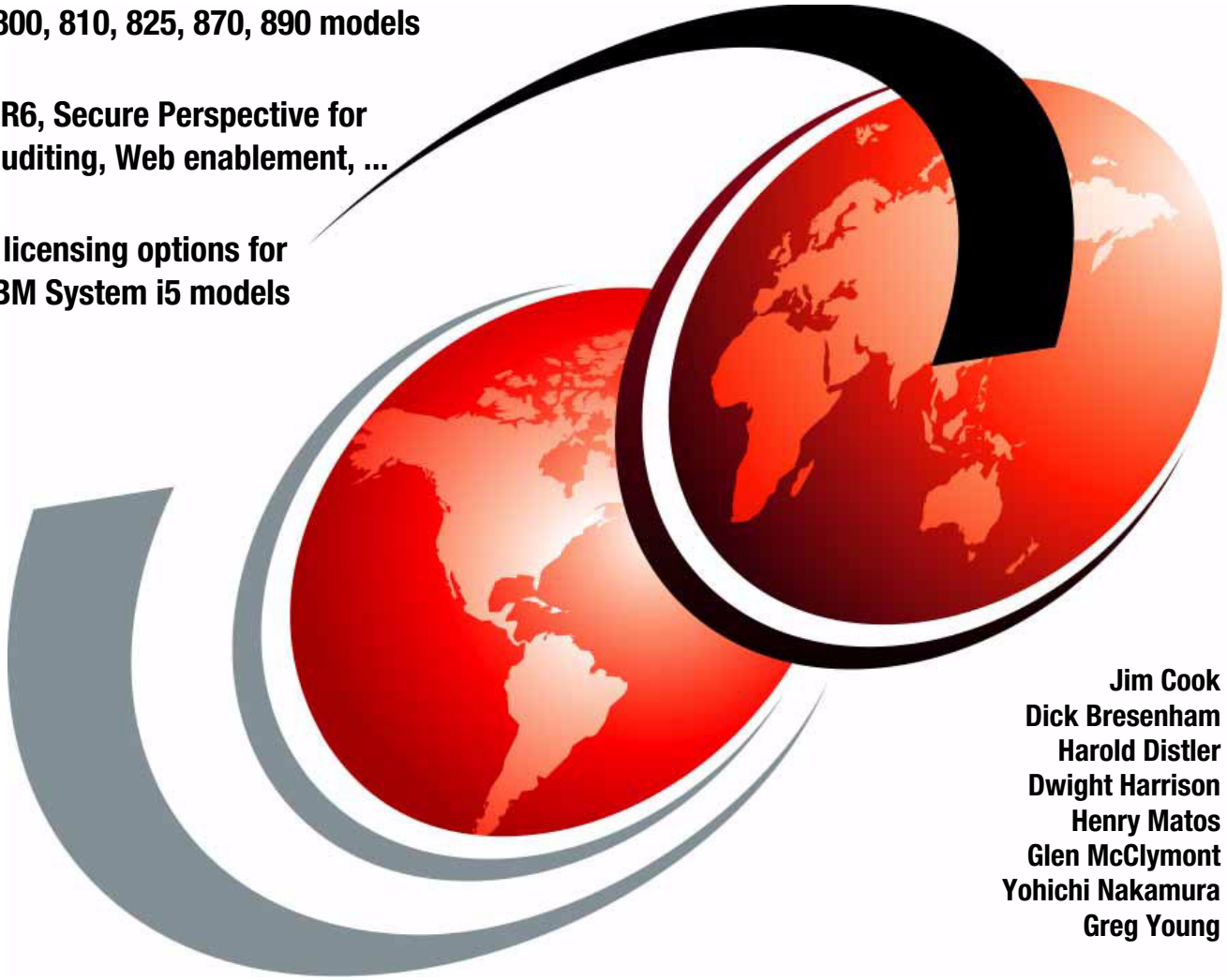
IBM

IBM System i Overview

Models 515, 525, 550, 570, 595, and More

- A system builder for System i 515, 520, 525, 550, 570, 595, 800, 810, 825, 870, 890 models
- IBM POWER6, Secure Perspective for System i auditing, Web enablement, ...
- IBM i5/OS licensing options for selected IBM System i5 models



Jim Cook
Dick Bresenham
Harold Distler
Dwight Harrison
Henry Matos
Glen McClymont
Yohichi Nakamura
Greg Young

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IBM System i Overview: Models 515, 525, 550, 570, 595, and More

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Note: Before using this information and the product it supports, read the information in “Notices” on page xi.

First Edition (July 2008)

This edition applies to IBM System i5 models running IBM i5/OS V5R3 and i5/OS V5R4.

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Preface

This IBM® Redpaper publication describes the IBM System i™ technology-based hardware and software capabilities that were announced between January 2007 and October 2007. From a System i family hardware coverage viewpoint, this paper also integrates the new hardware information announced in 2007 with existing System i hardware information. The existing information was pulled from the IBM Redbooks® publication *IBM System i5, eServer i5, and iSeries Systems Builder IBM i5/OS Version 5 Release 4 - January 2006*, SG24-2155.

This paper is now *the* "system builder" for the processor hardware technology for IBM System i Models 515, 520, 525, 550, 570, IBM POWER6™ 570, and 595; for Models 800, 810, 825, 870, and 890; and for I/O device attachments that are supported on these models by IBM i5/OS® V5R3 and V5R4. The PCI rules Redpaper publication that corresponds to the level of information in this paper is *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011. Older technology hardware supported up to IBM OS/400® V5R2 is documented in *IBM eServer iSeries and AS/400e System Builder: IBM OS/400 Version 4 Release 3 - Version 5 Release 2*, REDP-0542, and *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638.

For more information about where to find technical marketing information, read the IBM Technote *Where to Find Today and Yesterday's System i Technical Marketing Deliverables*, TIPS0637.

System i Builder and SG24-2155: From a System i system builder perspective, this paper contains hardware-level content that is a superset of the information that was contained in *IBM System i5, eServer i5, and iSeries Systems Builder IBM i5/OS Version 5 Release 4 - January 2006*, SG24-2155. We recommend that you use the information in this paper for hardware content and no longer use the content provided in SG24-2155-12. SG24-2155 was last updated in September 2006 and has since become obsolete.

A variety of new offerings were announced in 2007 that target the minimizing of product acquisition cost and simplifying of product administration. These new offerings are highlighted by the new i5/OS licensing "editions" that are available on the IBM System i Models 515 and 525 and the simplified i5/OS licensing on the POWER6 Model 570 (also referred to in this paper as *POWER6 570* and *9406-MMA*). All are intended to minimize the initial investment in use of i5/OS. Simplification of the edition offerings of the 515, 525, and 570 (POWER6) has greatly enhanced the product structure of each of these System i models.

IBM System i Models 515, 520, 525, 550, 570, 9406-MMA and 595 are summarized in this paper as well as System i Models 800, 810, 825, 870, and 890 (all prior to IBM POWER5™ technology). Chapter 15, "iSeries Model 800, 810, 825, 870, 890 processor features" on page 561 is the last chapter in this paper to demonstrate the focus on System i 5xx models.

This paper describes the following capabilities:

- Hardware:
  - IBM System i 9406-MMA models, which includes new support for *Serially Attached SCSI* (SAS) technology disk drives, and 12X I/O loop attachment, new Integrated Virtual Ethernet adapter (Host Ethernet Adapter), and basic upgrade considerations
  - IBM System i5™ 515 and 525 models, including reduced total prices for specific disk hardware packages on the Model 525

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The Model 515 has a simplified set of configuration options that include only the most popular I/O options to keep the ordering process as simple as possible.

- Faster processor (2.3 GHz) offering on the IBM System i Model 595
- New support of entry-level tape devices and associated media in DDS/DAT format media
- New higher performance dual mode (with or without IOP) disk controllers
- Support of disks packaged within the SCSI-attached, EXP24 Disk Enclosures, which are currently offered on IBM System p™ models
- Overview of System i solution editions that include 3Com IP Telephony offerings and Model 525 Oracle® JD Edwards® and SAP® application offerings

► Software:

- i5/OS V5R4 user-based licensing on the 515 and 525 models
- Application server i5/OS pricing on IBM System i5 Models 550, 570, POWER6 570, and 595
- Exclusive to the POWER6 570 model, i5/OS and Capacity Backup editions only

  There are no Standard and Enterprise editions, and 5250 OLTP Enterprise Enablement is completely optional.
- Secure Perspective for System i, which provides a Web-based natural language interface to i5/OS security for easing the automation of setting up and tracking your i5/OS security attributes and events for security auditing purposes
- A set of Web-enablement enhancements targeted to get you up and running in an IBM WebSphere® Application Server technology-based environment as quickly as possible

  This support is a follow-on to the initial set of Web-enablement enhancements announced in October 2006 and delivered prior to April 2007.
- New SQL-based product offerings:
  - MySQL™ Enterprise for i5/OS available from the MySQL AB Corporation
  - DB2® Web Query for System i available from IBM that has been uniquely developed for the i5/OS environment by Information Builders, Incorporated
- A new version (V7.0) of WebSphere Development Studio Client for System i to extend existing capabilities for developing and deploying i5/OS Web-based applications
- For Models 515 and 525, the i5/OS Unlimited Collaboration Users feature with a cost-effective option for adding IBM Lotus® collaboration solution products
- Overview of the April 2007 enhancements available for the IBM Systems Workload Estimator for IBM System i model sizings

The team that wrote this IBM Redpaper

This paper was produced by a team of specialists from around the world working at the International Technical Support Organization (ITSO), Rochester Center.

Jim Cook is a Senior Software Engineer Project Leader at the ITSO, Rochester Center. He leads teams that produce IBM System i announcement presentation sets that are maintained on the System i technical support Web sites and presents at ITSO Forums internationally. Jim also produces Redbooks publications about various System i and i5/OS-related topics.

Dick Bresenham is a Senior iSeries® Techline Specialist on the Western Area team in Dallas, Texas, providing iSeries pre-sales technical marketing support. Prior to joining IBM Techline, he was a System/36™, System/38™, and AS/400/iSeries Systems Engineer. He joined IBM as a Process Engineer in Austin, Texas, and has 23 years of service with IBM.

Harold Distler is a Consulting Product Specialist with Sirius Computer Solutions, an IBM Premier Business Partner. Harold assists customers with System i hardware ordering and configuration processes and has worked on several System Handbook and System Builder residencies.

Dwight Harrison is a System i Remote Hardware Support Specialist in Rochester, Minnesota. He worked both in the Rochester development lab and in the field for 24 years prior to joining the Rochester Hardware Support Center in January 1993. In the Support Center, Dwight provides remote diagnostics and interfaces with developers to resolve customer reported problems in both hardware and software support. He has participated in previous residencies for the Handbook and Builder.

Henry Matos is a Senior System i Technical Sales Specialist for the IBM Latin America Techline organization based in Atlanta, Georgia. He joined IBM in 1976 as a Computer Operator trainee for the Program Information Department in Hawthorne, NY, where all of IBM program products where originally distributed. After several internal staff and management positions, in 1988, he accepted a position as an IBM AS/400® Systems Engineer for the Midtown Manhattan DR4 Branch office. Later he joined the IBM Technical Support organization, which then became the IBM Americas Techline organization. In 1997, he became the first Techline Specialist for the new Latin America Techline team.

Glen McClymont is a Senior AS/400 Techline Specialist with IBM in Canada. Since 1988, he has worked with the System i product family in customer hardware support, software support, and most recently in pre-sales marketing support. Glen has over 30 years of experience with IBM. He is an alumni resident for the ITSO from previous Handbook and Builder residencies, providing expertise between updates.

Yohichi Nakamura is an IT Specialist with IBM Japan Systems Engineering Co., Ltd. He works in IBM System i Advanced Technical Support team for Japan as a specialist for IBM System i. He has three years of experience on the IBM System i platform. His areas of expertise include overall of i5/OS operations, LPAR configurations, performance analysis and networking.

Greg Young is a System i Technical Sales Specialist in Minneapolis, MN. He joined IBM in 2004 as a System i Licensed Internal Code software developer before transferring to the field in 2006. As a Technical Sales Specialist, he provides pre-sales technical marketing, high availability, external storage, and LPAR configuration support.

Many thanks to Susan Powers and the authors of the previous editions of the *IBM eServer i5 and iSeries System Handbook i5/OS Version 5 Release 3 October 2005 -- Draft*, GA19-5486, and *IBM System i5, eServer i5, and iSeries Systems Builder IBM i5/OS Version 5 Release 4 - January 2006*, SG24-2155.

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Deb Angst
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Mike Fallenstein
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Jim Hermes

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Summary of changes

This section describes the technical changes made in this update to REDP-5052. Full POWER6 processor technology and IBM i (formerly i5/OS) 6.1 release level coverage is planned for a future publication.

July 2008 update

The following paragraphs summarize the primary changes in this softcopy update. Change bars appear to the left of the pertinent text to assist the reader in locating the new material.

Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135:

- Updated many feature descriptions with small but important changes including:
  - Model 520 memory plugging rules
  - Disk and tape adapter (controllers, adapters) details
  - Added the POWER6 smart Fibre Channel adapters #5749 and #5774
- New table: Adapters supporting i5/OS Operations Console PC Workstations

Chapter 8, “Storage and media for IBM System i family models” on page 359:

- Updated details for tape and optical devices supported on various adapters and software release level information for “IOP-less” support.
- Updated the description for alternate IPL (restart) considerations and added references to additional documentation.

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1

Overview of this paper

In this chapter, we summarize the content in this paper and provide references to a variety of new offerings announced during 2007 that target minimizing product acquisition cost and simplifying product administration. These new offerings are highlighted by the new i5/OS licensing “editions” that are available on the IBM System i Models 515 and 525 and the simplified i5/OS licensing on the System i POWER6 model 570 (also referred to in this paper as POWER6 570 and 9406-MMA), all intended to minimize the initial investment in use of i5/OS. Simplification of the edition offerings of the 515, 525, and 570 (POWER6) have greatly enhanced the product structure of each of these System i models.

We summarize IBM System i Models 515, 520, 525, 550, 570, 9406-MMA (System i POWER6 570) and 595 in this paper as well as System i Models (prior to POWER5 technology) 800, 810, 825, 870, and 890. We intentionally placed Chapter 15, “iSeries Model 800, 810, 825, 870, 890 processor features” on page 561, as the last chapter in this paper to demonstrate the focus on IBM System i Model 5xx. Both 5xx and 8xx models are covered in other hardware chapters and sections, such as Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

In this chapter, we also highlight the new i5/OS software-based capabilities that were introduced between January 2007 and October 2007. Chapter 11, “Software enhancements” on page 433, presents an overview of specific software announcements.

System i Builder and SG24-2155: From a System i system builder perspective, this paper contains hardware-level content that is a superset of the information that was contained in *IBM System i5, eServer i5, and iSeries Systems Builder IBM i5/OS Version 5 Release 4 - January 2006*, SG24-2155. We recommend that you use the information in this paper for hardware content and no longer use the content provided in SG24-2155-12. SG24-2155 was last updated in September 2006 and has since become obsolete.

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1.1 Topics covered in this paper

The announcements from January 2007 through October 2007 include many unique capabilities on specific System i models, i5/OS, and selected software products. These new announcements build on the strengths and capabilities of “i for integration” that is already available on System i models running i5/OS and i5/OS-based software products and applications available prior to 2006.

The System i POWER6 model 570 now includes the latest IBM POWER6 technology plus an array of other technology advances. It is designed to deliver outstanding price/performance, mainframe-inspired reliability and availability features, flexible capacity upgrades, and innovative virtualization technologies.

The System i POWER6 model 570 commercial processing workload (CPW) ratings are approximately 70% higher than equivalent POWER5 systems and approximately 30% higher than equivalent IBM POWER5+™ systems. This is accomplished within the same footprint, electrical power, and cooling parameters as the POWER5+ 570 system. The ability to share integrated high-speed Ethernet adapter ports is enhanced by the Integrated Virtual Ethernet (IVE). Additionally, new 12X I/O loop attachment capabilities are offered, providing up to 50% more bandwidth compared to high-speed link (HSL)-2 technology.

New i5/OS licensing offerings were introduced during 2007 to reduce your initial investment:

- Exclusive to the System i 570 (POWER6), two new i5/OS editions simplify your choice: i5/OS Edition and Capacity BackUp. Starting with a single i5/OS Edition, the 9406-MMA model can be customized by processor to run multiple transaction processing, and collaborative and application processing workloads. Software-tier level p30 pricing is offered across all configurations up to 16-way. This offers lowered initial start-up costs as well as improved flexibility during server consolidations and granularity for intermediate-sized System i configurations.

  In this paper, you can find more information about these unique POWER6 570 editions in 2.1.3, “i5/OS Edition features” on page 19.

- Exclusive to the IBM System i Models 515 and 525, new i5/OS licensing per concurrent user is available. Along with providing the typical wide-range of i5/OS functions, you get improved flexibility, granularity, and lowered cost to use i5/OS with this licensing by concurrent user. This pricing structure can significantly reduce the i5/OS cost to small and medium business (SMB) customers, while providing performance levels and I/O configurations comparable to the System i Model 520+ processor range.

  Unlimited Collaboration Users i5/OS pricing also became available during 2007. It enables reduced cost of all the Lotus Corporation products included in this offering.

  You can find more information about this i5/OS licensing by concurrent user, unique to Models 515 and 525 systems in 11.2.3, “i5/OS user entitlement details” on page 443.

  The Model 525 now has two “solution editions” for SAP and Oracle JD Edwards applications that are supported under i5/OS. These two solution editions also have optional *disk hardware packages* that offer a reduced price for a combined set of disk arms, a disk controller and a disk hardware enclosure.

- New i5/OS pricing is available for IBM System i Models 550, 570, and 595 that are designated as *application servers* that do not require significant use of DB2 for i5/OS.

  You can find more information about this application server licensing for i5/OS in 11.4.1, “i5/OS Application Server Processor Entitlement details” on page 453.

Some new software capabilities, such as the new Secure Perspective for System i product and two new separate query-based products developed by independent software vendors (ISVs) and based on their existing products, became available. These include My SQL for i5/OS, which was developed and distributed by MySQL AB, and the DB2 Web Query product. DB2 Web Query for System i was developed expressly for IBM and the System i environment by Information Builders, Incorporated. This product (5733-QU2) can be ordered from and is supported by IBM.

In the following topics, we expand upon the key 2007 i5/OS-based capabilities, while referring you to the respective chapters in this paper for more information about these capabilities. For example, 9406-MMA capabilities are summarized in Chapter 2, “System i POWER6 model 570” on page 11, and all the 2007 software enhancements, including the new i5/OS licensing topics are covered in Chapter 11, “Software enhancements” on page 433.

1.2 Hardware capabilities in this paper

This paper addresses the following key hardware capabilities that were announced between January 2007 and October 2007:

- IBM System i 9406-MMA models, which include new support for Serially Attached SCSI (SAS) technology disk drives, and 12X I/O loop attachment, new IVE adapter (Host Ethernet Adapter), and basic upgrade considerations

  Refer to Chapter 2, “System i POWER6 model 570” on page 11, for more information about the 9406-MMA i5/OS software tier and the i5/OS edition.
- IBM System i Models 515 and 525, including reduced total prices for specific disk hardware packages on the Model 525
- Faster processor (2.3 GHz) offering on the IBM System i Model 595
- New support of entry-level tape devices and associated media in DDS/DAT format media
- New higher performance dual mode (with or without IOP) disk controllers
- Support of disks packaged within the SCSI-attached, EXP24 Disk Enclosures, which are currently offered on IBM System p models
- Overview of System i and 3Com IP Telephony capabilities under the IBM System i Model 520 descriptions

This paper also includes system builder-level hardware information for processor Models 515, 520, 525, 550, 570, and 595, Models 800, 810, 825, 870, and 890, and I/O device attachments supported on these models by i5/OS releases V5R3 and V5R4. For more information, refer to *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011.

Important:

- This paper contains hardware-level content that is a superset of the information contained in *IBM System i5, eServer i5, and iSeries Systems Builder IBM i5/OS Version 5 Release 4 - January 2006*, SG24-2155, which was last updated in September 2006. This paper also includes technical corrections to the information provided in the system builder book. In addition, Chapter 8, “Storage and media for IBM System i family models” on page 359, in this paper has been updated and reorganized to cover tape hardware that is supported under i5/OS.

  Refer to the IBM Technote *Where to Find Today and Yesterday's System i Technical Marketing Deliverables*, TIPS0637, for a guide on where to find different hardware technology-level technical marketing documentation among Redbooks publications for the System i platform.

- Since the original general availability of i5/OS V5R3 and V5R4, both releases have significantly enhanced Licensed Internal Code (LIC) levels of V5R3M5 and V5R4M5, respectively. These microcode levels offer additional hardware support that does not require corresponding new release levels of i5/OS V5R3 or V5R4.

  If you are running i5/OS V5R3 or i5/OSV5R4, we recommend that you install the V5R3M5 and V5R4M5 levels of microcode. By doing so, you will be ready to use the hardware that requires a microcode-level update. See the following System i Support Web page for more information:

  `http://www.ibm.com/systems/support/i`

For older hardware technology information, refer to the following publications:

- *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638.

  This paper contains PCI rules that are related to the iSeries Models 270, 820, 830, 840, SB2, and SB3 configurations with OS/400 V5R2 and for rules related to the iSeries Models 800, 810, 825, 870, and 890 configurations up to OS/400 V5R2.

- *IBM eServer iSeries and AS/400e System Builder: IBM OS/400 Version 4 Release 3 - Version 5 Release 2*, REDP-0542

  This paper offers detailed information about the iSeries Models SB2, SB3, 250, 270, 820, 830, and 840, as well as the AS/400e™ Model 170, Model 250 package, Models 720, 730, 740, and releases of OS/400 software from Version 4 Release 3 through Version 5 Release 2. It includes information about rules related to the #5033, #5034, #5035, and #5077 Migration Towers that can attach to Models 820, 830, 840, SB2, or SB3, and the description of the affected features to be migrated to these models.

In addition, refer to the following locations on the Web for further hardware information:

- For general IBM POWER6 technology-based hardware documentation:
  - System i

    `http://www.ibm.com/systems/support/i`
  - System p

    `http://www.ibm.com/systems/support/p`
  - IBM Systems Information Center

    `http://publib.boulder.ibm.com/infocenter/systems/index.jsp`

  These support pages offer a wide range of tools and resources, including hardware and software maintenance, for example Fix Central capabilities, and technical documentation.

When accessing POWER6 hardware information, these locations provide the most effective links to available documents, such as the System i Overview (POWER6) and Hardware Management Console (HMC) documentation that is specific to Version 7 Release 3.1.0 or later. Links to other product documentation including POWER5 and pre-POWER5 hardware and i5/OS-based software are also available from these locations. We recommend that you go to these locations on the Web first to find the appropriate categorization of hardware information.

On the System i Support page, under the Select your product area, for Hardware, select **570 - System i 570 (POWER6)** and click **Go**. On the next page, under Hardware - Documentation, click the **System i 570 (9406-MMA) publications** link.

From any of the hardware links, you can access documentation that applies to only POWER5 models, only to POWER6 models, or both POWER5 and POWER6 models. Keep in mind that updates to POWER6 documentation will be made over time.

- The POWER5 technology-based IBM Systems Hardware Information Center

  http://publib.boulder.ibm.com/infocenter/eserver/v1r3s/index.jsp

  This information center contains information for System i and p models, such as installing and activating the POWER5 system, choosing a console setup, setting up and administering HMC-based logical partition (LPAR), setting up and using Capacity on Demand offerings, and more.
- The IBM iSeries (System i) Information Center (pre-POWER5 technology)

  http://publib.boulder.ibm.com/iseries/
- IBM System i planning, including upgrades information

  http://www.ibm.com/systems/support/i/planning/migrationupgrade.html
- IBM System i hardware

  http://www.ibm.com/systems/i/hardware/

1.3 Software capabilities in this paper

This paper addresses the following key software capabilities that were announced between January 2007 and October 2007:

- i5/OS V5R4 concurrent user-based licensing on the Models 515 and 525
- Application server i5/OS processor licensing for the Models 550, 570, POWER6 570, and 595
- Exclusive to the POWER6 570 model, i5/OS and Capacity Backup editions only

  There are no Standard and Enterprise Editions, and 5250 online transaction processing (OLTP) Enterprise Enablement is completely optional.
- Secure Perspective for System i product,

  This product provides a Web-based natural language interface to i5/OS security for easing the automation of setting up and tracking i5/OS security attributes and events for security auditing purposes. During October 2007, support was extended to AIX® and Microsoft® Windows® operating systems.
- Addition of JDK™ Standard Edition (SE) 6, the latest release of the Java™ programming language, in IBM i5/OS V5R4

  JDK SE 6 contains many new features and enhancements to collections, jconsole, debug, monitoring and management, instrumentation, reflection, performance, and more.

- A set of Web enablement enhancements targeted to simplify the installation processes of an IBM WebSphere Application Server-based environment, with optimum performance

  This support is a follow-on to the initial set of Web enablement enhancements that were announced in October 2006 and delivered prior to April 2007.
- A new version (V7.0) of WebSphere Development Studio Client for System i to extend existing capabilities for developing and deploying i5/OS Web-based applications
- Overview of 2007 enhancements that are available for the IBM Systems Workload Estimator for IBM System i model sizings
- MySQL Enterprise for i5/OS

  MySQL is a popular open source database that is often used with PHP-based Web applications. The announcement of MySQL support for i5/OS follows the successful introduction of PHP supported by Zend on i5/OS in 2006. Now the PHP applications can maintain their existing program interfaces to MySQL.
- DB2 Web Query for System i

  This business intelligence-oriented Web-based query and report writing tool is a suite of products developed by Information Builders expressly for i5/OS. Ordered from and supported by IBM, the DB2 Web Query for System i tools represents a robust set of functions that are available as a base subset of the WebFOCUS product, with some optional downloads from IBM.

  Existing Query/400 definitions running under i5/OS continue to be supported. They can also be imported into DB2 Query for System i and enhanced under this product.
- Value Packs for Popular i5/OS Software Products

  These products, exclusively available for System i POWER6 model 570, contain a specific set of individual licensed programs that are available at a reduced cost compared to purchasing them separately:

  – DB2 Value Pack for i5/OS (5722-DVP)

    This package includes:

    • DB2 Query Manager and SQL Development Kit (5722-ST1)

    • DB2 Symmetric Multiprocessing (DB2 SMP) (5722-SS1, Option 26)

    • DB2 UDB Extender (5722-DE1), which consists of two components, the XML Extender and a linguistic search engine called *Text Extender*

    • XML Toolkit (5733-XT1)

  – Operations Value Pack for i5/OS (5722-SVP)

    This package includes:

    • Backup Recovery and Media Services (BRMS) (5722-BR1)

    • BRMS Network Feature (5722-BR1, Option 1)

    • Media and Storage Extensions (5722-SS1, Option 18)

    • Performance Tools for i5/OS (5722-PT1) - Manager (5722-PT1, Option 1)

  – Zend and MySQL Value Pack for i5/OS (5639-MVP)

    This package offers the software and support offerings to develop and deploy Web applications based on PHP and MySQL on i5/OS. The Zend and MySQL products are available directly from the vendors or can be ordered individually from IBM.

    No-charge Zend Core and Studio for i5/OS is available with the standard support offering. The no-charge MySQL Community Server offering is also available.

This Value Pack reduces the price of the individually purchased products that are part of this package. This package can be ordered only through IBM and includes:

- Zend Core for i5/OS with gold support from Zend
- Zend Studio for i5/OS with gold support
- Zend Platform for i5/OS with gold support
- MySQL Enterprise with silver support from MySQL AB

- IBM System i Model 550, 570, and 595 Enterprise Edition enhancements

  For new 550, 570 and 595 Enterprise Edition systems shipped starting 17 August 2007, additional software is included at no additional charge:

  – Zend Core for i5/OS, 5639-ZC1, with Standard Support
  – MySQL Enterprise for i5/OS, 5639-MYS, with Silver Support

  If higher levels of support are required, chargeable upgrades are available.

- Enhancement of System i integration with iSCSI attached BladeCenter® and System x™ servers to support multiple path I/O between the i5/OS partition providing the virtual I/O and the BladeCenter or System x server and to support virtual storage for VMware ESX server V3.0.1
- New and expanded Web services and service-oriented architecture (SOA) related capabilities introduced for 4Q 2007 availability

Chapter 11, “Software enhancements” on page 433, provides additional information about most of these software items. For additional software resources, refer to the following publications and locations on the Web:

- *IBM System i5 Handbook IBM i5/OS Version 5 Release 4 January 2006*, SG24-7486
- *IBM System i5 V5R4 Technical Overview Redbook*, SG24-7271

  This book contains information about hardware and software that were announced between January 2006 and 10 February 2007.

- The IBM iSeries (System i) Information Center

  http://publib.boulder.ibm.com/iseries/

- IBM System i software Web page

  http://www.ibm.com/systems/i/software

1.4 The System i CPW workload performance rating

CPW represents the IBM internal system performance benchmark. The *commercial processing workload* can be characterized by as many 5250 workstation jobs active, with background, lower priority batch work also being performed. The jobs that perform 5250 I/O operations consume a small amount of processor utilization per transaction. CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models.

CPW should not be used to compare performance with processor technologies outside the System i family. We strongly recommend that you *do not* use CPW as the sole metric for sizing System i models. Consider other performance aspects, such as specific application characteristics, like high CPU utilization and large numbers of disk I/O per second, and running multiple applications. You should use a sizing tool, such as the IBM Systems Workload Estimator (WLE) to size a particular System i model and its memory and I/O configuration. In later chapters in this paper, we provide references to sizing tools.

In this paper, we use the term *5250 OLTP CPW* and the term *5250 CPW* interchangeably. OLTP represents processor capacity that is available for work done by i5/OS jobs that communicate with a 5250 workstation or 5250 workstation emulator in an interactive manner. 5250 CPW also applies to i5/OS jobs that perform work directly to a twinax attached printer of the 5250 family of printers. Work that is performed by spooled writer jobs that print to LAN-attached printers is not accounted toward 5250 CPW capacity.

5250 CPW is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW is known as *Interactive CPW* on earlier System i models. Performance metrics reported in the Performance Tools for iSeries product, 5722-PT1, continue through i5/OS V5R4 to report 5250 work under the interactive terminology.

In this paper and other publications, the full processor CPW rating is sometimes also referred to as the *batch CPW* rating.

Some IBM System i models offer a 5250 OLTP CPW capacity rating lower than the maximum ("batch") CPW rating. Other System i models offer the Standard Edition that essentially has zero 5250 OLTP CPW capacity.

For more information about CPW, refer to the following publications:

- The "CPW and CIW Descriptions" appendix in the *System i Performance Capabilities Reference i5/OS Version 5, Release 4*, SC41-0607, under the "General Performance Resources" section at the following address:

  `http://www.ibm.com/systems/i/solutions/perfmgmt/resource.html`

- *Aiming for Zero Interactive on iSeries*

  `http://www.ibm.com/servers/eserver/iseries/perfmgmt/pdf/ZeroInteractive.pdf`

  This white paper discusses using the IBM WebFacing Tool with your 5250 application to enable interaction with your application from a browser workstation interface. Processing under the IBM WebFacing Tool enables your 5250 jobs to not be accounted toward the 5250 OLTP CPW rating of your system or partition. This is important on IBM System i family models that offer a reduced 5250 OLTP CPW capacity relative to total (batch) CPW capacity and models that offer a Standard Edition, which is defined to have zero 5250 OLTP CPW capacity.

  Starting with i5/OS V5R2 and use of the WebFacing Tool as part of WebSphere Development Studio Client for iSeries Version 5 product, the refaced applications can be set up to not be accounted as 5250 OLTP work.

  Starting with i5/OS V5R4 and WebSphere Development Studio Client for iSeries Version 6, 5250 applications using either or both the IBM WebFacing Tool or Host Access Transformation Services (HATS) can run without being accounted toward 5250 OLTP CPW capacity. This is accomplished by running under the WebSphere Development Studio Client component - WebFacing Deployment Tool for WebSphere Development Studio with HATS Technology.

  In 11.10, "WebFacing Deployment Tool V7.0 with HATS technology" on page 484, we discuss the latest capabilities for WebSphere Development Studio Client V7.0.

1.5 Pricing and contacting sales representatives

This paper does not contain detailed ordering instructions or pricing information. For additional information, we recommend that you contact either an IBM representative or an authorized IBM Business Partner.

You can go to the IBM System i “How to Buy” Web page at:

http://www.ibm.com/systems/i/buy/marketing/

From this page, you can choose to be put in contact with an IBM Business Partner or IBM Sales Representative. You can also request a price quote. To contact an IBM U.S. Sales Representative, call 1-888-SHOP-IBM.

1.6 Special RPQs

In this section, we identify the RPQ that became available during 2007 that the authors of this paper determined to be of significant importance to include in this edition.

Disk Content Security PRPQ #5799-SD1 (P84513)

IBM Disk Sanitizer for i5/OS erases disk drive contents by overwriting all addressable locations on the disk drive three times.

This RPQ is currently available for i5/OS V5R3 and V5R4 and is provided through appropriate PTFs. It includes the following benefits:

- Significantly reduces the risk of data theft and accidental information dissemination
- Provides regulatory compliance by meeting rigorous USA Department of Defense (DoD) standards (5220.22-M) and furnishing appropriate audit trail documentation
- Can help customers to reuse or sell storage assets rather than destroy them

See the IBM PRPQ database for more information regard ordering, prerequisites, limitations, and so forth.

2

System i POWER6 model 570

In this chapter, we provide summary charts and diagrams, as well as identify the processor features that are associated with each System i POWER6 TM model 570. For feature descriptions, including details about power and packaging and main memory, refer to Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

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2.1 System i POWER6 model 570 overview

The System i POWER6 570 provides faster processor and memory technology than POWER5 technology-based models. It is also the first System i model to support, in addition to high-speed link (HSL)-attached I/O towers and drawers, the 12X loop technology for attaching 12X attach-capable I/O towers and drawers.

The following figures summarize the key 9406-MMA attributes and features, all within the same frame dimensions and weights used by the POWER5+ System i 570 rack configuration. The text that follows expands on the capabilities shared with the POWER5+ technology Model 570 and the new 9406-MMA unique capabilities.

The following figure shows a rack with a 16-way configuration.

System i Model 570 with POWER6 Technology

570

- Up to 16-way
- 5,500 to 76,900 CPW
- Max 768 GB memory
- Max 387 TB disk storage
- HSL-2 and 12X I/O
- i5/OS V5R4*
- P30 software tier

* With License Internal Code V5R4M5 or later

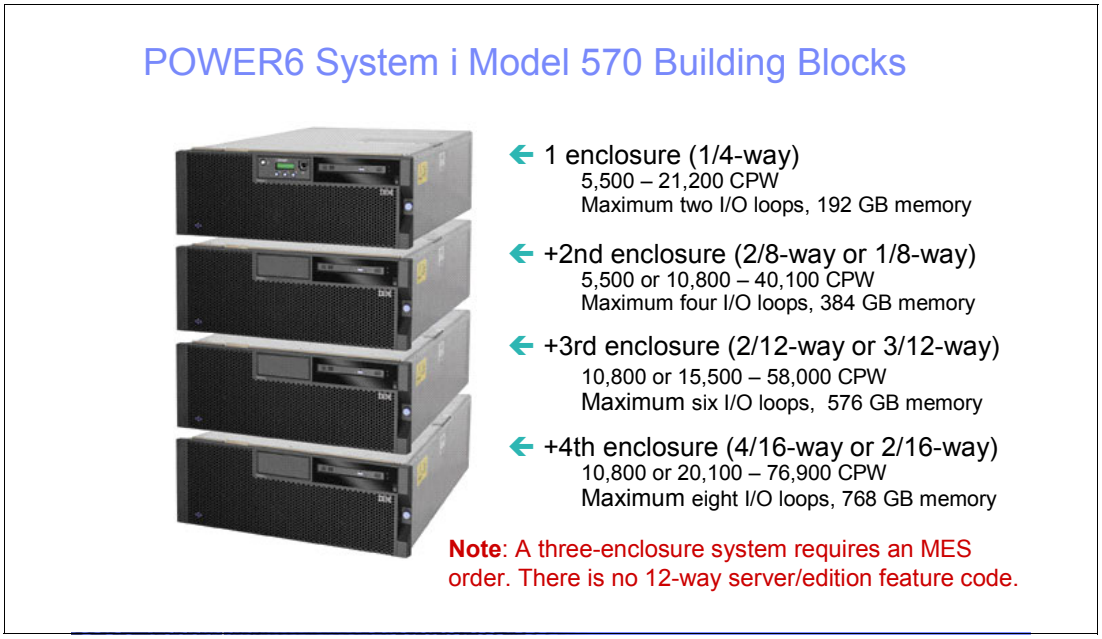
We recommend that you install the POWER6 Model 570 (as well as IBM System i POWER5 and POWER5+ models supporting a rack configuration) in a new or existing 19-inch IBM rack. This model provides the proper dimensions, mounting surfaces, power distribution, ventilation, stability, and other functional requirements. The design of the POWER6 Model 570, similar to the POWER5 technology-based models, is optimized for use in an IBM 36U or 42U rack (System i feature code #0551 or #0553). Both the front cover and the external processor fabric cables occupy space on the front left side of the rack that may not be available in racks from other companies. The rear service interface fabric cables have little slack and might not accommodate racks from other companies, which are deeper than the #0551/0553.

When using the IBM hardware and software ordering tool, the IBM Sales Configurator (sometimes also referred to as e-Config), the #0551 is defaulted on a new Model 570 order. You can edit the configurator output to use a #0553 rack instead.

The maximum amount of disk storage is somewhat less than 387,825 GB (387 TB). A size of 387 TB presumes that the maximum number of supported disk drives (1374 on a 16-way) is on i5/OS formatted 282.25 GB drives. Since the 282.25 disk drives are not yet supported as load source devices, actual maximum storage is somewhat less than 387 TB, depending on

the load source disk size and associated disks that are used to provide load source protection (mirrored, RAID-5 or RAID-6).

The following figure shows up to four “building blocks” (processor and memory enclosures) that are available to support up to a 4-way 570 (POWER6) (one block) through up to a 16-way 570 (POWER6) (4 blocks).



System unit and processor enclosure: In this paper, we use several terms such as *system unit* or *processor enclosure* or *node* to represent the physical enclosure that include a set of available processor cards, memory cards, and I/O slots for the IBM system i 5xx and 8xx models addressed in this publication. The IBM System i Model 595 “system unit” is actually contained within a larger frame.

For the POWER5 and POWER6 570 Models, some IBM documentation refers to each processor enclosure as simply a *building block*.

In addition to processor and memory cards, each processor enclosure (building block) has support for a limited number of I/O devices or I/O loop (GX) adapters and can support up to two GX (I/O loop) adapters for additional I/O attachments as described later in this chapter.

The POWER6 570 commercial processing workload (CPW) ratings are approximately 70% higher than equivalent POWER5 systems and approximately 30% higher than equivalent POWER5+ systems. Improved performance compared to POWER5 and POWER5+ models is also realized for Lotus Domino® Mail and Calendar Users (approximately 35% improvement over similarly configured POWER5+ 570 model) and the IBM internal WebSphere Application Server “stock broker” benchmark application Trade6 (approximately 45% improvement over similarly configured POWER5+ 570 model). This is accomplished within the same footprint, electrical power, and cooling parameters as the POWER5+ system.

With its advanced virtualization technologies, the System i POWER6 570 can run multiple operating systems and application environments simultaneously. System i POWER6 570 shares the following key characteristics with POWER5+ technology models:

- Security and virus resistance
- The ability to run i5/OS, Linux® and AIX 5L™ applications on a single system and integrate IBM eServer™ xSeries® (System x) servers running Windows or Linux

  See 2.1.1, “Operating systems and editions” on page 16, for supported release levels.
- Advanced Power Virtualization feature for AIX and Linux support
- Micro-Partitioning™ (up to 10 partitions per processor, 160 per system)
- Simultaneous multithreading (SMT) where a single processor operates as two processors
- Dynamic logical partition (LPAR) movement of processor capacity, memory, and I/O devices
- Capacity on Demand options supported on POWER5+ models:
  - Permanent Capacity Upgrade on Demand (CUoD) for processors and permanent CUoD for memory
  - Trial Capacity on Demand (CoD)
  - On/Off CoD
- Continued support of most HSL loop and HSL I/O enclosures currently supported on POWER5 systems
- i5/OS V5R4M0 RAID hot spare option (introduced in October 2007)

  This option allows one or more disk drives to be standing by (hot spare). If a drive fails, the second drive is automatically brought online in place of the failed drive. This option minimizes the time that the array is running unprotected and is available for disk controllers running either RAID-5 or RAID-6. At least one drive per disk controller is required for the arrays protected. This protection option is not applicable to mirrored configurations.

  Using either a Service Tools interface or an iSeries Navigator interface (select **Configuration and Service** → **Hardware**), you configure a RAID set with a hot spare to enable this automated function. See the #0347 RAID Hot Spare Specify described in 4.10, “Disk units” on page 264, for more information.

The following new capabilities and offerings are offered exclusively on the 9406-MMA:

- Utility Capacity on Demand (Utility CoD)

  With Utility Capacity on Demand, granularity can be achieved down to a single 9406-MMA processor minute. When enabled, it can automatically provide additional processor capability when a workload peak occurs. See 2.7, “Capacity on Demand” on page 39, for more information about all POWER6 CoD capabilities.
- P30 software across the 1 to 16 processor activations

  This feature offers significant cost advantages compared to the POWER5 technology-based 570 models.
- i5/OS and Capacity Backup Editions

  These editions are the only two software editions that are available. No Standard nor Enterprise Edition is available. The i5/OS and Capacity Backup Editions offers significant cost advantages compared to the POWER5 technology-based 570 models.
- 12X loop technology (for POWER6) supporting the 12X I/O enclosure (#5796), also called a *12X channel*

  POWER6 570 system unit can have up to two GX adapters. An HSL-2 GX adapter #1800 allows a loop to attach up to six HSL I/O enclosures. The system unit 12X Channel GX Adapter #1802 allows a loop to attach up to four 12X I/O enclosures.

Each POWER6 570 system unit can have up to one of the following adapter combinations:

– Two HSL-2 GX adapters
– Two 12X GX adapters
– One HSL-2 GX adapter and one 12X GX adapter

12X is a new loop for I/O attachment technology. The “12” refers to the number of wires within the 12X cable. Potentially, 12X technology offers up to 50% more bandwidth than HSL technology.

12X loop technology is based upon the participation of IBM with the InfiniBand® Trade Association (IBTA). IBM 12X support is not InfiniBand compliant.

HSL I/O enclosures must be attached to an HSL loop. 12X I/O enclosures must be attached to a 12X loop. HSL and 12X enclosures cannot be mixed on the same loop because they are not compatible.

For System i POWER6 model 570 models, the only supported I/O drawer supporting 12X loop attachment is the #5796 12X I/O Drawer. Two #5796 drawers can be enclosed in a #7314 enclosure. The #5796 has the following key characteristics:

– Six high-speed, PCI-X DDR slots per #5796
– Dual mode or IOP-less IOAs only (no IOP support)
– The #5796 is similar to the HSL #5790 with the following key differences:
  • The #5796 can support higher workload levels.
  • The #5790 has six PCI-X slots, which can support IOPs.
  • The #5790 has a maximum of six 5790s per HSL loop.

Note: The #5796 is supported only on the 570 (POWER6) model.

Disk controllers for attaching disks in the #5786 EXP24 Disk Drawer is supported in both an HSL I/O enclosure and a 12X I/O enclosure. The #5786 is supported also on System i Models 800, 810, 825, 870, 890 and 520, 550, 570, 595 and POWER6 570.

The 5xx systems (POWER5 and POWER6) can be clustered. HSL-attached I/O units can be switched, assuming that all I/O units have the faster HSL-2 adapters, indicated by #6417 and #9517.

► #5636 or #5639 Integrated Virtual Ethernet (IVE)

When ordering a 9406-MMA processor enclosure (identified by #5801), specify either a #5636 or #5639 IVE. The *Host Ethernet Adapter* (HEA) is the term used in most system documentation for IVE. This adapter replaces the POWER5 technology-based embedded two port Ethernet Adapter in the system unit. You must specify one of the two available processor enclosure adapters:

– #5636: Two Ethernet 10/100/1000 Mbps ports and two serial ports
– #5639: Four Ethernet 10/100/1000 Mbps ports and one serial port

These adapters are currently supported only in the 9406-MMA system unit or one of the addition three processor enclosures. These adapters are not supported in an I/O tower or drawer. IBM manufacturing installs this adapter in its own special slot. It does not use a PCI slot. You can see where this adapter is placed in 2.5.5, “Model 9406-MMA back view” on page 33.

These adapters provide significant options for use in a system with multiple partitions. Each port can be owned by a different partition, or multiple MAC addresses can allow up to eight partitions to share a port. A maximum of 16 MAC addresses is supported with the #5636. A maximum of 32 MAC addresses is supported with the #5639.

For more information, refer to Chapter 6, “Integrated Virtual Ethernet” on page 329.

- Support for a new larger capacity 282 GB disk drive

  This disk drive is *not* currently supported as a load source device.

- The new software offering *Value Packs for Popular i5/OS Software Products*, which includes DB2 Value Pack for i5/OS with optional features for Database, and Operations Value Pack for i5/OS with optional features for operations management

  These value packs are designed to offer these valuable software products, at a savings, to clients who purchase a new POWER6 570, which no longer bundles these software products in the base configuration. See Chapter 11, “Software enhancements” on page 433, for more information about all software capabilities announced October 2007, including MySQL Enterprise for i5/OS and DB2 Web Query for System i.

We present more information about these capabilities, which were announced in October 2007, later in this paper. The remainder of this chapter focuses on the key POWER6 on System i capabilities.

The following table gives a quick glance at the announcement and availability dates for the System i POWER6 570.

Model and processor	Announce date	General availability date	Withdrawn from marketing
POWER6 570 #7380	24 July 2007	14 September 2007	---

2.1.1 Operating systems and editions

The 9406-MMA supports i5/OS, Linux, and AIX 5L partitions at the following release levels:

- i5/OS V5R4 with cumulative PTF package level C7226540 or later and with Licensed Internal Code level V5R4M5 (indicated on physical media as SLIC RS545-A or later)
- AIX 5L for POWER™ V5.2 with Technology Level 5200-10 or later
- AIX 5L for POWER V5.3 with Technology Level 5300-06 or later
- SUSE® Linux Enterprise Server 10 SP1 for POWER or later
- Red Hat Enterprise Linux 4.5 for POWER or later

The AIX and Linux release levels are identical to those supported on the System p POWER6, 9117-MMA model.

Two new System i editions simplify choices. The POWER6 570 delivers product flexibility with two editions: one i5/OS and one Capacity BackUp. Zero 5250 online transaction processing (OLTP) capacity is included in either the i5/OS or Capacity BackUp Editions, but it can be added on a per-processor basis using 5250 Enterprise Enablement features.

Notes:

- Starting with a single i5/OS edition, the 9406-MMA can be customized by a processor to run multiple transaction processing, collaborative processing, and application processing workloads.
- The single 5250 workstation job exception applies to either the i5/OS edition or Capacity BackUp edition, as it does, for example, with a POWER5+ 570 Standard Edition. That is, a single 5250 session can be used to perform necessary functions. To operate multiple active 5250 sessions, you can purchase a 5250 OLTP Enterprise Enablement per processor or an “all processors” option. Enterprise Enablement is separate from the 9406-MMA editions.

2.1.2 System unit and features

The i5/OS Edition of the POWER6 570 is available as a 1/4-way, 2/8-way, 3/12-way (via miscellaneous equipment specification (MES) only), or 4/16-way system, while the Capacity BackUp Edition is available as a 1/4-way, 1/8-way, or 2/16-way system. Each POWER6 570 system unit (processor enclosure) supports two dual-core processor cards and up to six Serially Attached SCSI (SAS) technology disk drives.

Each processor card supports twelve buffered memory slots (dual inline memory module (DIMM) DDR2) that allow memory to be plugged into the processor card (direct attach). Memory is plugged in quads.

- #7830 4.7 GHz processor (0/2-way) processor card (two per enclosure or node).

  That is there are two processor cores per processor card.

  - 8 MB L2 cache per processor card
  - 32 MB L3 cache per processor card
- One slimline DVD drive slot
- Two USB 2.0 ports for optional AIX/Linux partition usage only
- IVE card

  One or the other of the following mandatory options are installed, depending upon your initial order:

  - Option 1: Four 1 Gb Ethernet ports and one serial port #5639
  - Option 2: Two 1 GB Ethernet ports and two serial ports #5636
- One service interface card
- Two Hardware Management Console (HMC) ports and two SPCN ports
- Six PCI slots

  - Four Peripheral Component Interconnect Express (PCIe) slots (three if an optional HSL/12X GX card is used for a second loop in a processor enclosure)
  - Two PCI-X DDR slots (IOP-less IOAs only)

  PCIe adapters and slots offer potentially faster throughput than are available with PCI, PCI-X, and PCI-X double data rate (DDR) technology. However, PCIe adapters that are currently available are approximately the same speed as PCI-X adapters.

  PCIe (supported only on POWER6 technology-based models) uses a term called *lanes* to refer to its capabilities. Each lane can support a data rate of 2.5 Gb/sec in both send and receive. The slowest and smallest PCIe comes in one lane (referred to as *X1*) with the fastest PCIe up to 32 lanes (x32). Think of lanes as data paths. The more lanes there are, the faster the data can flow, which is similar to an auto highway with multiple driving lanes. The size of the adapter and slot vary proportionally to the number of lanes. Since the physical size varies for both adapter and slot, an adapter with more lanes than the slot has cannot physically be plugged together. In the reverse, if the slot has more lanes than the adapter, then the adapter can be plugged into the slot. In summary, PCIe adapters are supported in a slot with an equal number of lanes or less.

  All four PCIe slots in the POWER6 570 processor enclosure are x8.

  PCI, PCI-X, and PCI-X DDR cards have the same form factor. A PCIe card has a different form factor. All PCIe and all PCI-X DDR slots do not support an IOP feature card. As of the July 2007 announcement, PCIe slots are available only within the POWER6 processor enclosure.

PCIe adapters and slots are physically incompatible with PCI, PCI-X, and PCI-X DDR adapters and slots. PCIe adapters and slots only support IOP-less mode of operation. PCI-X DDR slots only support IOP-less operation.

PCIe adapters (IOAs) announced in July 2007 (i5/OS V5R4M0 with Licensed Internal Code V5R4M5 required) include:

- #2893/9693 PCIe 2-Line WAN with Modem (i5/OS, Linux, and AIX)
- #2894/9694 PCIe 2-Line WAN with Modem (CIM) (i5/OS, Linux, and AIX)
- #5773 PCIe 4Gb Fibre Channel Adapter (Linux and AIX)
- #5767 PCIe 1GB Ethernet UPT 2-Port IOA (i5/OS, Linux, and AIX)
- #5768 PCIe 1Gb Ethernet Fiber 2-Port IOA (i5/OS, Linux, and AIX)

The PCIe Ethernet adapters support Operations Console over LAN. The PCIe 2-Line WAN with Modem IOAs support the use of i5/OS Operations Console Direct Attach. This i5/OS console option uses a special cable #0367 attached to a user-supplied Windows workstation.

For these WAN and Ethernet adapters, direct Systems Network Architecture (SNA) is not supported. For the WAN adapters, this means the Create Line SDLC (CRTLINSDLC) command is not supported. SNA via i5/OS SNA Enterprise Extender configuration (preferred) or AnyNet® is supported.

If you need direct support of CRTLINSDLC, you must use a WAN or LAN adapter associated with a supported IOP.

- Six SAS disk slots
- Integrated disk and DVD controller with zero write cache
- Redundant cooling
- Redundant power including redundant power regulators and dual power cords
- One dedicated GX slot for either a HSL-2/RIO-G or 12X loop
- One optional GX slot for a second HSL-2/RIO-G or 12X loop (blocks PCIe slot C6 does not have to match the GX adapter in the dedicated slot)
- Rack mount specify code

For items that are specifically orderable, you can find more information in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

Important: The POWER6 570 does not use edition-to-edition or server-to-server feature changes. For each increase in processor capacity of one to four, add one #5801 enclosure via an MES order. This means that the server or edition feature code cannot be used to know the maximum n-way of a system configuration.

When adding a #5801 processor enclosure, for each #5801, you must also add the following items:

- A #0423 feature

  This feature counts the number of enclosures.
- At least one processor activation
- One IVE feature, which is also known as one HEA

  You must select either the 2-port or 4-port adapter or accept the new order default for one of these adapters.
- One Service Interface feature
- The appropriate Processor Fabric and Service Processor Cables to connect the enclosures together
- At least two memory features and their activation features

  Alternatively you might already have enough extra memory features and activations on the system to move at least 8 DIMMs to each new enclosure.

Optionally, you can also add:

- One DVD drive
- One to six SAS disk drives
- PCI cards supported in the enclosure
- One to two, HSL/12X loops adapters
- I/O enclosures supported by the HSL or 12X loop adapter or adapters
- I/O enclosure, I/O controller, IOP (if necessary), and I/O devices desired to be placed within a supporting I/O enclosure

2.1.3 i5/OS Edition features

POWER6 570 i5/OS configuration 1 (#5460)

- Hardware
  - 1/4-way system with one processor activation
  - One PCIe WAN IOA
  - LPAR capable
- Software
  - Licensing for i5/OS (one processor license - P30 tier)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

POWER6 570 i5/OS configuration 2 (#5461)

- Hardware
  - 2/8-way system with two processor activations
  - One PCIe WAN IOA
  - LPAR capable

- Software
  - Licensing for i5/OS (one processor license, P30 tier)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

POWER6 570 i5/OS configuration 3 (#5462)

- Hardware
  - 4/16-way system with four processor activations
  - One PCIe WAN IOA
  - LPAR capable
- Software
  - Licensing for i5/OS (one processor license, P30 tier)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

2.1.4 Capacity BackUp configurations

POWER6 570 Capacity BackUp configuration 1 (#7053)

- Hardware
  - 1/4-way system with one processor activation
  - One PCIe WAN IOA
- Software
  - Licensing for i5/OS (one processor license - P30 tier)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

POWER6 570 Capacity BackUp configuration 2 (#7058)

- Hardware
  - 1/8-way system with one processor activation
  - One PCIe WAN IOA
- Software
  - Licensing for i5/OS (one processor license, P30 tier)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

POWER6 570 Capacity BackUp configuration 3 (#7063)

- Hardware
  - 2/16-way system with two processor activations
  - One PCIe WAN IOA
- Software
  - Licensing for i5/OS (one processor license, P30 tier)
  - iSeries Access (5722-XW1) unlimited users

- IBM Director for i5/OS (5722-DR1)
- IBM Web Enablement (5722-WE2)

POWER6 570 i5/OS MES 3/12-way configuration

- Hardware
  - 3/12-way system with four processor activations
  - Configured only with an MES upgrade via either one of the following options:
    - Existing 1/4-way plus two #5801 processor enclosures
    - Existing 2/8-way plus one #5801 processor enclosure
  - One PCIe WAN IOA
  - LPAR capable
- Software
  - Licensing for i5/OS (one processor license, P30 tier)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

2.2 System i POWER6 model 570 minimum and maximum capacities

The following tables provide the minimum and maximum system capacities for the System i POWER6 model 570. The values are package dependent.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address:

`http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html`

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

`http://www.mpginc.com`

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

`http://www.bmc.com`

To review the footnotes for the following table, see 2.3, “Notes for System i POWER6 model 570” on page 23.

	Model 9406-MMA							
Processor feature	**#7380 x 2**	**#7380 x 4**	**#7380 x 3**	**#7380 x 3**	**#7380 x 8**	**#7380 x 2**	**#7380 x 4**	**#7380 x 8**
Server feature	**#4910**	**#4911**	**MES only**	**MES only**	**#4912**	**#4922**	**#4923**	**#4924**
Number/type/ speed of processor	1/4/ POWER6/ 4.7 GHz	2/8/ POWER6/ 4.7 GHz	3/12/ POWER6/ 4.7 GHz	2/12/ POWER6/ 4.7 GHz	4/16/ POWER6/ 4.7 GHz	1/4/ POWER6/ 4.7 GHz	1/8/ POWER6/ 4.7 GHz	2/16/ POWER6/ 4.7 GHz
Relative system performance[1, 2]								
Processor CPW (min/max)	5500/ 21200	10800/ 40100	15500/ 58000	10800/ 58000	20100/ 76900	5500/ 21200	5500/ 40100	10800/ 76900
Mail and Calendar Users[2a]	12300/ 47500	24200/ 89700	34700/ 130000	24200/ 130000	45000/ 172000	12300/ 47500	12300/ 89700	45000/ 172000
5250 CPW [5]	0/21200	0/40100	0/58000	0/58000	0/76900	0/21200	0/40100	0/76900
with Enterprise Enablement[6c] (single/max)	5500/ 21200	5500/ 40100	5500/ 58000	5500/ 58000	5500/ 76900	5500/ 21200	5500/ 40100	5500/ 76900
L2 Cache (MB) per dual core processor	8	8	8	8	8	8	8	8
L3 Cache (MB) per dual core processor	32	32	32	32	32	32	32	32
Main storage (GB minimum/maximum)[11]	4/192	8/384	12/576	12/576	16/768	4/192	8/384	16/768
Main storage DDR2 DIMMs (quads minimum/maximum)	2/6	4/12	6/18	6/18	8/24	2/6	4/12	8/24
LPAR (10)[12]	10 (40)	20 (80)	30 (120)	30 (120)	40 (160)	10 (40)	10 (80)	20 (160)
Minimum i5/OS level/LIC level[8]	V5R4 with License Internal Code V5R4M5	V5R4 with License Internal Code V5R4M5	V5R4 with License Internal Code V5R4M5	V5R4 with License Internal Code V5R4M5	V5R4 with License Internal Code V5R4M5	V5R4 with License Internal Code V5R4M5	V5R4 with License Internal Code V5R4M5	V5R4 with License Internal Code V5R4M5
Software group [6c]	P30	P30	P30	P30	P30	P30	P30	P30
Disk storage (GB) [7d]								
Integrated minimum[7b]	0	0	0	0	0	0	0	0
Total maximum [7a]	154108	232009	386118	386118	387811	154108	232009	387811
DASD arms maximum	546	822	1368	1368	1374	546	822	1374
Internal arms (CEC)	546	822	1368	1368	1374	546	822	1374
External LUNS	546	822	1368	1368	1374	546	822	1374
System unit only	6	12	18	18	24	6	12	24
Physical packaging								
Rack Design - EIA units	4	8	12	12	16	4	8	16
External ports RIO-G(12X)	4 (4)	8 (8)	12 (12)	12 (12)	16 (16)	4 (4)	8 (8)	16 (16)
Max external loops RIO-G(12X)[14]	2 (2)	4 (4)	6 (6)	6 (6)	8 (8)	2 (2)	4 (4)	8 (8)
Max HSL I/O drawers	12	24	36	36	48	12	24	48
Max 12X I/O drawers	8	16	24	24	32	8	16	32
Max PCI card slots - HSL (system unit only)[10]	173 (5)	346 (10)	519 (15)	519 (15)	692 (20)	173 (5)	346 (10)	692 (20)

	Model 9406-MMA							
Processor feature	**#7380 x 2**	**#7380 x 4**	**#7380 x 3**	**#7380 x 3**	**#7380 x 8**	**#7380 x 2**	**#7380 x 4**	**#7380 x 8**
Server feature	**#4910**	**#4911**	**MES only**	**MES only**	**#4912**	**#4922**	**#4923**	**#4924**
Max PCI card slots - 12X(system unit only)[10]	53(5)	106(10)	159(15)	159(15)	212(20)	53(5)	106(10)	212(20)
Communication lines [3]	320	480	480	480	480	320	480	480
LAN ports (IVE/HEA only in CEC)	96 (4)	128 (8)	128 (12)	128 (12)	128 (16)	96 (4)	128 (8)	128 (16)
Integrated xSeries Servers	36	48	48	48	48	36	48	48
External xSeries Servers (IXA)	16	32	48	48	57	16	32	
iSCSI	42	84	126	126	168	42	84	168
Twinaxial workstation controllers	134	180	180	180	180	134	180	180
Twinaxial workstations	5360	7200	7200	7200	7200	5360	7200	7200
Internal DVD-ROM/ DVD-RAM [4]	1	2	3	3	4	1	2	4
Internal CD-ROM/Tape	0	0	0	0	0	0	0	0
Feature I/O Tower Tape/CD-ROM/DVD (combined system partition)	18 (25)	26 (36)	26 (48)	26 (48)	26 (48)	18 (25)	26 (36)	26 (48)
External tape (combined system) partition)	18 (36)	26 (48)	26 (48)	26 (48)	26 (48)	18 (36)	26 (48)	26 (48)
External optical/CD/DVD (combined system partition)	26 (48)	26 (48)	26 (48)	26 (48)	26 (48)	26 (48)	26 (48)	26 (48)
Cryptographic coprocessor (combined system partition)	8 (32)	8 (32)	8 (32)	8 (32)	8 (32)	8 (32)	8 (32)	8 (32)
Cryptographic accelerator (combined system partition)	4 (8)	4 (8)	4 (8)	4 (8)	4 (8)	4 (8)	4 (8)	4 (8)

2.3 Notes for System i POWER6 model 570

Note 1	CPW is used to measure the relative performance ratings of all System i model processors announced from September 1996 onward. The CPW value is measured on maximum configurations. The type and number of disk devices, the number of workstation controllers, the amount of memory, the system model, other factors, and the application running determine what performance is achievable. Do not use CPW to compare performance of System i models with other hardware platforms or real-world i5/OS applications. As a reminder, do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address: http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address: http://www.mpginc.com **Note**: The System i POWER6 model 570 requires i5/OS V5R4 with License Internal Code V5R4M5.
Note 2	Processor performance represents the relative performance (maximum capacity) of a processor feature running CPW in a client/server environment. Processor capacity is achievable when the commercial workload is not constrained by main storage and direct access storage device (DASD). Performance of the 5250 CPW represents the relative performance that is available to perform host-centric workloads. The amount of 5250 CPW capacity consumed reduces the available processor capacity by the same amount.

<table>
<tr><td>Note 2a</td><td>Mail and Calendar Users (MCU) is a relative performance measurement derived by performing mail and calendar functions using Lotus Domino and Lotus Notes® clients. The MCU workload represents users on a Notes client who are reading, updating, or deleting documents in an e-mail database. It also represents users who perform lookups in the Domino directory and schedule calendar appointments and invitations. Reported values reflect 70% processor utilization to allow for growth and peak loads in excess of customer workload estimates.

While MCU ratings provide a better means to compare Domino capacities relative to other System i models running i5/OS than CPW, do not use MCU as a sizing guideline for the number of Domino users in a real world environment.
For sizing, we recommend that you use a formal sizing tool, such as IBM Systems Workload Estimator, which you can find on the Web at the following address: http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

To learn about other sizing references, see Chapter 16, “System i family upgrades” on page 599.</td></tr>
<tr><td>Note 3</td><td>One line is used if the #5544 System Console on Operations Console is used. One line can be used if the #5548 System Console on 100 Mbps Ethernet is selected and the #0367 Operations Console PCI Cable must be connected. The numbers include the ECS line.</td></tr>
<tr><td>Note 4</td><td>There must be one DVD-ROM or DVD-RAM per system. See the details for each system.</td></tr>
<tr><td>Note 5</td><td>5250 CPW (Interactive) is an approximate value that reflects the amount of Processor CPW that can be used for workloads performing 5250-based tasks. Keep in mind the following points:
► The System i POWER6 model 570 i5/OS Edition provides zero CPW for 5250 work. Limited 5250 CPW is available for a system administrator to user 5250 display device I/O to manage various aspects of the server. Multiple administrative jobs exceed this capability.

There is a single job or console exception for interactive (5250 OLTP) work. This means that, when a single job within an i5/OS partition (or the entire system i5/OS) is active and that job performs 5250 OLTP functions, almost total processor capacity of that partition (or system) is available for the work being done by that single job. This is true regardless of the system limitations associated with interactive application capacity.

Keep this in mind when performing certain functions, such as running a CPU-intensive query or service diagnostics. When multiple jobs performing 5250 functions become active, the single job exception is no longer available and their performance is severely restricted. When more than one job must be active, consider running these CPU-intensive functions as batch jobs rather than from a 5250 workstation.

► The System i System i POWER6 model 570 i5/OS Edition can add 5250 OLTP by using the 5250 Enterprise Enablement features.
► A task submitted through a 5250 session (5250 device or 5250 emulation) that does display or printer I/O requires 5250 CPW.
► A task submitted through a 5250 session (5250 device or 5250 emulation) as a "batch" job is not considered 5250 OLTP work and does not require any 5250 CPW unless the task does display or printer I/O.
► Maximum 5250 CPW is equivalent to the Processor CPW for the active processor.</td></tr>
<tr><td>Note 6c System i POWER6 model 570</td><td>Software group is determined by the combination of processor feature and edition feature. Display the QPRCFEAT system value or DSPHDWRSC TYPE(*AHW) to display the processor feature code value. This value is also shown for the Capacity Card CCIN value when using SST to perform a Capacity Upgrade on Demand. The following table provides a cross-reference.
<table>
<tr><th>Processor</th><th>Server feature</th><th>Edition feature</th><th>Software group</th><th>Processor feature code or QPRCFEAT value</th></tr>
<tr><td rowspan="6">#7380</td><td>#4910 (0-4Way)</td><td>#5460 i5/OS</td><td>P30</td><td>#5460 (7054 with full 5250 Enterprise Enablement)</td></tr>
<tr><td>#4911 (0-8Way)</td><td>#5461 i5/OS</td><td>P30</td><td>#5461 (7051 with full 5250 Enterprise Enablement)</td></tr>
<tr><td>#4912 (0-16Way)</td><td>#5462 i5/OS</td><td>P30</td><td>#5462 (7056 with full 5250 Enterprise Enablement)</td></tr>
<tr><td>MES to 12-Way</td><td>NA</td><td>P30</td><td>#5470 (7018 with full 5250 Enterprise Enablement)</td></tr>
<tr><td>#4922 (0-4Way)</td><td>#7053 Capacity BackUp</td><td>P30</td><td>#7053 (7054 with full 5250 Enterprise Enablement)</td></tr>
<tr><td>#4923</td><td>#7058 Capacity BackUp</td><td>P30</td><td>#7058 (7059 with full 5250 Enterprise Enablement)</td></tr>
</table></td></tr>
</table>

		#4924	#7063 Capacity BackUp	P30	#7063 (7064 with full 5250 Enterprise Enablement)
		MES to 12-Way	MES to 12-Way Capacity BackUp	P30	#7047(7019 with full 5250 Enterprise Enablement)
Note 7	External DASD cannot exceed the maximum system capacity or the maximum number of disk arms.				
Note 7a	The total maximum DASD capacity (no mirroring or RAID protections) assumes 282.25 GB disk drives, which were announced in July 2007. External DASD cannot exceed the maximum system capacity or the maximum number of disk arms. Note the following points: ► Depending upon your use of mirroring or RAID-5/RAID-6 protection, protected maximum storage is less than what is listed here. ► The 282.25 GB disk drive is not currently supported as a load source disk. Depending upon the protection mechanism that you choose, the maximum storage is also further reduced with a 141 GB load source disk drive.				
Note 7b	With the announcement of SAN Boot, there is no longer a requirement for an internal disk. San Boot requires the #2847 PCI IOP for SAN Load Source.				
Note 7d	Hot spares are not considered configured units. Therefore, they do not count against the system maximums. The maximum number of GB stated in this 570 (POWER6) table for each server feature is less than the stated maximum value. The maximum value assumes that the maximum number of supported disk drives are configured and each such disk has a 282.25 GB capacity. i5/OS does not yet support load source capability using the 282.25 GB disk drives. Therefore, since IBM also requires the load source disks to be protected (mirrored or RAID (minimum of three disks) protection), the maximum disk storage values shown in the table must be reduced by the number and size of disks dedicated to load source and load source protection. For example, assuming two disk mirrored load source configuration using SAS drives, each of 139.5 GB, actual maximum disk storage on a 16-way configuration can be estimated to be approximately: `387825 GB – (2 x 142.75 GB) = 387539 GB` This is still approximately 387 TB.				
Note 8	i5/OS V5R4 with License Internal Code V5R4M5 with the latest level of the LIC and Cumulative PTF package available for the IBM System i POWER6 570 with a 4.7 GHz processor. For the latest information, refer to the IBM Prerequisite page at: `http://www-912.ibm.com/e_dir/eServerPrereq.nsf/UpgradeCategories/Hardware?opendocument`				
Note 9	Does not apply to POWER6 570 models.				
Note 10	The processor enclosure (system unit, also referenced as CEC) has four PCIe slots and two PCI-X DDR slots. When a second RIO-G or 12X loop is required in a processor enclosure, one PCIe card slot (C6) in that system unit is blocked by the RIO-G or 12X adapter. The processor enclosure does not support IOP cards. PCIe slots are currently not supported in any supported I/O tower or drawer enclosure.				
Note 11	0/32 GB memory DIMMs are not available until 30 November 2007.				
Note 12	A maximum of 10 active partitions per activated processor. A maximum of 64 i5/OS partitions applies to any model with six or more activated processors. There is a maximum of 32 processors per i5/OS partition (Model 595 or larger only).				
Note 13	Does not apply to POWER6 570 models.				
Note 14	RIO-G and 12X expansion drawers/towers cannot be mixed on a loop. However, one loop can be RIO-G and the other loop can be 12X.				

2.4 Hardware Management Console

To support connectivity to any POWER6 model, HMC Version 7 Release 3.1.0 or later is required. Version 7 R3.1.0 introduces a browser-based interface. To connect your browser to the HMC running V7R3.1.0, enable remote Web access on the HMC and enter a URL similar to the following example:

`https://`*`HMC host name or HMC IP address`*

The required 9406-MMA system firmware level is version EM310. The specific system-firmware release level of this version of EM310 shipped with the System i model was identified in September 2007. Refer to the POWER code matrix at the following Web address,

which contains links to several sets of HMC information, including the supported HMC level and required System i firmware level:

http://www14.software.ibm.com/webapp/set2/sas/f/power5cm/supportedcode.html

The latest HMC levels are posted at the HMC Web site, which is available at the end of this section.

The following HMC models are supported:

- 7042-C06 (announced on 22 May 2007)
- 7042-CR4 (announced on 22 May 2007)
- 7310-C05 (withdrawn from marketing on 21 September 2007)
- 7310-C04 (withdrawn from marketing on 31 August 2006)
- 7310-C03 (withdrawn from marketing on 30 June 2005)
- 7310-CR3 (withdrawn from marketing on 27 April 2007)
- 7310-CR2 (withdrawn from marketing on 29 April 2005)

HMC V7R3.1.0 can also operate with POWER5 technology-based systems running at system-firmware level SF240_299 or later.

If an HMC Machine Type 7310 is attached to a POWER5 based system, it must be updated to HMC licensed machine code Version 7 Release 3.1.0 before attaching to a 9406-MMA.

HMC licensed machine code Version 7 Release 3.1.0 provides a Web browser-based interface to the HMC. The following browsers are supported:

- Firefox 1.5.0.6 or later
- Microsoft Internet Explorer® 6.0 or later

WebSM is not supported as an interface to HMC Version 7 Release 3.1.0 or later. WebSM continues to be supported to HMC Version 6 or older.

For more information about supported HMC and firmware levels and updating HMC and firmware levels, refer to the HMC Web page at:

http://www14.software.ibm.com/webapp/set2/sas/f/hmc/home.html

2.5 9406 System i POWER6 model 570 system unit schematics

In the following sections, we give an overview of 9406-MMA processor and memory technologies, followed by drawings of the front, back, and top views of the system unit.

2.5.1 Model 9406-MMA Processor Card layout

The 9406-MMA processors run at 4.7 GHz. Each POWER6 processor card has a single-chip module (SCM), which contains two processor cores as shown in the second figure on the next page. Each processor card also contains an L3 cache that is positioned right next to the SCM as shown. Each processor enclosure contains two processor cards, four processors.

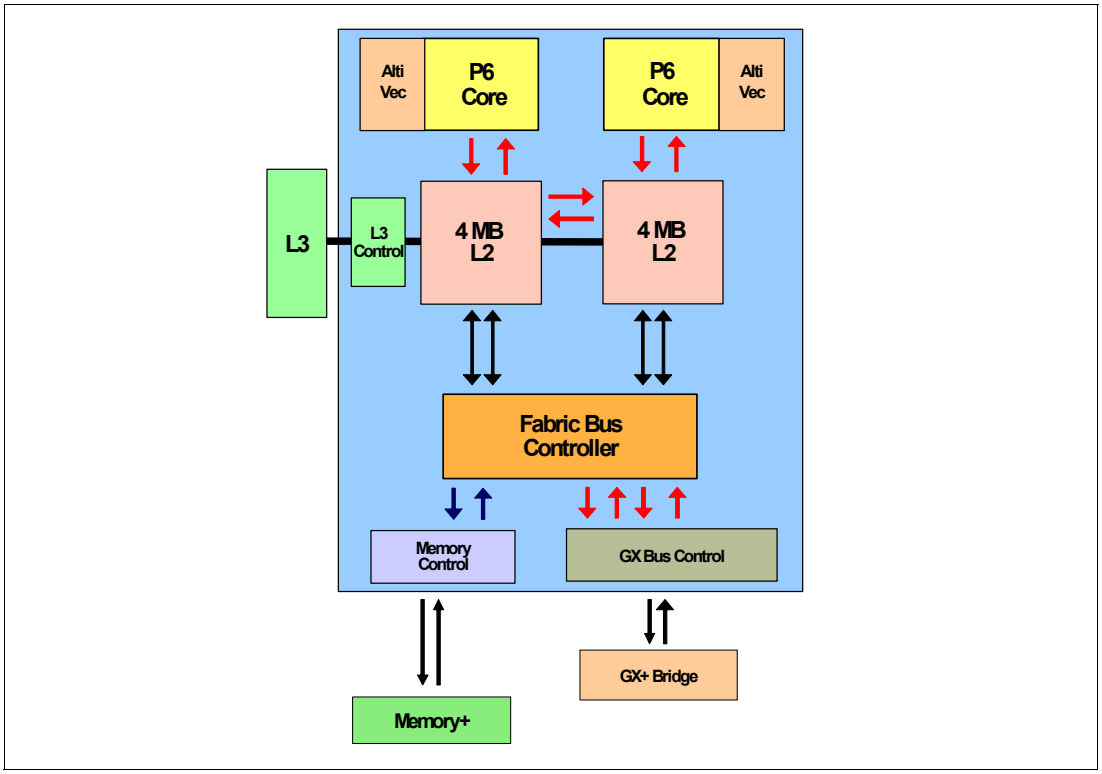
The POWER6 processor core and processor card are similar in structure to the POWER5 technology-based processor technology but with more advanced L2 and L3 cache access and memory access.

POWER5 and POWER5+ had approximately 2 MB (1.88 MB) of L2 cache that was shared by the two cores on the same processor card. POWER6 has 4 MB of L2 cache for each core, for

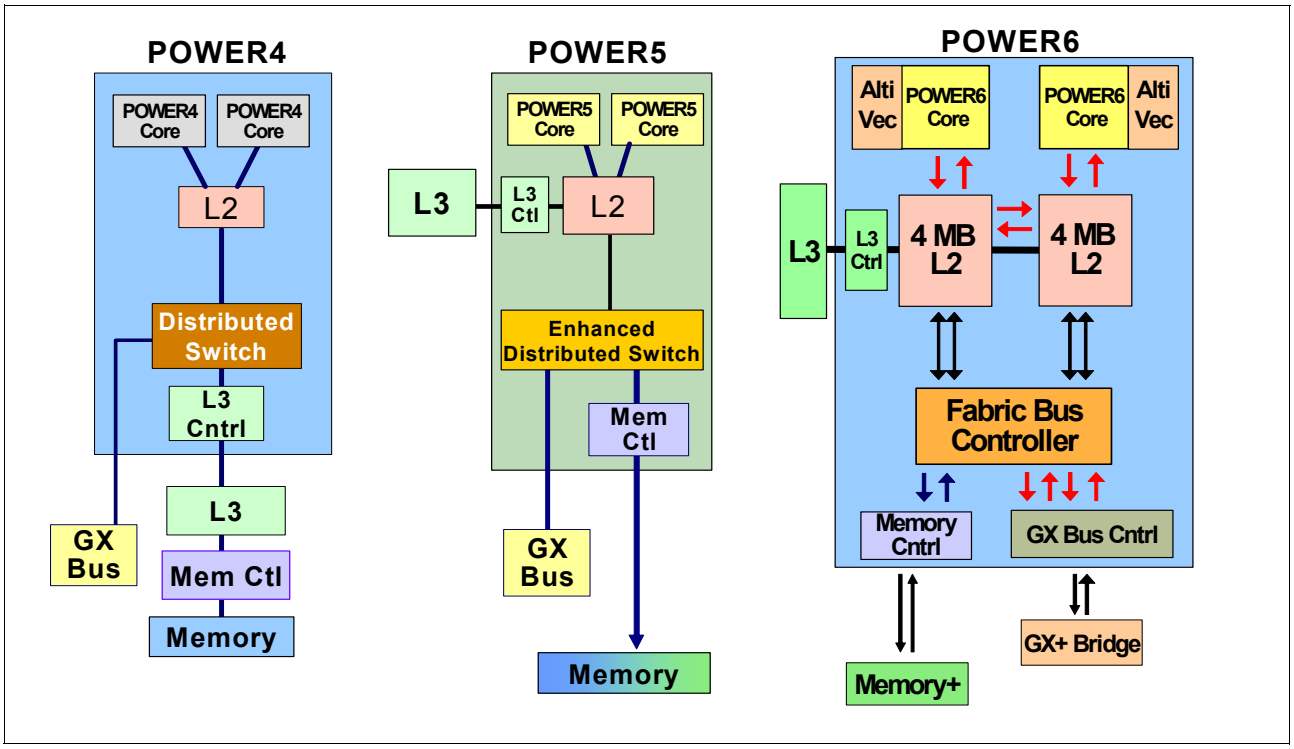
a total of 8 MB on the card (chip). For applications that access a large amount of data, this increase of more than 4 times in L2 cache size significantly improves performance.

Note: This description is in the context of processor cores packaged on the same processor card as the L2 cache. At run time, all processor cores in the system can access all L2 and L3 cache and main storage in the entire system as necessary.

The following figure shows the POWER6 processor card typology.



Processor technology upgrades of POWER6 over POWER5 (and IBM POWER4™) can be considered by using the following multiple processor technologies graphics.



The following key POWER6 processor technology characteristics are more advanced than POWER5:

- Ultra™-high frequency Dual-Core chip approximately 3.5 GHz up to 4.7 GHz

  System i 570 (POWER6) supports only the 4.7 GHz processor card. Top frequency speed on POWER5 is the POWER5+ processor on the 595 model running at 2.3 GHz.

- POWER5 can have five instructions in the process of execution, while POWER6 can have six instructions, with further enhancement to SMT which was introduced with POWER5.

- POWER5 SMT supports two SMT threads with alternate fetch and alternate dispatch (up to five instructions). POWER6 SMT supports priority-based dispatch, with simultaneous dispatch from two threads (up to seven instructions).

- POWER6 has a large L2 cache for each processor core on the same chip, compared to the shared large L2 cache on POWER5 processor cards.

- POWER6 has multiple path accesses (indicated by the arrows shown in the previous figure) between the processor core and L2 cache, between each L2 cache and a new fabric bus controller, two paths between the fabric bus controller and the memory controller, and four paths between the fabric bus controller and the advanced GX+ bus controller.

- The AltiVec and decimal floating point arithmetic capabilities

  AIX V5L 5.3 and later V6 take advantage of native floating point decimal support. IBM and other companies are licensed to use the AltiVec technology, which provides a software model that accelerates the performance of various software applications as it runs on reduced instruction set computing (RISC) microprocessors. The AltiVec technology vector unit fetches and interprets instructions as well as processes multiple pieces of data simultaneously. AltiVec instructions significant accelerate communications, multimedia, and other performance-driven applications.

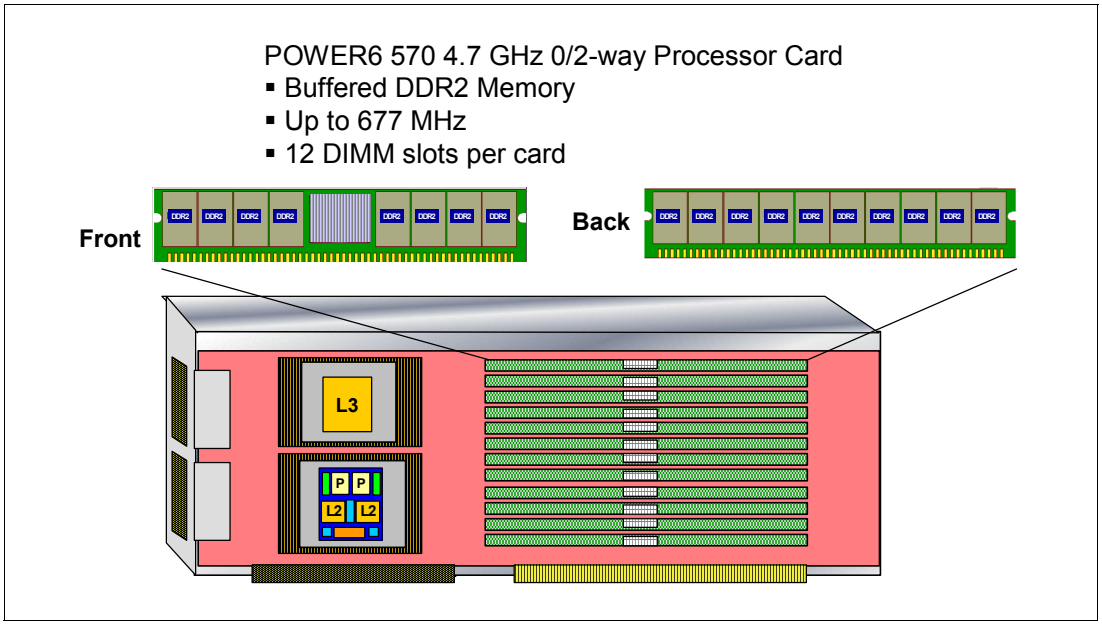
  For more information about AltiVec, do a Web search or go to the Freescale Semiconductor, Inc. Web site at:

http://www.freescale.com

- POWER6 technology has additional processor redundancy capabilities over POWER5 while delivering outstanding conservation of energy consumed for equivalent performance on earlier technology. Originally available power monitoring capabilities will be enhanced during 2008 for POWER6 as IBM rolls out a process to monitor and control energy consumption on all of its processor platforms and I/O hardware.

2.5.2 System i POWER6 model 570 memory layout

The following figure shows the physical layout of POWER6 memory DIMMs relative to the processor card.



The buffered memory of POWER6 enables both a higher bandwidth from the memory and a larger capacity. The larger capacity is important for Database and Java applications that use a large amount of memory. Larger bandwidth is important to feed the faster processor, higher bandwidth I/O operations, and the movement or copying of data from one memory location to another.

With POWER5 technology, a bus connects two DIMMs to the processor. With POWER6, a bus connects the processor card to one DIMM. A second bus connects the first DIMM to a second DIMM, and a third bus connects the second DIMM to a third DIMM. Because each bus has two connections on it, the rate at which data can be transferred across the bus is higher than the POWER5 structure. Data from the third DIMM is transferred or “buffered” from one bus to another at this same higher rate. This daisy chain of DIMMs allows more DIMMs to be connected (increasing capacity) while maintaining the higher bandwidth.

On POWER6 models, all memory is on demand. You must purchase at least half the capacity worth of DDR2 buffered memory activations when buying from IBM. Each 1 GB buffered DDR2 activation feature is #5680.

For best flexibility, memory activation is associated with the system, not the memory DIMMs. If you move memory to a different system, DDR2 buffered memory activations remain on the original system and remain available for any DIMMs that are plugged in.

On/Off memory capability is billed in 1 GB days.

An HMC is required for memory activation. Memory activation codes are entered through the HMC. The following table shows the available memory features for the System i POWER6 model 570.

Memory size	Feature number	Memory speed
0/2 GB	#5692	667 MHz
0/4 GB	#5693	667 MHz
0/8 GB	#5694	667 MHz
0/16 GB	#5695	533 MHz
0/32 GB	#5696	400 MHz

Before you order memory, you must understand the following general rules:

- You must have at least one memory feature per processor card. Therefore there are at least two features per processor enclosure.
- Generally we recommend that you install a similar total GB memory per processor card across the system.

  Memory DIMMs of the same MHz can be mixed on the same processor card, independent of their capacity. Memory DIMMs of different MHz can be mixed on the same system or processor enclosure, but the #5696 0/32 GB feature (400 MHz) cannot be mixed on the same processor card with smaller GB memory features (667 MHz or 533 MHz).

  The 0/2 GB, 0/4 GB, and 0/8 GB memory features (667 MHz) can be mixed on the same processor card with the 0/16 GB memory feature (533 MHz).

  In summary, keep in mind the following points regarding memory frequency:

  – You cannot mix 400 MHz memory DIMMs with a 667/533 MHz memory DIMMs on the same processor card.

  – You can mix 667 MHz and 533 MHz memory DIMMs on the same processor card.

  If different frequency (speed) memory DIMMs are used, the system will run all memory at the lowest MHz installed.
- Generally having more memory compensates for slower memory.
- Consider taking advantage of 12 versus 8 (POWER5) DIMM slots to use higher MHz of memory.
- For maximum memory bandwidth, use 8 DIMM slots per processor card. The third set of 4 DIMM slots adds capacity, but not bandwidth. This results in a modest performance gain over having more memory.
- For best performance, from a memory viewpoint, all memory slots should be filled with the same size and speed of memory DIMMs. This results in a modest performance gain over having 12 DIMM slots to use higher MHz of memory.
- All memory is on demand:

  – You must purchase at least half the capacity of DDR2 buffered memory activations when buying from IBM.

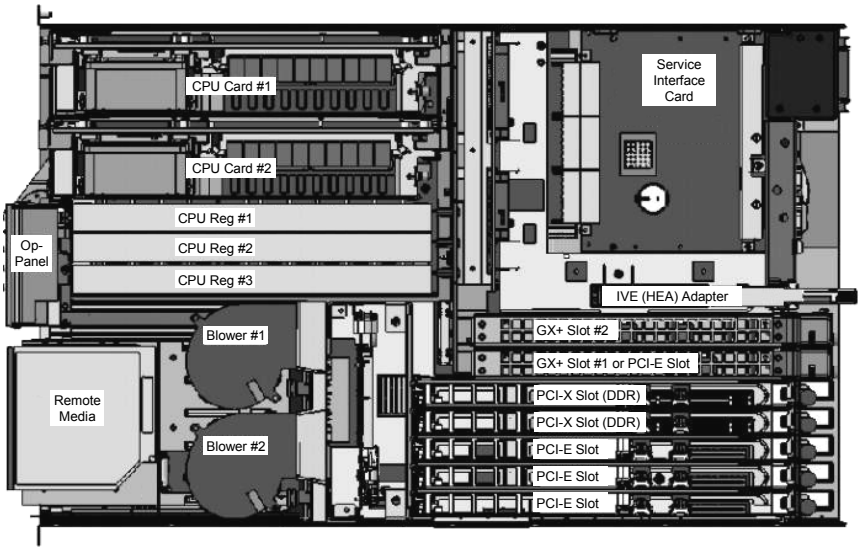
  – For best flexibility, memory activations are associated with the system, not the memory DIMMs. If you move memory to a different system, DDR2 buffered memory activations remain on the original system and remain available for any DIMMS plugged in.

– The 1 GB buffered DDR2 memory activation feature is #5680. On/Off memory capability is billed in 1 GB days.
– An HMC is required for memory activation.

Important: Memory conversions from the POWER5+ 2.2 GHz 570 DDR2 memory cards are available during initial upgrade to the 9406-MMA. For more information, see 2.9, “Migration considerations” on page 40.

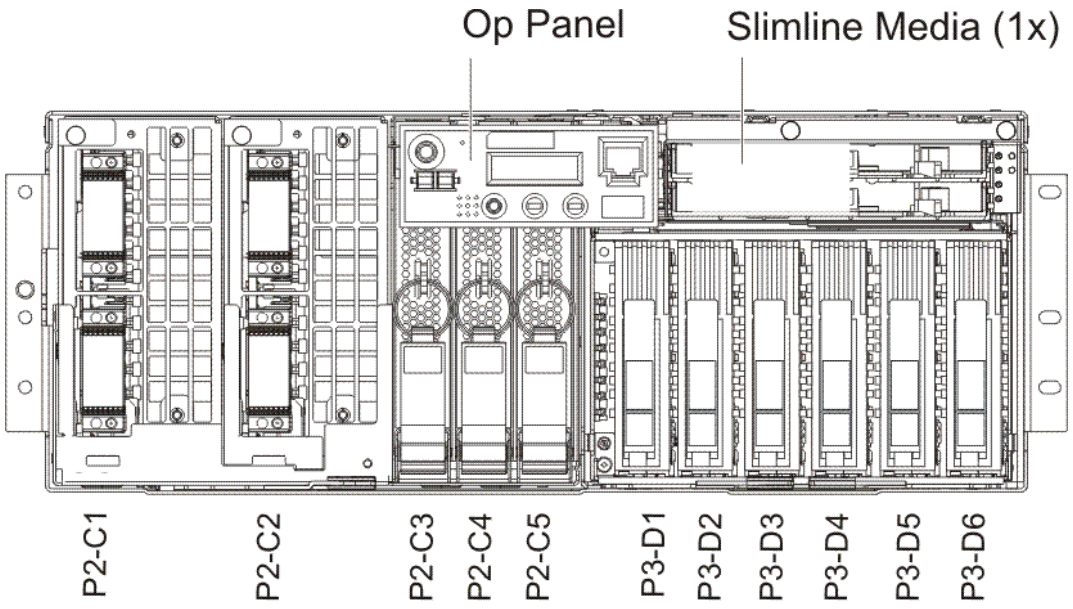
2.5.3 Model 9406-MMA top view

The following figure is a drawing showing the top view of the 9406-MMA.



2.5.4 Model 9406-MMA front view

The following figure is a drawing showing the front view of the 9406-MMA.



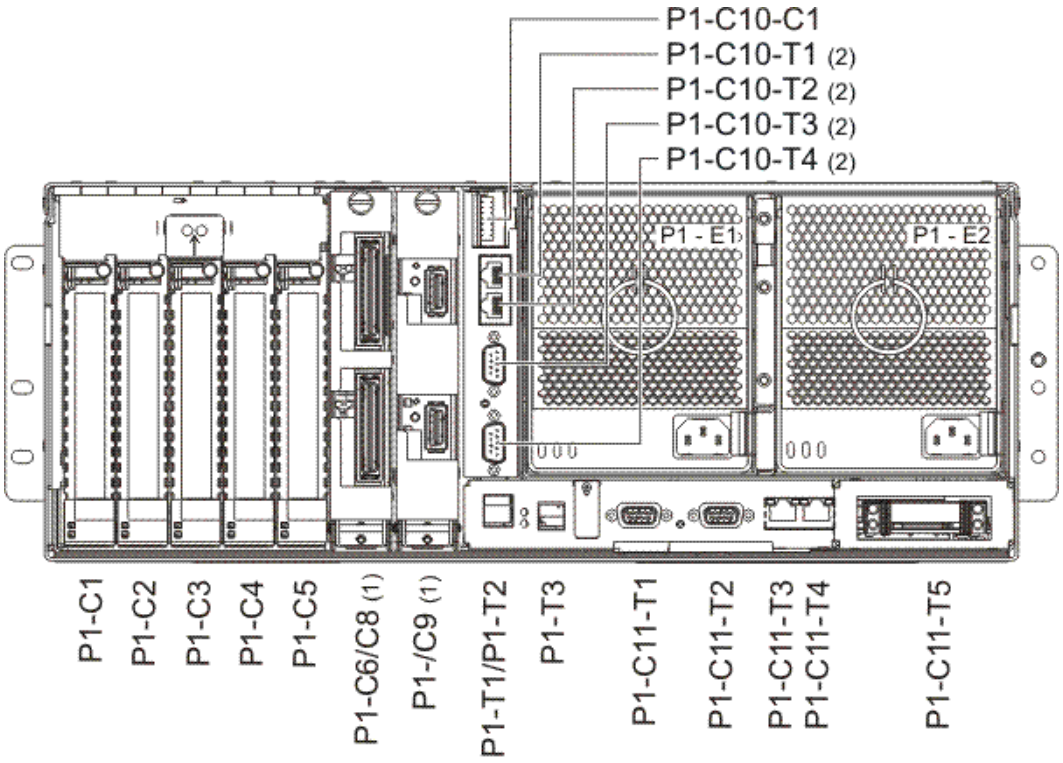
P2-C1 through P2-C2 for processor/memory

P2-C3 through P2-C5 for power regulators

P3-D1 through P3-D6 for SAS disk drives

2.5.5 Model 9406-MMA back view

The following figure is a drawing showing the back view of the 9406-MMA.



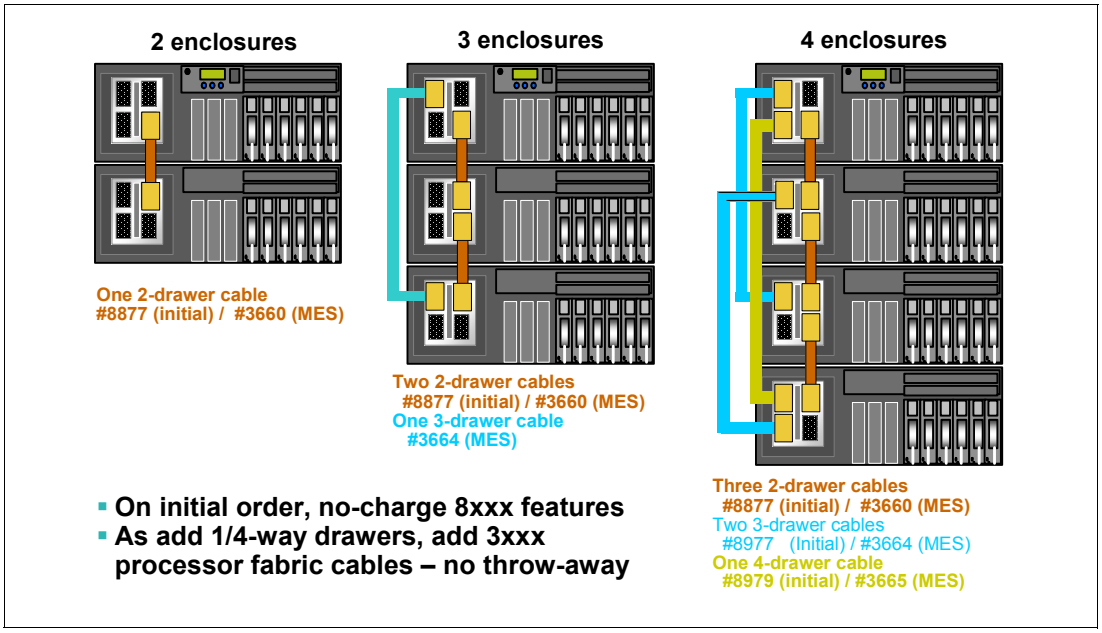
Notes:

- P1-C1 through P1-C3 and PCI-C6 are PCIe slots (x8 long).
- P1-C1 through P1-C3 are full length. P1-C6 is short form.
- P1-C4 and P1-C5 are PCI-X slots: 64-bit, DDR technology.
- (1) GX slots for either HSL-2 or 12X adapters, one base. As shown, P1-C9 is a base 12X and P1-C6-C8 is an optional HSL-2 adapter. When a second GX adapter is configured, P1-C6 is not available as a PCIe slot.
- (2) The IVE (HEA) is shown as a specify feature #5636, two Ethernet ports (P1-C10-T1, P1-C10-T2) and two serial ports (P1-C10-T3, P1-C10-T4) of which port 2, location P1-C10-T3 (top port) is used by i5/OS for uninterruptible power supply communications. A #1827 cable is required.
- Alternatively, feature #5639 IVE (HEA) four Ethernet ports with one serial port may be specified.
- The serial port is used by i5/OS for uninterruptible power supply communication only. A #1827 cable is required.
- P1-C11-T1 and P1-C11-T2 are for SPCN 0 and SPCN 1 connections.
- P1-C11-T3 is for HMC 1 and P1-C11-T4 is for HMC 2 connections.
- P1-C11-T5 is used if connecting multiple processor enclosures. This port connects the service interface cards.
- P1-C10-C1 is used by IBM service personnel.

The following sections provide examples that show the front and back views of multiple processor enclosures that are connected together and the fabric cables that are used to connect the enclosures.

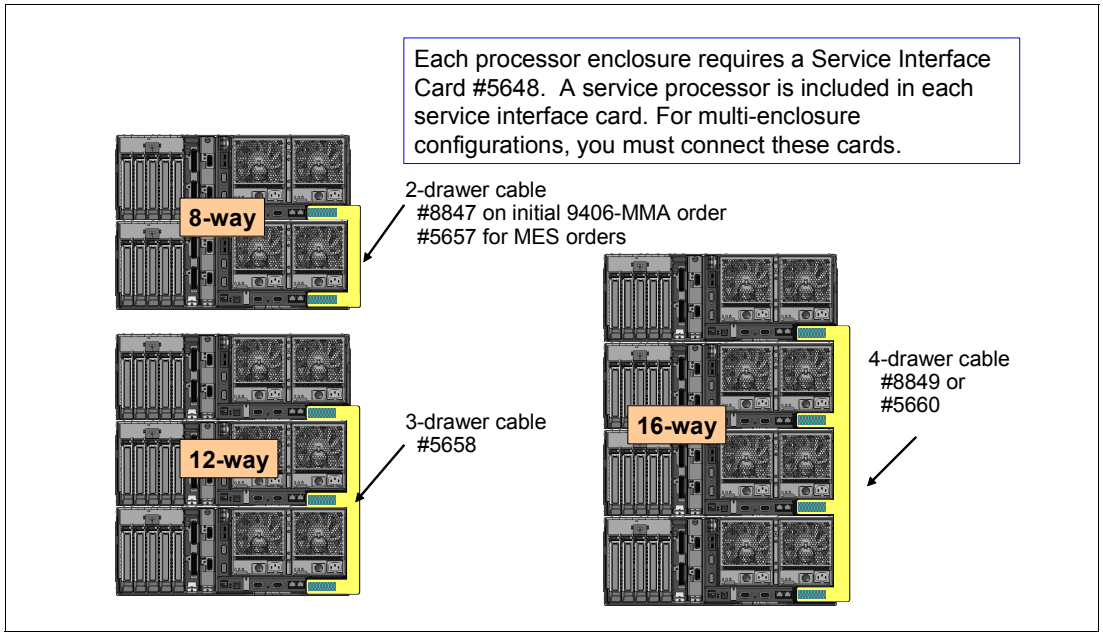
2.5.6 9406-MMA Processor enclosure fabric connection cables

The following figure shows the front view of the fabric cables and associated features for new and MES configurations. Connecting the processor enclosures is generally similar to connecting the POWER5-base 570 models. The text color in the figure corresponds to the fabric cable that is shown.



2.5.7 570 (POWER6) processor enclosure service processor cable connections

The service processors within each processor enclosure need to be connected. The following figure shows the fabric cable connections among the service processors. Note the feature numbers listed within the figure.



Note: In summary, a 12-way (3-processor enclosures) system requires one #3664 fabric cable feature and two #3660/#8877 fabric cable features that are attached to the front of the system. If you are upgrading from a 2-enclosure configuration, one of the required #3660/#8877 cables is already present. A 3-processor enclosure system also requires a 3-enclosure service interface cable #5658 to be attached to the rear of the system.

See the 3-processor enclosure (drawers) graphics in the previous figure in this section and the figure in 2.5.6, “9406-MMA Processor enclosure fabric connection cables” on page 34.

2.6 System i POWER6 model 570 processors

The POWER6 570 initial installation is IBM installed. Processor upgrades within models are performed by IBM Service Representatives.

Processor	Processor activation feature	Server feature	Edition feature	Model 9406-MMA processor
#7380	#5403	#4910		**#7380 4.7GHz Proc Card 0/2-Way** ► Includes two #7380 0/2-way POWER6 4.7 GHz processors (CCIN 53CF) ► Includes one #7783 Base Processor Activation feature ► Includes 32 MB L3 cache per processor card ► Includes twelve main memory DIMM slots per processor card
			#5460	**#5460 i5/OS Edition for #4910** Provides limited 5250 OLTP CPW
#7380	#5403	#4911		**#7380 4.7GHz Proc Card 0/2-Way** ► Includes four #7380 0/2-way POWER6 4.7 GHz processors (CCIN 53CF) ► Includes two #7783 Base Processor Activation features ► Includes 32 MB L3 cache per processor card ► Includes twelve main memory DIMM slots per processor card
			#5461	**#5461 i5/OS Edition for #4911** Provides limited 5250 OLTP CPW
#7380	#5403	#4912		**#7380 4.7GHz Proc Card 0/2-Way** ► Includes eight #7380 0/2-way POWER6 4.7 GHz processors (CCIN 53CF) ► Includes four #7783 Base Processor Activation features ► Includes 32 MB L3 cache per processor card ► Includes twelve main memory DIMM slots per processor card
			#5462	**#5462 i5/OS Edition for #4912** Provides limited 5250 OLTP CPW
#7380	#5403	#4922		**#7380 4.7GHz Proc Card 0/2-Way** ► Includes two #7380 0/2way POWER6 4.7 GHz processors (CCIN 53CF) ► Includes one #7783 Base Processor Activation feature ► Includes 32 MB L3 cache per processor card ► Includes twelve main memory DIMM slots per processor card
			#7053	**#7053 CBU Edition for #4922** Provides limited 5250 OLTP CPW
#7380	#5403	#4923		**#7380 4.7GHz Proc Card 0/2-Way** ► Includes four #7380 0/2-way POWER6 4.7 GHz processors (CCIN 53CF) ► Includes one #7783 Base Processor Activation feature ► Includes 32 MB L3 cache per processor card ► Includes twelve main memory DIMM slots per processor card
			#7058	**#7063 CBU Edition for #4924** Provides limited 5250 OLTP CPW
#7380	#5403	#4924		**#7380 4.7GHz Proc Card 0/2-Way** ► Includes eight #7380 0/2-way POWER6 4.7 GHz processors (CCIN 53CF) ► Includes two #7783 Base Processor Activation features ► Includes 32 MB L3 cache per processor card ► Includes twelve main memory DIMM slots per processor card
			#7063	**#7063 CBU Edition for #4924** Provides limited 5250 OLTP CPW

Model 9406-MMA CUoD and OLTP features	
#5403	**#5403 One Processor Activation** The #5403 One Processor Activation provides an activation code that can be used to permanently activate one processor on a Capacity Upgrade on Demand system. One or more of these no-charge activation features can be ordered, depending on the configuration rules.
#5404	**#5404 Utility Billing 100 Proc Min** The #5404 Utility Billing 100 Proc Min provides payment for 100 minutes of temporary use of one processor, feature #7380. When the system recognizes that non-reserve processors (permanently activated processors) that are assigned or available to the uncapped partitions have been 100% utilized, and at least 10% of one processor is needed, then additional processor resource is automatically applied and chargeable processor minutes start accruing. Minutes stop accruing when the utilization level drops and the base processors assigned can handle the workload. You can use the HMC to view all processor activation statistics including utility on demand processor utilization. Each occurrence of this feature pays for one hundred processor minutes of usage. The purchase of this feature might occur before or after use of the processor.
#5490	**#5490 Enterprise Enablement** The #5490 Enterprise Enablement provides one processors worth of 5250 OLTP capacity that can be spread across multiple physical processors or multiple partitions. A permanently activated processor and adequate i5/OS processor license entitlements are prerequisites.
#5491	**#5491 Full Enterprise Enable** The #5491 Full Enterprise Enable is ordered when full 5250 OLTP capability is required for all permanently activated processors. Addtional i5/OS licenses may also be required.
#5656	**#5656 On/Off 1Proc-1Day Billing** The #5656 On/Off 1Proc-1Day Billing feature is ordered to enable your server for On/Off Capacity on Demand. Once enabled, processors on a temporary basis can be requested. An On/Off Capacity on Demand contract must be signed before this feature can be ordered. On/off usage must be reported to IBM at least monthly. This information, which is used to compute billing data, is then provided to the sales channel. The sales channel places an order for a quantity of On/Off Processor Day Billing features and a bill is generated. One #5656 should be ordered for each billable processor day. Prior to reaching the enabled limit of usable temporary processor days, this feature can be reordered.
#5680	**#5680 1GB CUoD Memory Activation** The #5680 1GB CUoD Memory Activation feature permanently activates 1 GB of DDR2 memory on CUoD memory features #5692, #5693, #5694, #5695, or #5696.
#5691	**#5691 On/Off 1GB-1Day Memory Bill** The #5691 On/Off 1GB-1Day Memory Bill feature is ordered to enable a server for On/Off Memory Capacity on Demand. After the On/Off Memory function has been enabled in a system, the on/off usage must be reported to IBM at least monthly. This information, which is used to compute the billing data, is provided to the sales channel. The sales channel places an order on the customer's behalf for the quantity of this feature that matches the reported usage. One #5691 feature should be ordered for each billable day for each 1 GB increment of POWER6 memory that was used.
#5801	**#5801 1/4-way Processor Enclosure** The #5801 1/4-way Processor Enclosure feature adds: one 570 (POWER6) expansion drawer including redundant power and cooling, six SAS disk slots, four PCIe slots, two PCI-X DDR slots, two 0/2-way processors (#7380), two GX slots for HSL or 12X loops adapters, IVE slot, and a DVD enclosure slot. The #5801 is ordered as an MES after the initial 570 (POWER6) installation and does not impact the existing server or edition features. With the #5801 order, a minimum of one processor activation (#5403), plus an IVE adapter, plus two memory features are required. Appropriate processor fabric cables and the appropriate service interface cable are also required. Minimum operating system level: V5R4 with License Internal Code V5R4M5.
#7272	**#7272 2GB CUoD Memory Activation** The #7272 2 GB CUoD Memory Activation feature allows the conversion of 2 GB of activated POWER5+ Model 570 DDR2 memory into 2 GB of 9406-MMA DDR2 activated memory for feature code #7892.
#7273	**#7273 4 GB CUoD Memory Activation** The #7273 4 GB CUoD Memory Activation feature allows the conversion of 4 GB of activated POWER5+ Model 570 DDR2 memory into 4 GB of 9406-MMA DDR2 activated memory for feature code #7893 and #4495.
#7274	**#7274 8 GB CUoD Memory Activation** The #7274 8 GB CUoD Memory Activation feature allows the conversion of 8 GB of activated POWER5+ Model 570 DDR2 memory into 8 GB of 9406-MMA DDR2 activated memory for feature code #7894 and #4496.

#7275	**#7275 16 GB CUoD Memory Activation** The #7275 16 GB CUoD Memory Activation feature allows the conversion of 16 GB of activated POWER5+ Model 570 DDR2 memory into 16 GB of 9406-MMA DDR2 activated memory for feature code #4497 and #4499.
#7276	**#7276 32 GB CUoD Memory Activation** The #7276 32 GB CUoD Memory Activation feature allows the conversion of 32 GB of activated POWER5+ Model 570 DDR2 memory into 32 GB of 9406-MMA DDR2 activated memory for feature code #4498.
#7728	**#7728 570 Reserve Capacity Prepaid** The #7728 570 Reserve Capacity Prepaid provides 30 processor days of reserve capacity on a Capacity on Demand server. To establish reserve capacity on the server, select a quantity of inactive processors to be placed in the server's shared processor pool as reserve processors. When the server recognizes that non-reserve processors (permanently activated processors) that are assigned or available to the uncapped partitions have been 100% utilized and 10% of a Reserve CoD processor is put into use for more than 30 consecutive seconds, a processor day (good for a 24-hour period) is subtracted from the prepaid amount of days. You can use the HMC to view all processor activation statistics, including reserve processor on demand utilization. Supported on Models 570+ and 570 (POWER6) CUoD servers with Reserve Capacity on Demand enabled Minimum operating system level: i5/OS V5R3 for Model 570+ and V5R4 with License Internal Code V5R4M5 for Model 570 (POWER6).
#7783	**#7783 POWER6 570 Base Proc Activation** The #7738 570 Base Processor Activation provides an activation code that can be used to permanently activate one processor on a Model 570 Capacity Upgrade on Demand system. One or more of these no-charge activation features can be ordered, depending on the configuration rules. Supported on 9406-MMA CUoD server Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5.
#7951	**#7951 On/Off Prepaid for Model 570** The #7951 On/Off Prepaid for Model 570 is ordered to enable On/Off Capacity on Demand to temporarily enable processor or processors. When enabled, processors are requested on a temporary basis. An On/Off Capacity on Demand contract must be signed to order this feature. A #7951 can be reordered prior to reaching the enabled limit of usable temporary processor days. Available processors are required for activation. Supported on Model 570 or Model 9406-MMA Minimum operating system level: i5/OS V5R3 for Model 570, V5R4 with License Internal Code V5R4M5 for 9406-MMA
#7954	**#7954 On Demand Memory for Model 570** The #7954 On Demand Memory for Model 570 is ordered to enable On/Off Capacity on Demand. When enabled, memory activation can be requested on a temporary basis. An On/Off Capacity on Demand contract must be signed before the #7954 is ordered. The #7954 can be reordered prior to reaching the enabled limit of usable temporary memory days. One or more #7890 Orderable on Demand Memory with nonactivated memory are required. Supported on Model 570 and 9406-MMA Minimum operating system level: i5/OS V5R3 for Model 570 and i5/OS V5R4 with License Internal Code V5R4M5 for 9406-MMA.
#8478	**#8478 256GB CUod Memory Activate** The #8478 256GB CUod Memory Activate feature provides 256 GB permanent memory activations for buffered DDR2 memory on a 9406-MMA. Depending on the memory features ordered, several #8478s may be ordered. Memory activations are stored in the system, not on the memory card providing system configuration flexibility. If memory is moved to a different system, the activations remain with the original system.
#9299	**#9299 Base Enterprise Enablement** The #9299 Base Enterprise Enablement is placed on an upgrade order from an Enterprise Edition server to enable one processor's worth of 5250 OLTP capability. Supported on POWER6 570 Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5

You can find feature descriptions, including details about power and packaging, main storage, PCI IOP controllers, workstation controllers, LAN/WAN adapters, disk units, internal tape, CD-ROM, and other magnetic media controllers in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

2.7 Capacity on Demand

Several types of CoD are optionally available on the 9406-MMA to help meet changing resource requirements in an On Demand environment. The POWER5+ models CoD options are available on the 9406-MMA, along with a new Utility CoD offering. Resources can be installed on the system but remain inactive until needed.

- *Capacity Upgrade on Demand* allows you to purchase additional permanent processor or memory capacity and dynamically activate it when needed for a specific system.
- *On/Off Capacity on Demand* enables processors or memory to be temporarily activated in full-day increments, as needed. The system administrator is provided an interface at the HMC to manage activation and deactivation of resources. A monitor residing on the server logs usage activity. Charges are based on usage reporting collected monthly.

  On/Off Capacity on Demand can be purchased for temporary standby processors as needed. However, high-usage of On/Off Capacity on Demand outside a disaster can be costly. Permanent processor activations should be considered for ongoing requirements. Before using temporary capacity on a system, On/Off CoD must first be enabled by ordering an enablement feature (MES only) and the required contracts signed. For more information regarding registration, enablement, and usage of On/Off CoD, refer to the On/Off Capacity on Demand Web page at:

  `http://www-912.ibm.com/supporthome.nsf/document/28640809`
- *Utility Capacity on Demand* is new on POWER6 technology. Utility CoD applies to processors only and is designed for use for shorter workload peaks compared to On/Off Capacity on Demand.

  To use Utility CoD, a POWER6 570 system must already be registered for use at an IBM Web site and appropriate Utility CoD activation information must have been entered into the HMC (running Version 7 Release 3 level software) that manages that POWER6 570 system. Each partition that is defined as uncapped may take advantage of Utility CoD.

  When an uncapped partition reaches 100% utilization of non-Utility CoD processors and at least some additional processor capacity within the system is available for use, the additional processor capacity is assigned to the uncapped partition that needs the resource for temporary use. When at least 10% of a Utility CoD processor is used during a one minute interval, a Utility CoD processor minute is recorded as consumed.

  Assignment of the additional processor capacity is managed by the system's shared processor pool manager as it does for managing On/Off Capacity on Demand support.

  If additional workload requires a higher level of performance, the system automatically allows the additional Utility CoD processors to be used. The system automatically and continuously monitors and charges for the performance that is needed above the base (permanent) level. Usage is measured in processor minute increments and is reported via a Web interface. Billing is based on the reported usage.

  On/Off CoD continues to be offered on POWER6 processor-based servers as the primary solution for temporary activations (approximately one hour or more in duration per day). On/Off CoD is available for both processor and memory temporary activations. Utility CoD applies to processors only and is designed for use when shorter workload peaks require additional processing resources to be immediately available.

The 570 (POWER6) Utility CoD replaces the POWER5 CoD option of Reserve CoD (processor). The following list identifies the major differences between Utility CoD on POWER6 processor-based servers and the Reserve CoD function on POWER5 processor-based systems:

- Utility CoD counts usage in processor-minute granularity (as compared to processor-day granularity in Reserve CoD). For example, if a workload spike requires three processors for three minutes, then nine processor minutes of use are recorded.
- Utility CoD has the ability to set a cap on the maximum amount of usage which can be consumed by Utility CoD. For example, if a client wants to cap the total usage at 500 minutes, using the HMC panels, you can easily configure and dynamically modify this.
- Reserve CoD involved prepaid usage blocks of time and also optimized processor use within the shared pool. Utility CoD offers no paper contracts (Web-based registration) and “pay-as-you-use” post pay (or pre-pay) blocks of time used. The Web-based reporting interface provides reporting flexibility that is based on individual use and schedules.

- *Trial CoD* offers a one-time, no additional charge, 30-day trial to allow a customer to explore the uses of inactive processor and memory capacity on their server. This function is available on all System i models that come with inactive CoD processors or memory. Trial periods are made possible with activation codes that you can requested from the Trial Capacity on Demand Web page at:

  https://www-912.ibm.com/tcod_reg.nsf/TrialCod?OpenForm

An HMC console is required when using all forms of temporary CoD activations, including On/Off CoD, Utility CoD, and Trial CoD.

For more details about on demand processing, refer to the Capacity on Demand Web page, which includes Utility Capacity on Demand information, at:

http://www.ibm.com/systems/i/cod/

2.8 Supported upgrades for System i models

Refer to Chapter 16, “System i family upgrades” on page 599, for an overview of the upgrades that are supported for System i5 and IBM eServer i5 models.

2.9 Migration considerations

To migrate from earlier POWER6 System i models to System i POWER6 model 570, consider the following points about disk drives and memory.

Disk considerations

- New disk protection rules

  System i POWER6 model 570 has more stringent disk controller configuration rules to continue reducing potential single points of failure. Therefore, the smaller cache disk controllers must also have protected write cache.

  Since there is no physical way to attach an auxiliary write cache IOA to these smaller write cache disk controllers, these controllers must be mirrored or replaced by a larger disk controller with auxiliary write cache on System i POWER6 model 570.

- New disk technology

  The embedded System i POWER6 model 570 disk controller supports SAS disk drives, and we cannot attach existing SCSI disk drives to this controller. The up to six SAS disk drives supported in each 9406-MMA enclosure (system unit) are supported as unprotected or protected by mirroring.

  For more information about SAS, see 4.13.2, “System i POWER6 model 570 and V5R4 with License Internal Code V5R4M5 storage enhancements” on page 314.

- Performance

  The embedded System i POWER6 model 570 disk controller has no write cache. Where disk and disk controller performance is a consideration, use a SCSI disk with a SCSI disk controller with write cache.

- Load source disk

  The load source drive can be placed in any of the following locations:

  – Within the system unit enclosure (processor enclosure)

    If this option is selected for the 570 (POWER6), you must also select mirroring to protect the load source. Currently the embedded SAS disk controller in the processor enclosure does not support RAID protection.

  – Within a storage area network (SAN) logical disk enclosure (SAN load source option)

  – Within a HSL-2 or 12X I/O loop attached I/O enclosure (tower or drawer)

    The supported choices include #0595/#5095, #5094/#5294, or #5786/#5787.

  Feature codes for these load source options are described in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135, under the descriptions for #07xx and #08xx.

  i5/OS V5R4 with Licensed Internal Code (LIC) V5R4 with License Internal Code V5R4M5 requires a minimum i5/OS load source size of 17 GB. Keep in mind that currently a disk drive with capacity greater than approximately 140 GB disks is not supported as a load source device.

- No disks in the 9406-MMA system unit

  You can optionally specify the #0719 when ordering to specify no disks within the enclosure. That is, you place all disks in either I/O towers or drawers or in external SAN attached disk storage systems.

- Supported disk drives

  All 15k rpm SCSI disk drives supported on the System i POWER5 configurations are supported on the System i POWER6 model 570. Also supported is the SCSI i5/OS 35 GB 10k rpm disk drive. Keep in mind that the SCSI i5/OS 10k rpm disk drive smaller than 35 GB is no longer supported on the System i POWER6 model 570. The 35 GB or larger 10k and 15k rpm drives are supported in Linux and AIX partitions. These SCSI drives are supported by multiple disk controller options.

Memory considerations

Since the memory features for the POWER6 570 are fully-buffered DDR2 memory features, the unbuffered DDR2 memory features for the POWER5+ 570 and the DDR1 memory features for the POWER5 570 are not compatible with the POWER6 570.

Memory conversions from POWER5+ DDR2 memory and activations to POWER6 570 memory are available only during the initial upgrade to a 9406-MMA configuration. This provides POWER5+ investment leverage.

The POWER5+ 570 with DDR2 memory and DDR2 memory activation features are converted POWER6 570 memory activations. The actual POWER5+ memory DIMMs used for the conversion are returned to IBM.

These activations can be applied toward any size POWER6 570 memory features. For example, a 4 GB POWER5+ DDR2 memory feature can optionally be converted to a 4 GB POWER6 memory activation feature.

The following table shows the available memory conversion options for POWER5+ DDR2 memory feature conversions to 9406-MMA buffered DDR2 memory.

POWER5+ feature	POWER5+ DDR2 size	Convert to 9406-MMA	9406-MMA feature
#7892	2 GB	2 GB activation	#7272
#7893	4 GB	4 GB activation	#7273
#7894	8 GB	8 GB activation	#7274
#4497	16 GB	16 GB activation	#7275
#4499	16 GB	16 GB activation	#7275
#4498	32 GB	32 GB activation	#7276
#4495	4/8 GB	4 GB activation	#7273
#4496	8/16 GB	8 GB activation	#7274
#7663	1 GB activation	1 GB activation	#5680

See the memory plugging rules listed in 4.6, “Main storage” on page 197. For more general upgrade planning information in this publication, see Chapter 16, “System i family upgrades” on page 599.

3

System i POWER5-based models

In this chapter, we provide summary charts and diagrams, as well as identify the processor features that are associated with each IBM System i POWER5-based Model 515, 520, 525, 550, 570, and 595. You can find feature descriptions, including details about power and packaging and main memory, in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

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3.1 System i5 models overview

The IBM System i5 POWER5-based processor models were introduced during 2005, with various processor model enhancements during 2006 and 2007. The POWER5 processor uses the new POWER5 processor cores, chips, card, and memory technologies, which include simultaneous multithreading (SMT) capability. Each core is capable of running SMT, which, to the operating system, looks like two separate processors.

High performance on a System i server is achieved by using SMT along with many individual high performance microprocessors, I/O devices, and interconnect technologies. Key to the System i high performance is the POWER5 distributed switch that supports large bandwidth between processors, cache, memory, and I/O.

While programs run on POWER5 microprocessors, movement of data is handled by high performance I/O adapters (IOAs) and, where required, I/O processors (IOPs). Data moves between I/O towers and to Integrated xSeries Adapter (IXA) PC servers across high-speed link (HSL) at 2 GB/s. Storage area network (SAN) disk and tape devices are supported at 2 Gbps and 4 Gbps over a Fibre Channel.

The processor POWER5 chip of IBM Models 515, 520, 525, 550, and 570 is packaged with the L3 cache chip into a cost-effective dual-chip module (DCM) package. Each processor card has a single DCM that contains two POWER5 processor cores, L2 cache, and a 36 MB L3 module. A DCM and its associated L3 cache are packaged on a single processor card. Main memory attaches to each processor card. The exception to this applies to the initially available 520 entry-level models without L3 cache, where the POWER5 chip is packaged into a single-chip module (SCM) package.

For the Models 515, 520+, 525, 550+, and 570+, the POWER5+ processor is 37% smaller than the POWER5 chip. It consumes less power and requires less sophisticated cooling. Thus, you can use the POWER5+ processor in servers where previously you could only use low frequency chips due to cooling restrictions.

Other POWER5+ enhancements include changes in the fabric, L2 and L3 controller, memory controller, GX+ controller, and chip reliability, availability, and serviceability (RAS). Several enhancements have been made in the memory controller for improved performance.

The 595 models contain multichip modules (MCMs), with eight processors each. In such an MCM, four physical copper SOI chips exist, each with two processor cores. Each core is capable of running SMT, which, to the operating system, looks like two separate processors.

The 8-way MCM is the building block for the Model 595. It is only available with four chips, each with its attached L3 cache. A single processor on a chip has all of the L2 and L3 cache resources attached to the module (144 MB per MCM).

On an System i Model 595, a 64-way configuration is implemented with eight MCMs, with each MCM containing four dual-core POWER5 chips running at speeds ranging from 1.5 GHz to 2.3 GHz.

Although an operating system gives the impression that it is concurrently executing a large number of tasks, each processor in an symmetric multiprocessor (SMP) traditionally executes a single task's instruction stream at any moment. Multithreading minimizes the processor wait or idle time.

In general, multithreading allows a single processor to process multiple threads in a different way than a single processor without this capability. There are several distinct differences

between the types of multithreading implemented in the industry. In this paper, we restrict our discussion to IBM technologies only.

The i5/OS QPRCMLTTSK system value controls whether to enable individual SMPs to concurrently execute multiple instruction streams. Each instruction stream belongs to separate tasks or threads. When enabled, each individual processor concurrently executes multiple tasks at the same time. The effect of its use is likely to increase the performance capacity of a system or improve the responsiveness of a multithreaded application.

Running multiple instruction streams at the same time does not improve the performance of any single task. Therefore, you must have many active (ready to run) threads to take maximum advantage of multithreading.

Note: There is always the slight possibility that multithreading results do not achieve the highest performance efficiency in certain workload environments. However, the i5/OS system value enables you to turn off this option should you need to.

Older System i model processors used an approach called *hardware multithreading* (HMT). In the hardware multithreading approach, the hardware automatically switches between the tasks on any long processing delay event, for example, a cache miss.

Some model processors, such as POWER4 System i models, do not support any form of multithreading, which means the QPRCMLTTSK system value has no performance effect. Because the system value enables the parallel use of shared processor resources, the performance gains depend highly on the application and the model.

POWER5 SMT is a big improvement over the previously implemented System i HMT. Each POWER5 processor has five pipelines: the branch pipe, two arithmetic pipes, and two load store pipes. Other pipes are in the POWER5 processor implementation, but they are not important for this level of SMT description. With POWER5, there can be at most five instructions that are issued or dispatched per processor cycle.

Essentially each thread that is dispatched has some amount of wait time, whether it is program-level waits or processor runtime waits, such as waiting for memory to contain instructions or program data. SMT essentially detects such waits within a processor and, where appropriate, runs a different thread waiting, in the processor that is waiting on the running thread, much more efficiently than HMT.

Processor affinity is also involved, in that the system's dispatching algorithm attempts to run a thread in the same processor in which it last ran. Above processor affinity is *memory affinity*. That is, the system also attempts to run a thread in a processor whose physically attached cache and memory cards contain the data that the thread most recently referenced.

For more information about System i SMT and memory affinity, refer to is the white paper *Simultaneous Multi-Threading (SMT) on eServer iSeries POWER5 Processors* on the Web at:

http://www.ibm.com/systems/i/solutions/perfmgmt/pdf/SMT.pdf

IBM System i5 servers work with a different structure when compared to the previous technologies used with the System i5 servers. Above the POWER5 technology-based hardware is a code layer called the *POWER Hypervisor™*. This code is part of the firmware shipped with the System i5 hardware. The POWER Hypervisor resides in flash memory on the Service Processor. This firmware performs the initialization and configuration of the System i5 hardware, as well as the virtualization support that is required to run up to 254

partitions concurrently on the System i5 servers. The layers above the POWER Hypervisor are different for each supported operating system.

For more details about SCM and DCM, see *IBM System i5 Handbook IBM i5/OS Version 5 Release 4 January 2006*, SG24-7486.

The following table gives a quick glance at the announcement and availability dates for the various IBM System i5 models.

Model and processor	Announce date	General availability date	Withdrawn from marketing
515 #8327, #8330	10 April 2007	20 April 2007	---
520 #8950, #8951, #8952, #8953, #8954, #8955	5 May 2004	31 May 2004	1 June 2006
520 #8972	12 July 2005	22 July 2005	1 June 2006
520+ #8325, #8327, #8330	31 January 2006	14 February 2006	---
525 #8330	10 April 2007	20 April 2007	---
550 #8958	17 August 2004	10 September 2004	1 June 2006
550+ #8312	31 January 2006	14 February 2006	---
570 #8961	5 May 2004	31 May 2004	1 October 2004
570 #8971	30 July 2004	31 August 2004	---
570+ #8338	31 January 2006	14 February 2006	---
570 POWER6 #7380	24 July 2007	14 September 2007	---
595 #8981	15 October 2004	19 November 2004	---
595 #8966	31 January 2006	14 February 2006	---
595+ #8968	10 April 2007	20 April 2007	---
595 #8973	11 July 2006	25 August 2006	

Note: In the processor tables that follow, the maximum values are shown. Some combinations of features might not be valid when other features are used. For more information, see Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135, and the paper *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, for complete coverage.

3.2 System i Model 515

The System i Model 515 delivers the full capabilities of POWER5+ and i5/OS for entry system customers. With new i5/OS licensing by user, the Model 515 delivers the performance to run the applications that today's businesses require in an affordable package. The Model 515 is ideal for small to medium-sized businesses that want an easy-to-install, manageable system. The 9407 Model 515 has attributes that include:

- Security and virus resistance.
- The ability to run i5/OS, Linux and AIX 5L applications on a single system and integrate IBM eServer xSeries (System x) servers running Windows or Linux.
- Support for 5 to 40 i5/OS licensed concurrent users with a P05 software tier.

Note: The 515 does not support an HSL adapter. Therefore the maximum number of disk drives supported is 8, all placed within the 515 processor enclosure (CEC). Also, any integrated xSeries server support is via an Internet Small Computer System Interface (iSCSI) adapter.

The user-based i5/OS licensing associated with the 9407 Model 515 provides added flexibility, enabling businesses to take advantage of i5/OS capabilities at a lower financial investment than was available before the Model 515. The Model 515 offers i5/OS V5R4 license entitlements for 5 to 40 users in blocks of five users. There is also an option for an unlimited number of i5/OS user entitlements for users external to your organization, such as customers, business partners, or suppliers.

Each 9407 Model 515 is built to order and can be customized to meet customer needs. The Model 515 features an integrated set of hardware capabilities including two 1 Gbps Ethernet LAN ports and a disk, tape or DVD drive controller in the base. It is available as either a desk-side or tower configuration or as a rack-mount configuration for placement in a 19-inch rack such as the System i 25U or 36U racks. It requires only 4 EIA units or 4 U of rack space.

The Model 515 provides the full power of its POWER5+ processor available for batch work (non-interactive), 5250 OLTP work, or both. For applications that are not I/O intensive, this translates to 3800 CPW (batch and 5250 OLTP) for the 1-way system and 7100 CPW for the 2-way system. For applications that are disk I/O intensive, this translates to 800 CPW (batch or 5250 OLTP) for either the 1-way or 2-way Model 515. The Model 515 has a maximum of eight disk drives.

The Model 515 features a one-year limited warranty with 9 a.m.-5 p.m., next business day, customer-replaceable unit (CRU), and on-site service. This can be upgraded to 24x7, same-day service with service offerings. The included i5/OS license is provided with three months or one year of support coverage based on the software maintenance agreement (SWMA), depending on the configuration. The SWMA can be expanded to either one or three years.

3.3 System i Model 515 Editions

The 9407 Model 515 is offered as an Express Configuration or as a Base Product Configuration. An *Express Configuration* provides a package of popular options that fit many base system needs at an attractive package price. A *Base Product Configuration* includes a few pre-selected options and provides more flexibility in adding options. Features can be added to Express or Base Configurations either initially or as an MES.

An internal tape drive is offered at no additional charge in Model 515 Express Configurations. Depending on the configuration, the base tape drive is either the 36 GB 4mm tape drive or the 30 GB QIC tape drive. The 4 mm tape drive can be replaced by a 30 GB QIC tape drive or a 200 GB LTO-2 tape drive (#8755). The 30 GB QIC tape drive can be replaced by the 200 GB tape drive in the system unit for an additional charge.

3.4 Model 515 configurations overview

The minimum functional system consists of the base system unit, base features, and selected priced features. A variety of LAN and WAN adapters, an iSCSI adapter, a SCSI external tape adapter, and rack options are available. Each Model 515 system unit has a maximum of 16 GB of memory and 560 GB of disk capacity.

The Model 515 supports hot-plug disk slots, hot-plug PCI-X card slots, and redundant hot-plug cooling fans. A redundant hot-plug power supply is available.

The Model 515 initial installation is customer setup (CSU).

Note: Attachment of I/O towers/drawers is not supported.

3.4.1 Base system unit and features

The Model 515 POWER5+ system supports a single processor card. The processor card supports eight dual inline memory module (DIMM DDR2) memory positions that allow memory to be plugged in the processor card (direct attach). Memory is plugged in pairs of DIMMs.

- The processor cards:
  - #8327 1.9 GHz Processor (1-way)
    - 1.9 MB L2 cache
    - 36 MB L3 cache
  - #8330 1.9 GHz Processor (2-way)
    - 1.9 MB L2 cache
    - 36 MB L3 cache
- Three media bays and one operator panel bay

  The three media bays consist of one half-height and two slimline bays. The half-height bay is for SCSI tape devices. The top slimline bay is usable by i5/OS for the required DVD-ROM. The second slimline bay is based on integrated drive electronics (IDE). IDE is a standard electronic interface that is used between a computer motherboard's data paths or bus and the computer's disk storage devices. The IDE interface is based on the IBM PC Industry Standard Architecture (ISA) 16-bit bus standard, but it is also used in computers

that use other bus standards. Most computers sold today use an enhanced version of IDE called enhanced IDE.

- Two system and two USB 2.0 ports
  - Neither USB port is usable by i5/OS.
  - Only system port T2 is usable by i5/OS (for #1827 Serial-UPS Conversion Cable).
- Two 10/100/1000 Mbps Ethernet ports

  One of these Ethernet ports is usable for a LAN console.
- Base Service Processor
- Two Hardware Management Console (HMC) ports
- Six PCI-X card slots
- Four disk slots
- Integrated disk, DVD, and tape controller
- Rack mount or desk-side specify

3.4.2 Optional features

- 40 MB write cache disk controller for the four base disk slots

  Enables RAID protection and does not use a PCI-X card slot
- #5570 5727 Cache + 2 70GB Disk Package

  This package provides one #5727 Integrated Cache - 40 MB and two #4327 15k rpm 70.56 GB Disk Units.
- #5571 5727 Cache + 6 70GB Disk Package

  This package provides one #5727 Integrated Cache - 40 MB and six #4327 15k rpm 70.56 GB Disk Units. It requires #5592/#5593 as a prerequisite.
- #5572 4-70GB Disk Package

  This feature provides four #4327 15k rpm 70.56 GB Disk Units.
- #5592 4 Disk Slot Exp + Controller

  This feature provides a disk backplane (#6594), which enables the second set of four disk slots in a Model 515 and provides a disk controller (#5776) to run these four disk slots. The disk controller is plugged into either the C4 or the C6 PCI slot of the 515 system unit. The disk controller has 90 MB write cache and can provide RAID protection for the disk drives. Mirroring protection is provided via i5/OS.
- #5593 4 Disk Slot Exp + Controller

  This feature provides a disk backplane (#6594), which enables the second set of four disk slots in a Model 515 and provides a disk controller (#0648) to run these four disk slots. The disk controller is plugged into either the C4 or the C6 PCI slot of the 515 system unit. The disk controller has 90 MB write cache and can provide RAID protection for the disk drives. Mirroring protection is provided via the operating system.

  The #5593 can be used to provide four disk slots capacity to a AIX 5L or Linux partition.
- 36 GB 4 mm tape drive, 30 GB QIC tape drive, or 200 GB LTO-2 tape drive in the system unit driven by the embedded disk controller

  The 36 GB 4 mm tape drive supports read/write of DDS3, DDS4, and DAT72 media.
- An external tape drive attached via a PCI-X tape controller

- #7940, #7966, Advanced Power Virtualization (APV)
  - The following feature codes are associated with the Model 515 and each System i 52*n* model:
    - #7940 - 9405-520, 9406-520, and 9406-525
    - #7966 - 9406-515
  - Enables partitioning: The ability to have more than one logical partition, for i5/OS V5R4, AIX, and Linux
  - Enables micro-partitioning: The granularity to assign less than one full processor capacity to a partition
  - Provides Virtual I/O Server (VIOS) capabilities: Virtualizes up to four disks of capacity for AIX 5L or Linux partitions
  - Optional, chargeable per-processor feature:
    - If 1-way 515, order either zero #7966 features or one #7966 feature.
    - If 2-way 515, order either zero #7966 features or two #7966 features (two required).
    - There is a price per #7966 feature.
  - Ships a software enablement key for the system and ships VIOS and Partition Load Manager

Note: System i, excluding Model 515, includes partitioning and micro-partitioning without additional features. Enabling VIOS and Partition Load Manager on System i requires the optional APV feature. The Partition Load Manager is only included in the APV feature for POWER5 technology-based systems. Partition Load Manager is not supported on POWER6.

On the System i models, partitioning is included as part of the base System i capabilities. The APV feature is ordered to enable VIOS capabilities and Partition Load Manager capabilities for AIX and Linux partitions.

3.4.3 Hardware support constraints

Based upon the objective to minimize the purchase price and simplify ordering the Model 515, the following features are not supported on the Model 515:

- More than 16 GB memory
- Additional sizes of disk drives
- HSL-loop adapter, I/O towers/drawers, and associated Model 520 or 525 higher I/O maximums
- Integrated xSeries Server (IXS) or IXA
- Fibre Channel adapters
- Support of older, withdrawn IOAs (controllers)
- Full rack-mount features
- Choice of front door or easy-access front cover
- DVD-RAM

3.4.4 Logical partitioning on the Model 515

In most configurations, it is anticipated that logical partitioning will not be desired. However, logical partitioning is available. Logical partitioning on the Model 515 requires #7966 Advanced Power Virtualization.

Like other POWER5 technology-based systems, an HMC is required for an AIX 5L partition or for a Linux partition with dedicated I/O. It is optional for up to three Linux partitions using all i5/OS virtual I/O.

The first four disk drives are always driven by the embedded disk controller of the 515 CEC. The second set in the Model 515 is always driven by a disk controller in a PCI slot. The second set can be owned by the i5/OS partition or another partition. There is a maximum of two i5/OS partitions (one per set of four disk slots). An i5/OS partition can support AIX or Linux partitions for virtual I/O.

APV support includes the capability to define a VIOS partition, which can own resources, such as network adapters, disk adapters, and disk drives, that are shared with Linux or AIX 5L client partitions.

3.4.5 Warranty options

The 9407 Model 515 includes a base warranty and has two optional warranty upgrades:

- Standard warranty
  - One year
  - 9 hours per day, Monday through Friday, excluding holidays, next business day response, and mandatory CRU (for tier 1 parts)
  - IBM On-site Repair (for non-tier 1 parts)
- Warranty upgrade 1
  - One year
  - IBM On-site Repair, 9 hours per day, Monday through Friday, excluding holidays, next business day response

    Next business day response applies to all geographies except EMEA, which is Same Business Day.
- Warranty upgrade 2
  - One year
  - IBM On-site Repair, 24 hours per day, 7 days a week

Notes:

- IBM must receive service calls by a certain time of day in order for those service calls to qualify for Same Business Day or Next Business Day service. This time varies by geography. Contact your local IBM representative for details.
- A Warranty Service Upgrade (WSU) can be purchased anytime during the original warranty period. Depending upon the timing, you might have to pay a price for the whole year starting with the new warranty. After each warranty period, consider another warranty or a normal maintenance agreement.

In regard to CRU, Tier 1 means that, if IBM determines over the phone that the problem is in a CRU, IBM will ship the part to the customer for replacement. If IBM installs the CRU, it is a billable service unless covered by a maintenance upgrade. The following table lists the Model 515 CRU parts.

Model 515 CRU Tier 1		
Battery for disk write cache controller Cables – external or internal Covers Disk drive Disk drive backplane DVD drive	Fan Fan tray assembly Memory DIMM Operator panel Operator panel cable PCI adapter Power cord	Power supply Service processor Tape drive Tape/DVD drive enclosure and backplane Time of day battery Voltage regulator

3.5 System i Model 515 overview

The following tables provide the minimum and maximum system capacities for the Model 515. The values are package dependent.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access on the Web at:

`http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html`

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

`http://www.mpginc.com`

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

`http://www.bmc.com`

In the following tables, read the accompanying footnotes at the bottom of each table. For the other notes, such as 2a, 5, and 6a, refer to the general table of notes in 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

9407 Model 515							
Processor feature	**Server feature**	**Configuration feature**	**Processor/5250 CPW[5]**		**MCU[2a]**		**LPAR**
			1-way	**2-way**	**1-way**	**2-way**	**Base**
#8327	#4901	#6010 Express Cfg 1	3800/ 3800	-	8200	-	10
		#6011 Express Cfg 2	3800/ 3800	-	8200	-	10
		#6018 Base Prod Cfg 1	3800/ 3800	-	8200	-	10
#8330	#4903	#6021 Express Cfg 3	-	7100/7100	8200	15600	10/processor
		#6028 Base Prod Cfg 2	-	7100/7100	8200	15600	10/processor
Note: Support for LPAR on the Model 515 requires optional feature #7966 Advanced Power Virtualization							

9407 Model 515		
Processor feature	**#8327**	**#8330**
Number/type/speed of processor	1/POWER5+/1.9 GHz	1/2-way/POWER5+ /1.9 GHz
L2 Cache (MB)	1.9	1.9
L3 Cache (MB)	36	36
Main storage (GB min/max)	1/16	1/16
Main storage DIMMs (min/max)	2/8	2/8
Minimum i5/OS level/LIC level	V5R4M0/V5R4M0	V5R4/V5R4M0
Software group [6a]	P05	P05
Disk controller (min/max)	1/2	1/2
Disk arms (min/max)	1/8	1/8
Internal DVD/tape (min 1 DVD/max 2 DVDs, 1 tape)	1/3	1/3
External tape/optical/DVD	0/2	0/2
Physical packaging HSL-2 ports I/O towers/drawers PCI card slots	 0 0 6	 0 0 6
Twinaxial controller (min/max)	0/1	0/1
Communication lines (min/max)	2/12	2/12
LAN ports (min/max)	2/8	2/8
System x Integration (min/max) Internal xSeries servers External xSeries adapters iSCSI adapters	 0/0 0/0 0/5	 0/0 0/0 0/5
Note: Some maximums and combinations of devices may be subject to configuration restrictions.		

The following table summarizes the 9407 Model 515 Base and Express configurations.

9407 Model 515 Express and Base Configurations					
	Express Configuration 1	**Express Configuration 2**	**Express Configuration 3**	**Base Configuration 1**	**Base Configuration 2**
CPW/5250 (unconstrained)[1]	3800/3800	3800/3800	7100/7100	3800/7100	7100/7100
CPW/5250 (constrained)[1]	800/800	800/800	800/800	800/800	800/800
N-way	1-way	1-way	2-way	1-way	2-way
Processor/Server/Edition	#8327/4901/6010	#8327/4901/6011	#8330/4903/6021	#8327/4901/6018	#8330/4903/6028
Processor activation feature	1 x #8410	1 x #8410	2 x #8428	1 x #8410	2 x #8428
N/C (no charge) disk	2 x 9613 (2 x 70 GB)	2 x 9613 (2 x 70 GB)	4 x 9613 (4 x 70 GB)	-	-
Disk (70 GB chargeable)	0 to 6	0 to 6	0 to 4	min 1/max 8	min 1/max 8
Disk protection	0040+0308/0041/ none	0040+0308/0041/ none	0040+0308/0041/ none	0040+0308/0041/ none	0040+0308/0041/ none
Write cache/Raid enabler	#5727 Chargeable (mirror default)	#5727 Chargeable (mirror default)	1 x #9510 (RAID default)	#5727 Chargeable	#5727 Chargeable
Console specify - choose one	#5540/#5544/#5550/#5552/#5553	#5540/#5544/#5550/#5552/#5553	#5540/#5544/#5550/#5552/#5553	#5540/#5544/#5550/#5552/#5553	#5540/#5544/#5550/#5552/#5553
N/C Memory	1 x 9548 (1 GB)	1 x 9548 (1 GB)	2 x 9549 (4 GB)	-	-
Memory (GB chargeable)	Max 15	Max 15	Max 12	Min 1/Max 16	Min 1/Max 16
N/C Tape[2]	1 x #9258	1 x #9653	1 x #9258	-	-
N/C DVD-ROM	1 x #9540	1 x #9540	1 x #9540	1 x #9540	1 x #9540
N/C WAN (modem)	1 x #9793/#9794	1 x #9793/#9794	1 x #9793/#9794	1 x #9493/#9494	1 x #9493/#9494
N/C IOP[2d]	1 x #9844	1 x #9844	1 x #9844	-	-
5722-SS1 V5R4 and all default programs (includes Web Enablement, 5722-WE2 and IBM Director, 5722-DR1)	One i5/OS processor license plus licensing for default programs	One i5/OS processor license plus licensing for default programs	Two i5/OS processor license plus licensing for default programs	One i5/OS processor license plus licensing for default programs	One i5/OS processor license plus licensing for default programs
N/C 5722-SSC i5/OS user licensing	1 x #1600 (5 users) additional users are chargeable	1 x #1600 (5 users) additional users are chargeable	1 x #1600 (5 users) additional users are chargeable	1 x #1600 (5 users) additional users are chargeable	1 x #1600 (5 users) additional users are chargeable
Software	5722-XW1 (unlimited users)	5722-QU1 5722-ST1 5722-XW1 (unlimited users)	5722-QU1 5722-ST1 5722-XW1 (unlimited users)	5722-XW1 (unlimited users)	5722-XW1 (unlimited users)
5722-WDS (chargeable)	1 optional	1 optional	1 optional	1 optional	1 optional
N/C SWMA	3 months	One year	One year	3 months	3 months
Software group [6a]	P05	P05	P05	P05	P05

9407 Model 515 Express and Base Configurations					
	Express Configuration 1	**Express Configuration 2**	**Express Configuration 3**	**Base Configuration 1**	**Base Configuration 2**

Note 1: The Model 515 provides full processor power (batch or 5250 OLTP) for applications that are not I/O intensive. For applications that are I/O intensive, this translates to approximately 800 CPW (batch or 5250 OLTP) for either the 1-way or 2-way because the Model 515 has a maximum of eight disk drives. CPW is used to compare relative performance rating among processor models within the IBM System i family.

As a reminder, do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. As a starting point for disk I/Os per second on the Model 515, consider a maximum of approximately 115 disk I/Os per second. We recommend that you size a Model 515 workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address:
http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address: http://www.mpginc.com

Note 2: The #9258 can be replaced with a #8753 30 GB QIC tape drive or a #8755 200GB LTO-2 Tape Unit only on initial orders for Express Configurations 1 and 3. There is no substitution, only delete, on Express Configuration 2.

Note 2d: No charge feature #9844 IOP on the Models 9407-515 Express Configurations #1 and #3, 9407-515 Base Configurations #1 and #2, and all 9406-525 configurations were removed from the configurator, e-config, on 9 October 2007. Orders received after 26 October 2007 with feature #9844 will be invalid. If an IOP is required after this date, feature #2844 must be ordered instead of #9844. No charge feature #9844 remains a valid feature on 9407-515 Express Configuration #2.

Note 3: The 9407 Model 515 is configurable. It is possible to add the 9407 features to these configurations or delete no-charge features.

Note 4: No charge software includes unlimited users with iSeries Access Family, 5722-XW.

Notes 2a, 5, 6a: See 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90. Note 6a in that table summarizes the Software tier grouping for all IBM System i5 models.

3.6 System i5 Model 520+ Editions

The following sections describe the editions that are available with the Model 520+ (1.9 GHz processors) configurations.

As a reminder, you should not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size a specific IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator for System i or Performance Navigator from Midrange Performance Group.

3.6.1 520 Capacity BackUp editions

The System i 520 (i520) Capacity BackUp Editions provide greater flexibility to help meet your requirements for backup, HA, and DR. Five i520 Capacity BackUp Edition features provide matching performance points for the 1.9 GHz 520 Enterprise and Standard Edition systems. The 1200 CPW, 2800 CPW, and 3800 to 7100 CPW Capacity BackUp Editions support 520 Enterprise Edition systems. The 3800 CPW and 3800 to 7100 CPW Capacity BackUp Standard Editions support 520 Standard Edition systems.

The 1/2-way 520 Capacity BackUp Editions provide the flexibility of a permanent processor activation that can be used to support additional application workloads. They also deliver capacity for role-swap operations, where the Capacity BackUp system maintains application availability when a production system is down for planned or unplanned outages. Similarly, Enterprise Enablement features and i5/OS Processor Entitlements can be permanently acquired for additional processors on the Capacity BackUp system. The 1/2-way Capacity BackUp Edition and Capacity BackUp Standard Edition enable the activation of the standby processor using On/Off Capacity on Demand at no charge in case of a disaster that takes down the primary system.

Before IBM ships a new Capacity BackUp Edition system, a primary system in the same enterprise must be registered via the System i Capacity BackUp Registration Web page at:

http://www.ibm.com/systems/i/hardware/cbu/form.html

The primary system must be an equivalent Model 520 or 810 that is equal to or larger in size than the Capacity BackUp system as measured by CPW. There may be exceptions to this rule when a difference in generations of technology or product structure make a direct comparison impossible. Such exceptions are documented on the Capacity BackUp Registration Web page.

The 520 Capacity Backup Editions contain the same set of software content as the 520 Standard Edition. An underlying assumption is that a Capacity BackUp Edition system is being used when its primary system is not available due to a planned or unplanned outage.

On/Off Capacity on Demand for temporary standby processor activation for the 1/2-way 520 can be purchased as needed. However, high usage of On/Off Capacity on Demand outside a disaster can be costly. Consider permanent processor activations for ongoing requirements. A *disaster* is defined as an event recoverable from an offsite location only that has resulted from the unforeseen loss of a production system's computing capability due solely to forces beyond your control. To qualify as a disaster, such outage is clearly one that, by its nature, requires a remote recovery operation. This means that the primary data center is no longer usable and that the outage is not due to a hardware or software failure.

The 1/2-way 520 Capacity BackUp edition includes an opportunity for an initial test of the switchover environment with three processor days provided at no additional charge with the On/Off Capacity on Demand function that can be used for the standby processor.

For Capacity BackUp Edition registration and additional information, go to the following Web address:

http://www.ibm.com/systems/i/hardware/cbu

Upgrades are available for the 520 Capacity BackUp Editions from selected Model 810 Enterprise Edition and Standard Edition systems. Upgrades are also available from smaller 520 Capacity BackUp Editions to larger 520 Capacity BackUp Editions. Likewise, the smaller 520 Capacity BackUp Standard Edition can be upgraded to the larger 520 Capacity BackUp Standard Edition.

3.6.2 System i and 3Com IP Telephony

Today, companies of all sizes are replacing traditional phone systems with IP telephony solutions to realize both the productivity benefits of easily accessible advanced applications and the infrastructure cost savings resulting from a single, converged voice and data network. Companies have many different reasons for making the switch to IP telephony that the deciding factors vary. The most common benefits cited by small- and mid-sized companies are cost savings and business advantage.

Cost savings can result from implementing and maintaining a single communications infrastructure across multiple offices. Converged systems can be easier to manage and modify as business needs evolve. In addition, companies might experience lower long-distance calling fees by reducing or eliminating toll charges as phone services become supported by their LAN and WAN connectivity, rather than exclusively by the public switched telephone network (PSTN).

Business advantages are driven by increased productivity and enhanced collaboration among employees, customers, and partners. These benefits result from cutting-edge,

IP-based applications. Unified messaging offers IP telephony users voice mail and e-mail integration and find-me, follow-me capabilities. Advanced collaborative applications, such as instant messaging, presence, and highly scalable audio conferencing, save time and effort. IP contact centers help drive customer satisfaction and business revenues. IP telephony solutions built on open architectures and industry standards, such as Session Initiation Protocol (SIP), also provide the most flexibility to connect to the third-party applications that your business requires.

3Com IP Telephony solutions enable the implementation of a next-generation, multimedia IP communications system that uses the Internet Engineering Task Force (IETF) SIP standard. With a robust set of productivity- enhancing applications and advanced phone features that are traditionally supplied by private-branch-exchange (PBX) systems, 3Com solutions can help you migrate to an open, IP-based communications system in increments that best fit your business objectives. Their centralized administration, configuration, and management capabilities can lower installation and operating costs and optimize IT staff as the system is implemented throughout your organization. 3Com IP Telephony helps ensure business continuity with a distributed, replicated architecture that can deliver full-function services at any site even during a WAN failure.

System i platforms are designed to be easy to operate and maintain. They support all critical business applications with a single, integrated system that can now enable both full-featured data and voice communications. Database, performance tuning, backup, reporting, communications, Internet connectivity, and file and printing services are built in, as are security features that can help your business meet regulatory requirements and safeguard critical data across all of these application environments. By embracing open standards, System i platforms give organizations broader choices and a greater capability to use already installed systems, eliminating requirements and the expense of additional servers and added complexity.

IP messaging

3Com messaging is a comprehensive set of communication services that are designed to enhance productivity through location-independent access to an integrated messaging environment. 3Com IP messaging includes an advanced range of interactive services that help enterprises to better manage their communications and increase the productivity of their workforce. The 3Com solution lets users consolidate voice mail, e-mail, and faxes into a single in-box for location-independent retrieval and management. They can also schedule the times when messages are delivered and send voice mails to individuals or groups by using extensive and easy-to-maintain distribution lists. With “find me, follow me” services, users can manage how they are contacted, while maintaining their own anytime, anywhere access to messages.

The IP messaging auto-attendant enables you to develop your own interactive voice response services, such as establishing dial-by-name directory functions or automated caller-specific call routing. Callers can be directed to prerecorded announcements and voice forms, and their answers to a predetermined set of questions can be captured. In addition, an unlimited number of company switchboard, departmental, or even personal auto-attendants on direct inward dial numbers can be configured.

Optimized services based on user need

Administrators can customize 3Com IP messaging services. Although groups of users are generally allocated, a predefined class of service ranging from a simple voicemail box to a comprehensive unified messaging mailbox with integrated e-mail and fax, almost every feature of the mailbox can be tailored to match the exact needs of any group or single user in the organization.

Seamless migration from legacy voice systems

The IP messaging application receives user connections either directly from SIP-compliant phones or from legacy PBXs or the PSTN through SIP Voice over IP (VoIP) gateways that connect to the messaging system. These options let enterprises deploy the software as either a stand-alone centralized messaging application integrated with existing voice systems or as part of a complete migration to IP telephony and SIP-based services.

Flexible scalability for multisite deployment

3Com IP messaging services are based on location-independent platforms and software that can be centralized or distributed across multiple sites for flexibility and scalability in a geographically dispersed organization.

Business continuity

The IP messaging solution offers network-based redundancy to ensure market-leading business continuity. Primary and secondary platforms can synchronize stored messages using real-time mirroring for high service availability. The application can also revert to another IP messaging platform without disruption should it detect a phone system failure.

IP conferencing

With 3Com IP conferencing, you can use your IP network to cost effectively enhance collaboration. Simple-to-establish and easy-to-manage conferencing, both scheduled and ad hoc, helps you improve communications of project teams and strengthen interactions among employees, suppliers, business partners, and customers. IP conferencing includes:

- Audio conferences among participants calling in from the PSTN or using phones connected to legacy PBXs or SIP-based phones directly connected to the IP network.
- Video conferences from video-capable SIP clients that support the H.263 video codec. The 3Com Convergence™ Client used with a USB webcam from any laptop or desktop PC can provide this capability.
- Desktop sharing that lets users view and interact with the desktop of a colleague. Detailed collaboration can occur to expedite the development and review of documents created in any PC application.

Simplify multimedia collaboration

3Com conferencing helps you reduce telecommunications costs and enhance collaboration. Workers can quickly and easily establish an ad hoc or scheduled conference session over the IP network for up to 100 participants with one intuitive desktop tool, the 3Com Convergence Client. With a single portal to integrated voice, video, data, and messaging services, communication can easily take place with whatever media is most convenient and appropriate to the subject matter.

Expand collaboration options

With low-cost webcams and click-to-conference functionality, several co-workers can participate in a high-quality video conference and share data files without the need for an expensive video conferencing facility or a conference administrator.

IP presence

Presence services let you know which employees are currently using their 3Com IP phone. Working with other components of the 3Com IP Telephony solution that use SIP, IP conferencing and presence capabilities offer advanced services such as presence publishing. *Presence publishing* supports SIP Instant Messaging and Presence Leveraged Extensions (SIMPLE) clients, allowing them to receive availability information from other clients that are

registered with the 3Com IP Telephony solution. These clients include the 3Com Convergence Client 1 and 3Com SIP-compliant IP phones.

Availability view of co-workers

Presence indicators on the 3Com Convergence Client show the on-hook/off-hook status of 3Com IP phones and the availability of co-workers, increasing user productivity and reducing reliance on voice mail. A conference host can eliminate time-consuming roll calls by using similar capabilities to monitor the presence of conference attendees.

IP convergence

3Com on the System i platform provides a desktop application that delivers integrated, productivity-enhancing access to high-value business communications services such as IP and video telephony, voice mail, conferencing, collaboration, presence, and instant messaging. The convergence software is included with all standard phone licenses. The 3Com Convergence Client acts as a personal portal that lets users conveniently take advantage of a variety of interpersonal communications functions, including telephony, audio and video conferencing, messaging, presence, document sharing, and instant messaging from any standard PC running Microsoft Windows. The client is compliant with the SIP and uses SIP for instant messaging and presence SIMPLE for standards-based, secure services.

Easy integration of advanced business applications

The 3Com Convergence Client can be cost-effectively integrated into the enterprise network and distributed to users with minimal installation and maintenance requirements. IT staff can easily make the client part of a standard enterprise desktop software package.

Leverage of standards-based interoperability

For SIP-enabled software that can be deployed anywhere on an enterprise IP network, the 3Com Convergence Client enables portability of user identity and standards-based multimedia communications features.

Easy access to conferencing services

With the client and a 3Com IP conferencing server, users can create an instant ad hoc conference call by simply dragging and dropping names instead of setting up a conference bridge beforehand and waiting for attendees to join the call at the appointed time. A mouse click adds video to the conference or enables collaborative data sharing and real-time document reviews.

Increased worker productivity

The 3Com Convergence Client speeds everyday business communications by making voice, video, presence, instant messaging, voice mail, and desktop sharing available through one easy-to-use interface. Increased control of collaborative services lets enterprises respond more effectively to the needs of customers, clients, and vendors. People are easier to reach. Information can be accessed and disseminated more efficiently and issues can be addressed and resolved more quickly.

Optimized contact with co-workers

A presence icon on the interface indicates the availability of co-workers, helping establish direct contact among co-workers and reducing protracted voice mail exchanges and telephone tag. Calls can be easily initiated by clicking the icon. By leveraging a converged network, the client enables faster cycle times and more efficient supply chain activities.

Seamless control of 3Com desk phones

Because the client can be associated with a physical IP phone, such as the 3Com 3102 Business Phone, a conventional handset can be used along with telephony functions, such as voice calls, audio conferencing, and voice mail access, from the PC client.

3Com Enterprise Management

3Com Enterprise Management Systems for i5/OS provides extensive management services for managing 3Com voice and data network and any other Simple Network Management Protocol (SNMP)-compliant devices. This is available for the 3Com telephony suite of products. Enterprise Management Systems can manage up to 20 nodes, most VoIP devices (VCX and Gateway), and some data devices (switches). 3Com Enterprise Management System for i5/OS provides a 20-node limit.

3Com IP Telephony Suite for IBM System i

3Com IP Telephony Suite can be integrated with line-of-business applications, IBM Lotus Domino, and IBM Lotus Sametime®. 3Com IP Telephony Suite can be implemented on System i platforms to provide highly available IP communications that are resilient to WAN outages. System i Models 520, 525, 550, 570, 570 (POWER6), and 595 are supported, running i5/OS V5R3 or V5R4 or later.

Available enhancements with the 3Com IP Telephony Suite include:

- New telephony integration for business and collaboration software
  - 3Com IP Telephony Integration SDK for System i
    - APIs can be used to easily integrate telephony functions within a line-of-business application.
  - 3Com IP Telephony Integration for IBM Lotus Domino
    - Message Synchronization enables the synchronization of message stores between 3Com IP Telephony Suite and IBM Lotus Domino. The prerequisite is Lotus Domino 6.0 or later.
    - Domino directory synchronization with 3Com directory allows users to be managed together with a single logical “directory entry.” The prerequisite is Lotus Domino 6.0 or later.
  - 3Com IP Telephony Integration for IBM Lotus Sametime
    - Click-to-Call Java plug-in for click-to-call enables Sametime IM users the ability to Click-to-Call individuals of groups in conference calls. It includes the function to let an administrator mute/unmute participants and control other aspects of the conference call. The prerequisite is Sametime 7.5 or later.
    - Sametime directory synchronization with 3Com directory allows users to be managed together with a single logical directory entry. The prerequisite is Sametime 7.5 or later.
    - The Sametime client extension enables phone awareness to be shown to users, for example, phone off-hook or phone on-hook.
- 3Com Enterprise Management Systems for i5/OS, which provides extensive management services for managing 3Com voice and data network and any other SNMP-compliant devices.
- New call center and telecommuting modules:
  - 3Com IP EPICCenter for System i
  - 3Com IP Telecommuting for System i

- Re-packaging 3Com IP Conferencing for System i
  - Three-year software application support
  - Support for new phone and gateway technology:
    - 3Com 3108 Wireless IP Telephone
    - 3Com V6100 Digital Gateway

3.6.3 System i IP Telephony Express offerings

In this section, we summarize the specific Model 520 express offerings for running telephony applications that are provided by 3Com. We recommend that you use the IBM Systems Workload Estimator to size your Telephony application workloads:

http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

Telephony Express 100 (#7381)

Telephony Express 100 is an economical package of hardware, software, and services that can support telephony and messaging functions for 100 users of the 3Com software. The complete package includes a server with the necessary software and licensing that are required to support the phone needs of a small business.

- Hardware
  - System i Model 520 1.9 GHz 1-Way (3800 CPW)
  - 70 GB 15K rpm disk
  - 1 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
    - 100 3Com IP Messaging Seat Licenses (3COVS73100-05)
    - Enterprise Management System for i5/OS (3CR15640)
  - Device licenses
    - Two 3Com IP Standard 50 Phone Licenses (3COVS72107-05)
    - Four 3Com Analog FXS Media Gateway 1 Port Licenses (3COVS71110-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)

Telephony Express 250 (#7382)

The Telephony Express 250 is an economical package of hardware, software, and services that can support telephony and messaging functions for 250 users of the 3Com software. The complete package includes a server with the necessary software and licensing that are required to support the phone needs of a small business.

- Hardware
  - System i Model 520 1.9 GHz 1-Way (3800 CPW)
  - 70 GB 15K rpm disk
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
    - 250 3Com IP Messaging Seat Licenses (3COVS73100-05)
    - Enterprise Management System for i5/OS (3CR15640)
  - Device licenses
    - 3Com IP Standard 250 Phone License (3COVS72102-05)
    - Eight 3Com Analog FXS Media Gateway 1 Port Licenses (3COVS71110-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)

Telephony Express 500 (#7383)

Telephony Express 500 is an economical package of hardware, software, and services that can support telephony and messaging functions for 500 users of the 3Com software. The complete package includes a server with the necessary software and licensing that are required to support the phone needs of a small business.

- Hardware
  - System i Model 520 1.9 GHz 1-Way (3800 CPW)
  - 70 GB 15K rpm disk
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
    - 500 3Com IP Messaging Seat Licenses (3COVS73100-05)
    - Enterprise Management System for i5/OS (3CR15640)

- Device licenses
  - Two 3Com IP Standard 250 Phone Licenses (3COVS72102-05)
  - 24 3Com Analog FXS Media Gateway 1 Port Licenses (3COVS71110-05)
- Distribution media
  - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)

Telephony Express 1000 (#7384)

Telephony Express 1000 is an economical package of hardware, software, and services that can support telephony and messaging functions for 1000 users of the 3Com software. The complete package includes a server with the necessary software and licensing that are required to support the phone needs of a midsized business.

- Hardware
  - System i Model 520 1.9 GHz 1/2-Way (3800/7100 CPW)
  - Two 70 GB 15K rpm disk units
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
    - 1000 3Com IP Messaging Seat Licenses (3COVS73100-05)
    - Enterprise Management System for i5/OS (3CR15640)
  - Device licenses
    - 3Com IP Standard 1000 Phone License (3COVS72104-05)
    - 24 3Com Analog FXS Media Gateway 1 Port Licenses (3COVS71110-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)

Telephony Express HA100 (#0486)

Telephony Express HA100 is packaged to provide a high level of availability for a 3Com telephony implementation. This package of hardware, software, and services supports telephony and messaging functions for 100 users of the 3Com software. The Telephony Express HA100 includes a primary and a secondary system (1-way).

Primary system

- Hardware
  - System i Model 520 1.9 GHz 1-Way (3800 CPW)
  - 70 GB 15K rpm disk
  - 1 GB DDR2 Main Storage

- DVD-ROM
- Logical Partitioning Specify
- Linux Partition Specify

- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
    - 100 3Com IP Messaging Seat Licenses (3COVS73100-05)
    - Enterprise Management System for i5/OS (3CR15640)
  - Device licenses
    - Two 3Com IP Standard 50 Phone Licenses (3COVS72107-05)
    - Four 3Com Analog FXS Media Gateway 1 Port Licenses (3COVS71110-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)

Secondary system

- Hardware
  - System i Model 520 1.9 GHz 1-Way (3800 CPW)
  - 70 GB 15K rpm disk
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
  - Enterprise Management System for i5/OS (3CR15640)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)

Telephony Express HA250 (#0487)

Telephony Express HA250 is packaged to provide a high level of availability for a 3Com telephony implementation. This package of hardware, software, and services supports telephony and messaging functions for 250 users of the 3Com software. The Telephony Express HA250 includes a primary and a secondary system (1-way).

Primary system

- Hardware
  - System i5 Model 520 1.9 GHz 1-Way (3800/7100 CPW)
  - 70 GB 15K rpm disk
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
  - Standard Edition
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
    - 250 3Com IP Messaging Seat Licenses (3COVS73100-05)
  - Device licenses
    - 3Com IP Standard 250 Phone License (3COVS72102-05)
    - Eight 3Com Analog FXS Media Gateway 1 Port Licenses (3COVS71110-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)
  - Enterprise Management System for i5/OS (3CR15640)

Secondary system

- Hardware
  - System i5 Model 520 1.9 GHz 1-way (3800/7100 CPW)
  - 70 GB 15K rpm disk
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)
  - Enterprise Management System for i5/OS (3CR15640)

Telephony Express HA500 (#0488)

Telephony Express HA500 is packaged to provide a high-level 3Com telephony implementation. This package of hardware, software, and services supports telephony and messaging functions for 500 users of the 3Com software. The Telephony Express HA500 includes a primary and a secondary system (1-way).

Primary system

- Hardware
  - System i5 Model 520 1.9 GHz 1-Way (3800/7100 CPW)
  - 70 GB 15K rpm disk
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
    - 500 3Com IP Messaging Seat Licenses (3COVS73100-05)
  - Device licenses
    - Two 3Com IP Standard 250 Phone Licenses (3COVS72102-05)
    - 24 3Com Analog FXS Media Gateway 1 Port Licenses (3COVS71110-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)
  - Enterprise Management System for i5/OS (3CR15640)

Secondary system

- Hardware
  - System i5 Model 520 1.9 GHz 1-Way (3800/7100 CPW)
  - 70 GB 15K rpm disk
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)

- Distribution media
  - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)
- Enterprise Management System for i5/OS (3CR15640)

Telephony Express HA1000 (#0489)

Telephony Express HA1000 is packaged to provide a high level of availability for a 3Com telephony implementation. This package of hardware, software, and services supports telephony and messaging functions for 1000 users of the 3Com software. The Telephony Express HA1000 includes a primary and a secondary system (1/2-way).

Primary system

- Hardware
  - System i5 Model 520 1.9 GHz 1/2-Way (3800/7100 CPW)
  - Two 70 GB 15K rpm disk units
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)
- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
    - 1000 3Com IP Messaging Seat Licenses (3COVS73100-05)
  - Device licenses
    - 3Com IP Standard 1000 Phone License (3COVS72104-05)
    - 24 3Com Analog FXS Media Gateway 1 Port Licenses (3COVS71110-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)
  - Enterprise Management System for i5/OS (3CR15640)

Secondary system

- Hardware
  - System i5 Model 520 1.9 GHz 1/2-Way (3800/7100 CPW)
  - Two 70 GB 15K rpm disk units
  - 2 GB DDR2 Main Storage
  - DVD-ROM
  - Logical Partitioning Specify
  - Linux Partition Specify
- Software
  - i5/OS V5R3 or V5R4 (5722-SS1)
  - IBM Director for i5/OS (5722-DR1)
  - Web Enablement for i5/OS (5722-WE2)
  - One year of SW Maintenance (5733-SPP)

- 3Com components
  - Software licenses
    - 3Com IP Telephony Server License (3COVS70109-05)
    - 3Com IP Messaging Server License (3COVS70309-05)
  - Distribution media
    - 3Com IP Telephony, Msg, and Conferencing on DVD (3CIBMDVDA)
  - Enterprise Management System for i5/OS (3CR15640)

3.7 System i5 Model 520+ overview

The following tables provide the minimum and maximum system capacities for the Model 520+. The values are package dependent.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address:

`http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html`

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

`http://www.mpginc.com`

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

`http://www.bmc.com`

To review the footnotes for the following table, see 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

9405/9406 Model 520+										
Processor feature	Server feature	Configuration feature[6a]	Processor/5250 CPW[5]			MCU[2a]			LPAR	
			Base	with Accelerator[2b]	2-way with maximum 5250	Base	with Accelerator[2b]	2-way	Base	with Accelerator[2b]
#8325	#0970	#7140 Express	600/30	3100/30	-	-	6600	-	2	10
		#7141 Express	600/30	3100/30	-	-	6600	-	2	10
		#7142 Express	600/30	3100/30	-	-	6600	-	2	10
	#0975	#7350 Value	600/30	3100/30	-	-	6600	-	2	10
#8327	#0970	#7143 Express	1200/60	3800/60	-	2600	8200	-	3	10
		#7148 Express	1200/60	3800/60	-	2600	8200	-	3	10
		#7144 Express	3800/60	-	-	8200	-	-	10	-
		#7152 Express	3800/60	-	-	8200	-	-	10	-
	#0975	#7352 Value	1200/60	3800/60	-	2600	8200	-	3	10
	#0906	#7366 Solution	1200/1200	-	-	2600	-	-	3	-
		#7373 High Availability	1200/1200	-	-	2600	-	-	3	-
		#7374 High Availability	2800/2800	-	-	6100	-	-	7	-
		#7381 Telephony 100	3800/0	-	-	8200	-	-	10	-
		#7382 Telephony 250	3800/0	-	-	8200	-	-	10	-
		#7383 Telephony 500	3800/0	-	-	8200	-	-	10	-
		#7691 Collaboration	3800/0	-	-	8200	-	-	10	-
		#7710 CBU	1200/1200	-	-	2600	-	-	3	-
		#7711 CBU	2800/2800	-	-	6100	-	-	7	-
		#7712 CBU Standard	3800/0	-	-	8200	-	-	10	-
		#7734 Enterprise	1200/1200	-	-	2600	-	-	3	-
		#7735 Enterprise	2800/2800	-	-	6100	-	-	7	-
		#7784 Standard	3800/0	-	-	8200	-	-	10	-
		#7786 Solution Entry	3800/0	-	-	8200	-	-	10	-
		#7788 1-way SAP	3800/0	-	-	8200	-	-	10	-

9405/9406 Model 520+										
Processor feature	Server feature	Configuration feature[6a]	Processor/5250 CPW[5]			MCU[2a]			LPAR	
			Base	with Accelerator[2b]	2-way with maximum 5250	Base	with Accelerator[2b]	2-way	Base	with Accelerator[2b]
#8330	#0906	#7375 High Availability	3800/3800	-	7100/7100	8200	-	15600	10/processor	
		#7384 Telephony 1000	3800/0	-	7100/0	8200	-	15600	10/processor	
		#7720 CBU Standard	3800/0	-	7100/0	8200	-	15600	10/processor	
		#7721 CBU	3800/3800	-	7100/7100	8200	-	15600	10/processor	
		#7736 Enterprise	3800/3800	-	7100/7100	8200	-	15600	10/processor	
		#7785 Standard	3800/0	-	7100/0	8200	-	15600	10/processor	
		#7787 Solution Growth	3800/0	-	7100/0	8200	-	15600	10/processor	
		#7789 2-way SAP	-	-	7100/0	-	-	15600	10/processor	

9405/9406 Model 520+			
Processor feature	**#8325**	**#8327**	**#8330**
Number/type/speed of processor	1/POWER5+/1.9 GHz	1/POWER5+/1.9 GHz	1/2-way/POWER5+/1.9 GHz
L2 Cache (MB)	1.9	1.9	1.9
L3 Cache (MB)	0	36	36
Main storage (GB min/max)	1/32	1/32	1/32
Main storage DIMMs (min/max)	2/8	2/8	2/8
Minimum i5/OS/LIC level	V5R3M0/V5R3M5	V5R3M0/V5R3M5	V5R3M0/V5R3M5
Software group [6a]	P05	P10	P20

3.7.1 9405 Model 520 Express configurations

The 9405 Model 520 Express configurations provide ready-to-run, fixed configurations as shown in the following table. The Express configurations are based on the 9406 Value Editions.

9405 Model 520 Express configurations							
Configuration	**Entry**	**Entry Plus**	**Entry Plus with RAID**	**Growth**	**Growth with RAID**	**Turbo**	**Turbo with RAID**
CPW	600	600	600	1200	1200	3800	3800
CPW with Accelerator	3100	3100	3100	3800	3800	N/A	N/A
5250 CPW	30	30	30	60	60	60	60
LPARs (i5/OS/ total)	2/10	2/10	2/10	3/10	3/10	10/10	10/10
Server feature	0970	0970	0970	0970	0970	0970	0970
Processor	8325	8325	8325	8327	8327	8327	8327
Configuration	7140	7141	7142	7148	7143	7144	7152
Disk[1]	2x#9256 (2x35 GB)	2x#9256 (2x35 GB)	4x#9256 (4x35 GB)	2x#9256 (2x35 GB)	4x#9256 (4x35 GB)	2x#9256 (2x35 GB)	4x#9256 (4x35 GB)
Disk[1]	2x#9613 (2x70 GB)	2x#9613 (2x70 GB)	4x#9613 (4x70 GB)	2x#9613 (2x70 GB)	4x#9613 (4x70 GB)	2x#9613 (2x70 GB)	4x#9613 (4x70 GB)
Disk protection	0040 Mirror	0040 Mirror	0041 RAID-5	0040 Mirror	0041 RAID-5	0040 Mirror	0041 RAID-5
Cache/RAID	None	None	9510	None	9510	None	9510
Console options select one [3]	#5540/#5553 #5550/#5552	#5540/#5553 #5550/#5552	#5540/#5553 #5550/#5552	#5540/#5553 #5550/#5552	#5540/#5553 #5550/#5552	#5540/#5553 #5550/#5552	#5540/#5553 #5550/#5552
RIO loops	0	0	0	0	0	0	0
DDR2 memory	9548 (1 GB)	9548 (1 GB)	9548 (1 GB)	9549 (2 GB)	9549 (2 GB)	9553 (4 GB)	9553 (4 GB)
30 GB QIC tape	9653	9653	9653	9653	9653	9653	9653
DVD-ROM	9540	9540	9540	9540	9540	9540	9540
Modem	9793/9794	9793/9794	9793/9794	9793/9794	9793/9794	9793/9794	9793/9794
Base IOP	9844	9844	9844	9844	9844	9844	9844
Twinax[2]	9746	9746	9746	9746	9746	9746	9746
Twinax[2]	4746	4746	4746	4746	4746	4746	4746
Software group	P05	P05	P05	P10	P10	P10	P10

Notes:

1. Effective April 2007, the Express configurations include 70 GB disk drives instead of 35 GB disk drives.
2. Effective 22 May 2007, new Express configuration orders have a chargeable #4746 twinax feature instead of the no-charge #9746 associated with #5540.
3. Other console options may be chosen via MES to the original order. Ensure all console options are available in your geography. The 9405 at i5/OS V5R3 and LIC V5R3M5 supports Twinax, LAN Console without IOP, and Direct Cable Operations Console. The 9405 at i5/OS V5R4M0 supports Twinax, LAN Console without IOP, Direct Cable Operations Console, and Thin Console.

Note: For this table, review footnote 6a in 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

3.8 System i Model 520 overview

The following tables provide the minimum and maximum system capacities for the Model 520. The values are package dependent.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address:

http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

http://www.mpginc.com

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

http://www.bmc.com

To review the footnotes for the following table, see 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

	9405 Model 520		
Processor feature	**#8950**	**#8951**	**#8972**
Server feature[9]	**#0900**	**#0901**	**#0912**
Number/type/ speed of processor	1/POWER5/ 1.5 GHz	1/POWER5/ 1.5 GHz	1/POWER5/ 1.5 GHz
Relative system performance [1, 2]			
Processor CPW	500	1000	2400
Mail and Calendar Users [2a, 9]	-	-	5500
5250 CPW [5]			
Express [6a]	30	60	60
L2 Cache (MB)	1.88	1.88	1.88
L3 Cache (MB)	0	0	0
Main storage (GB min/max)	1/32	2/32	4/32
Main storage DIMMs (minimum/maximum)	4/8	4/8	4/8
Logical partitions (LPAR)	2	4	10
Minimum i5/OS level/LIC level [8a]	V5R3M0/V5R3M0	V5R3M0/V5R3M0	V5R3M0/V5R3M0
Software group [6a]	P05	P10	P10

	9406 Model 520						
Processor feature	**#8950**	**#8951**	**#8952**	**#8953**	**#8954**	**#8955**	**#8972**
Server feature [9]	**#0900**	**#0901**	**#0902**	**#0903**	**#0904**	**#0905**	**#0912**
Number/ type/ speed of processor	1/ POWER5/ 1.5 GHz	1/ POWER5/ 1.5 GHz	1/ POWER5/ 1.5 GHz	1/ POWER5/ 1.5 GHz	1/ POWER5/ 1.65 GHz	2/ POWER5/ 1.65 GHz	1/ POWER5/ 1.5 GHz
Relative system performance[1, 2]							
Processor CPW	500	1000	1000	2400	3300	6000	2400
Mail and Calendar Users [2a]	---	2300	2300	5500	7300	13300	5500
5250 CPW [5]							
Value [6a]	30	60	-	-	-	-	60
Express [6a]	-	60	-	-	-	-	60
Standard [6a]	-	-	0	0	0	0	-
Solution [6a]	-	-	1000	-	-	-	-
Enterprise [6a]	-	-	1000	2400	3300	6000	-
High Availability [6a]	-	-	1000	2400	3300	6000	-
L2 Cache (MB)	1.88	1.88	1.88	1.88	1.88	1.88	1.88
L3 Cache (MB)	0	0	0	0	36	36	0
Main storage (GB min/max)	0.5/32	1/32	1/32	1/32	1/32	1/32	1/32
Main storage DIMMs (minimum/maximum)	2/8	4/8	4/8	4/8	4/8	4/8	4/8
Logical partitions (LPAR)	2	4	4	10	10	20	10
Minimum i5/OS level/LIC level	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0
Software group [6a]	P05	P10	P10	P10	P20	P20	P10

3.9 System i Model 525

The System i Model 525 focuses on small- to medium-sized business needs by delivering full POWER5+ performance and user-based i5/OS licensing in a 1/2-way system. The Model 525 supports 30 or more i5/OS users with greater systems scalability and partitioning capability than the Model 515. It is an easy-to-install, manageable system that provides the performance and reliability businesses expect.

Key attributes of the Model 525 include:

- Ability to run i5/OS, Linux, and AIX 5L applications on a single system and integrate IBM eServer xSeries servers running Windows
- 1/2-way system with a 1.9 GHz POWER5+ processor
- Two customizable system configuration options, Express and Capacity BackUp
- Support of 30 to unlimited i5/OS users
- P10 software tier
- Security and virus resistance

The System i Model 525 focuses on small- to medium-sized business needs. This 1/2-way system with full POWER5+ performance and user-based i5/OS licensing redefines the cost to acquire.

The user-based i5/OS licensing associated with the Model 525 provides added flexibility, enabling businesses to take advantage of i5/OS capabilities at a lower financial investment than available before with Model 520 processor and I/O attachment capabilities. The Model 525 includes license entitlements for 30 to unlimited users in blocks of 10 users. There is also an option for an unlimited user entitlement option for external i5/OS users (clients, vendors, or business partners).

When only one of the two processors has been permanently activated, the Model 525 has Capacity on Demand (CoD) options that make it possible to activate an additional processor resource in order to satisfy capacity needs that are associated with business growth or peaks. A key is required to activate the on/off CoD.

The Model 525 provides the full power of its POWER5+ processor available for either or both batch (non-interactive) and 5250 OLTP work. This translates to 3800 CPW (batch and 5250 OLTP) for the 1-way system and 7100 CPW for the 2-way system

The Model 525 does not have an upgrade path to a larger model such as the 550 or 570. However, upgrades to the Model 525 from the Model 520 or 810 are available.

Each Model 525 order is built to order and may be customized to provide exact hardware placement and IBM software preload. The Model 525 provides an integrated set of hardware capabilities including two 1 Gbps Ethernet LAN ports and a disk, tape, or DVD drive controller in the base. It is available as either a desk-side (tower) configuration or as a rack-mount configuration requiring 4 EIA units (4U) of rack space in a 19-inch rack.

The 9406 Model 525 comes with a one-year hardware warranty with 24x7 same-business-day service and one year of 9x5 software maintenance support (SWMA) for the included i5/OS license. The SWMA can be upgraded to 24x7 for three years.

3.10 System i Model 525 Editions overview

The 9406 Model 525 is offered as an Express Configuration, as a Capacity BackUp Configuration, and as a Solution Edition. The three Express Configurations package 30, 150, or an unlimited number of i5/OS user entitlements. The Capacity BackUp Configuration provides a second system for backup, high availability, and disaster recovery. This configuration includes 30 i5/OS user entitlements. Additional i5/OS user entitlements in 10 user increments can be added to the 30 or 150 entitlement Express Configurations and to the Capacity BackUp Configuration. For Capacity BackUp Configuration registration and additional information about the Capacity BackUp Edition, see the System i Capacity BackUp Editions Web page at:

http://www.ibm.com/systems/i/hardware/cbu

3.10.1 Base system unit and features

The Model 525 POWER5+ system supports a single processor card. The processor card supports eight DIMM DDR2 memory positions that allow memory to be plugged in the processor card (direct attach). Memory is plugged in pairs of DIMMs.

- #8330 1.9 GHz Processor (1/2-way) Processor
  - 1.9 MB L2 cache
  - 36 MB L3 cache

- Three media bays and one operator panel bay

  The three media bays consist of one half-height and two slimline bays. The half-height bay is for SCSI tape devices. The top slimline bay is usable by IBM i5/OS for the required DVD-ROM. The second slimline bay is a straight IDE and is usable only with AIX 5L or Linux partitions.
- Two system and two USB 2.0 ports
  - Neither USB port is usable by i5/OS.
  - Only system port T2 is usable by i5/OS (for #1827 Serial-UPS Conversion Cable).
- Two 10/100/1000 Mbps Ethernet ports

  One of these Ethernet ports is usable for a LAN console.
- Base service processor
- Two HMC ports and two SPCN ports
- Six PCI-X card slots
- Four disk slots
- Integrated disk, DVD, and tape controller
- Rack mount or desk-side specify

3.10.2 Express Editions

Model 525 Express configuration 1 (#7790)

- Hardware
  - 1/2-way system with one processor activation (3800 CPW); scalable up to two processor activations (7100 CPW)
  - One WAN IOA
  - LPAR capable
- Software
  - Licensing for i5/OS (one processor license)
  - Licensing for 30 i5/OS users (5722-SSC)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

Model 525 Express configuration 2 (#7791)

- Hardware
  - 1/2-way system with one processor activation (3800 CPW); scalable up to two processor activations (7100 CPW)
  - One WAN IOA
  - LPAR capable
- Software
  - Licensing for i5/OS (one processor license)
  - Licensing for 150 i5/OS users (5722-SSC)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

Model 525 Express configuration 3 (#7792)

- Hardware
  - 1/2-way system with one processor activation (3800 CPW); scalable up to two processor activations (7100 CPW)
  - One WAN IOA
  - LPAR capable
- Software
  - Licensing for i5/OS (one processor license)
  - Licensing for unlimited i5/OS users (5722-SSC)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

3.10.3 Capacity BackUp configuration

Model 525 Capacity BackUp configuration 1 (#6910)

- Hardware
  - 1/2-way system with one processor activation (3800 CPW); scalable up to two processor activations (7100 CPW)
  - One WAN IOA
  - LPAR capable
- Software
  - Licensing for i5/OS (one processor license)
  - Licensing for 30 i5/OS users (5722-SSC)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)

3.10.4 Solution Editions

The following Model 525 Solution Editions are available:

- System i 525 Solution Edition for Oracle JD Edwards Enterprise One (#6913)

  The applications that are supported are JD Edwards EnterpriseOne and World.
- System i 525 Solution Edition for SAP Applications (#6914)

  This configuration is intended for less than 100 SAP application users active. Among the SAP applications supported by the new edition are mySAP™, ERP, BI, CRM, Partition Load Manager, and SCM.

These application solutions are essentially the Model 525 versions of corresponding similar solution editions that are available on Models 520 and 550. Always consult with the application solution providers for additional application considerations and for proper system configuration performance sizing.

- Hardware
  - 1/2-way system with one processor activation – processor feature #8330, activation #8410 (3800 CPW); scalable up to two processor activations (7100 CPW)
  - One WAN IOA

- #9510 (#5727) disk controller with 40 MB write cache with four #9613 (#4327) 70.56 GB disk drives

  RAID or other disk protection, such as mirroring, is required. Disk protection by RAID is the default.
- LPAR capable
- Up to two of three available disk packages may be ordered with an initial order to increase system capacity at a reduced cost compared to unpackaged equivalent hardware:
  - #5567
  - #5568
  - #5569

- Software
  - Licensing for i5/OS (one processor license)
  - Licensing for up to 60 i5/OS users (5722-SSC)
  - iSeries Access (5722-XW1) unlimited users
  - IBM Director for i5/OS (5722-DR1)
  - IBM Web Enablement (5722-WE2)
  - One year P10 software maintenance included

3.11 System i Model 525 overview

The following tables provide the minimum and maximum system capacities for the Model 525.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at:

http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

http://www.mpginc.com

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

http://www.bmc.com

To review the footnotes for the following table, see 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

9406-525					
Processor feature	**Server feature**	**Configuration features**	**Processor CPW**	**No charge i5/OS user licenses**	**LPAR**
#8330	#0909	#6910 CBU Configuration 1	3800/7100	30	10/processor
		#7790 Express Configuration 1	3800/7100	30	10/processor
		#7791 Express Configuration 2	3800/7100	150	10/processor
		#7792 Express Configuration 3	3800/7100	Unlimited	10/processor
		#6913 Solution Edition: SAP Applications	3800/7100	60	10/processor
		#6914 Solution Edition: Oracle JD Edwards Applications	3800/7100	60	

	9406 Model 525
Processor feature	**#8330**
Server feature[9]	**#0909**
Number/type/ speed of processor	1/2-way/POWER5+ /1.9 GHz
Relative system performance [1, 2]	
Processor CPW	3800/7100
Mail and Calendar Users [2a, 9]	8200/15600
5250 CPW [5]	3800/7100
L2 Cache (MB)	1.88
L3 Cache (MB)	36
Main storage (GB min/max)	1/32
Main storage DIMMs (minimum/maximum)	2/8
Logical partitions (LPAR)	10/processor
Minimum i5/OS level/LIC level [8a]	V5R4M0/V5R4M5
Software group [6a]	P10

Numbers are for all 9405 and 9406 520/520+/525 processor features	**Base system unit**	**System maximum**
Disk storage (GB)[7d]		
Integrated minimum[7b]	0	
Integrated maximum[7a]	1109	39234
Total maximum [7, 7a]	-	39234
DASD arms maximum	8	278
Internal arms	8	278
External LUNs	-	278
Physical packaging		
Rack design - EIA units	4	4
External RIO-G ports	0/2	2
External RIO-G loops	0/1	1
PCI/PCI-X Expansion Tower	6	6
External xSeries Servers	8	8
PCI card slots[10a]	6	90
Communication lines[3]	8	192
LAN ports (includes embedded)	5	36
System x Integration (min/max)		
Internal xSeries servers	0/1	18
External xSeries adapters (IXA)	0	8

Numbers are for all 9405 and 9406 520/520+/525 processor features	Base system unit	System maximum
iSCSI adapters	0	21
Twinaxial workstation controllers	3	48
Twinaxial workstations	120	1920
Internal tape/CD/DVD [4]	1 tape/2 DVD	13 tapes/14 CD/DVD
External tape/optical/CD/DVD (single partition maximum)	0	18
External tape/optical/CD/DVD (system maximum)	0	36
Cryptographic coprocessor	0	8
Cryptographic accelerator	0	2

3.12 System i5 Model 550+ and i5 Model 550 overview

The following tables provide the minimum and maximum system capacities for the Models 550+ and 550. The values are package dependent.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address:

`http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html`

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

`http://www.mpginc.com`

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

`http://www.bmc.com`

To review the footnotes for the following table, see 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

	Model 550	Model 550+
Processor feature	**#8958**	**#8312**
Server feature[9]	**#0915**	**#0910**
Number/type/speed of processor	1/4/POWER5/1.65 GHz	1/4/POWER5+/1.9 GHz
Relative system performance[1, 2]		
Processor CPW	3300/12000	3800/14000
Mail and Calendar Users [2a, 9]	7300/26600	8200/30000
5250 CPW [5]		
Standard [6b]	0	0
Enterprise [6b]	3300/12000	3800/14000

	Model 550	Model 550+
Processor feature	**#8958**	**#8312**
Server feature[9]	**#0915**	**#0910**
High Availability[6b]	3300/12000	3800/14000
Capacity Backup	NA	3800/14000
Domino [6b]	0	0
Solution [6b]	3300/12000	3800/14000
Solution Edition for Oracle JDE Enterprise One[6b]	3300/12000	3800/14000
C2CRM with Domino[6b]	3300/12000	3800/14000
2-way SAP[6b]	0	0
4-way SAP[6b]	0	0
L2 Cache (MB)	1.9	1.9
L3 Cache (MB)	36	36
Main storage (GB min/max)	2/64	2 /64
Main storage DIMMs (minimum/maximum)	4/16	4/16
LPAR	10-40	10-40
Minimum i5/OS/LIC level	V5R3/V5R3M0	V5R3/V5R3M0
Software group[6b]	P20	P20

Numbers are for all 550+ and 550 processor features	Base system unit	System maximum
Disk storage (GB)[7d]		
Integrated minimum [7b]	0	0
Integrated maximum [7a]	1128	77051
Total maximum [7,7a]	-	77051
DASD arms maximum		
Internal arms	8	548
External LUNs	-	548
Physical packaging		
Rack design - EIA units	4	4
External RIO-G ports	2	4
External RIO-G loops	1	2
PCI/PCI-X Expansion Tower	6	12
External xSeries Servers	8	16
PCI card slots [10]	5	172
Communication lines[3]	6	320
LAN ports (includes embedded)	5	96
System x Integration (min/max)		
Internal xSeries servers	0/1	36
External xSeries adapters (IXA)	0	16
iSCSI adapters	0	27
Twinaxial workstation controllers	2	133
Twinaxial workstations	80	5320
Internal CD/DVD/tape [4]	2	26
External tape/optical/CD/DVD (LPAR)	2 (2)	18 (36)
Cryptographic coprocessor	1	8
Cryptographic accelerator	1	4

3.13 System i5 Model 570+ overview

The following tables provide the minimum and maximum system capacities for the Model 570+. The values are package dependent.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address:

http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

http://www.mpginc.com

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

http://www.bmc.com

To review the footnotes for the following table, see 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

	Model 570+			
Processor feature	**#8338 x 2**	**#8338 x 4**	**#8338 x 8**	**#8338 x 8**
Server feature	**#0934**	**#0935**	**#0936**	**#0937**
Number/ type/ speed of processor	2/4/ POWER5+/ 2.2 GHz	4/8/ POWER5+/ 2.2 GHz	8/16/ POWER5+/ 2.2 GHz	2/16/ POWER5+/ 2.2 GHz
Relative system performance[1, 2]				
Processor CPW	8400/16000	16700/31100	31100/58500	8400/58500
Mail and Calendar Users[2a, 9]	18200/34500	35500/67500	67500/130000	18200/130000
5250 CPW [5]				
Standard[6c]	0	0	0	0
Enterprise[6c]	8400/16000	16700/31100	131100/58500	-
High Availability[6c]	8400/16000	16700/31100	31100/58500	-
Capacity BackUp[6c]	-	-	-	8400/58500
L2 Cache (MB) per processor	1.9	1.9	1.9	1.9
L3 Cache (MB) per processor	36	36	36	36
Main storage (GB minimum/maximum)	4/128	8/256	16/512	16/512
Main storage DDR2 DIMMs (minimum/maximum)	8/16	16/32	32/64	32/64
Logical partitions (LPAR)[12]	20/40	40/80	80/160	20/160
Minimum i5/OS/LIC level [8]	V5R3M0/V5R3M0	V5R3M0/V5R3M0	V5R3M0/V5R3M0	V5R3M0/V5R3M0
Software group [6c]	P30	P40	P40	P40
Disk storage (GB)[7d]				

	Model 570+			
Processor feature	**#8338 x 2**	**#8338 x 4**	**#8338 x 8**	**#8338 x 8**
Server feature	**#0934**	**#0935**	**#0936**	**#0937**
Integrated minimum[7b]	0	0	0	0
Total maximum [7a]	77051	116000	193898	193898
DASD arms maximum	546	822	1374	1374
Internal arms	546	822	1374	1374
External LUNs	546	822	1374	1374
Physical packaging				
Rack Design - EIA units	4	8	16	16
External RIO-G ports	4	8	16	16
External RIO-G loops	2	4	8	8
PCI/PCI-X Expansion Tower	12	24	48	48
External xSeries Servers (IXA)	16	32	57	57
PCI card slots [10]	173	346	692	695
Communication lines [3]	320	480	480	480
LAN ports (includes embedded)	96	128	128	128
Integrated xSeries Servers	36	48	48	48
System x Integration (min/max)				
Internal xSeries servers	0/36	0/48	0/48	0/48
External xSeries adapters (IXA)	0/16	0/32	0/57	0/57
iSCSI adapters	0/42	0/84	0/168	0/168
Twinaxial workstation controllers	134	180	180	180
Twinaxial workstations	5360	7200	7200	7200
Internal DVD-ROM/ DVD-RAM [4]	1	2	4	4
Internal CD-ROM/Tape	0	0	0	0
Feature I/O Tower Tape/CD-ROM/DVD (combined system partition)	18 (25)	26 (36)	26 (48)	26 (48)
External tape (combined system partition)	18 (36)	26 (48)	26 (48)	26 (48)
External optical/CD/DVD (combined system partition)	26 (48)	26 (48)	26 (48)	26 (48)
Cryptographic coprocessor (combined system partition)	8 (32)	8 (32)	8 (32)	8 (32)
Cryptographic accelerator (combined system partition)	4 (8)	4 (8)	4 (8)	4 (8)

3.14 eServer i5 Model 570 overview

The following tables provide the minimum and maximum system capacities for the Model 570. The values are package dependent.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address:

http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

http://www.mpginc.com

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

http://www.bmc.com

To review the footnotes for the following table, see 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

	Model 570	
Processor feature	**#8961**	**#8961 (x2)**
Server feature	**#0919**	**#0920**
Number/type/speed of processor	0/2/POWER5/1.65 GHz	2/4/POWER5/1.65 GHz
Relative system performance[1, 2]		
Processor CPW	3300/6000	6350/12000
Mail and Calendar Users [2a, 9]	7300/13300	14100/26600
5250 CPW [5]		
Standard[6c]	0	0
Enterprise[6c]	3300/6000	6350/12000
L2 Cache (MB per processor)	1.9	1.9
L3 Cache (MB per processor)	36	36
Main storage (GB minimum/maximum)	2/65	2/128
Main storage DIMMs (minimum/maximum)	4/8	8/16
Logical partitions (LPAR)[12]	10/20	20/40
Minimum i5/OS level/LIC level [8]	V5R3M0/V5R3M0	V5R3M0/V5R3M0
Software group [6c]	P30	P30
Disk storage (GB)[7d]		
Integrated minimum[7b]	0	0
Total maximum[7a]	38949	77051
DASD arms maximum	276	546
Internal arms	276	546
External LUNs	276	546

	Model 570	
Processor feature	**#8961**	**#8961 (x2)**
Server feature	**#0919**	**#0920**
Physical packaging		
Rack design - EIA units	4	4
External RIO-G ports	2	4
External RIO-G loops	1	2
PCI/PCI-X Expansion Tower	6	12
External xSeries Servers (IXA)	8	16
PCI card slots [10]	90	173
Communication lines [3]	278	320
LAN ports (includes embedded)	71	96
Integrated xSeries Servers	19	36
Twinaxial workstation controllers	69	133
Twinaxial workstations	2760	5360
Internal DVD-ROM/ DVD-RAM [4]	1	1
Internal CD-ROM/Tape	0	0
I/O Tower Tape/CD-ROM/DVD	13 (13)	18 (25)
External tape (LPAR)	18 (36)	18 (36)
External optical/CD/DVD (LPAR)	26 (48)	26 (48)
Cryptographic coprocessor (combined system partition)	8	8
Cryptographic accelerator (combined system partition)	4 (8)	4 (8)

	Model 570					
Processor feature	**#8971**	**#8971 x 2**	**#8971 x 4**	**#8971 x 6**	**#8971 x8**	**#8971**
Server feature	**#0930**	**#0921**	**#0922**	**#0924**	**#0926**	**#0928**
Number/ type/ speed of processor	1/2/ POWER5/ 1.65 GHz	2/4/ POWER5/ 1.65 GHz	5/8/ POWER5/ 1.65 GHz	9/12/ POWER5/ 1.65 GHz	13/16/ POWER5/ 1.65 GHz	2/16/ POWER5/ 1.65 GHz
Relative system performance[1, 2]						
Processor CPW	3300/6000	6350/12000	15200/25500	25500/33400	36300/44700	6350/44700
Mail and Calendar Users[2a, 9]	14100/ 26600	14100/25900	33600/52500	57300/77000	83600/102000	14100/102000
5250 CPW [5]						
Standard[6c]	0	0	0	0	0	0
Enterprise[6c]	3300/6000	6350/12000	15200/25500	25500/33400	36300/44700	-
High Availability[6c]	3300/6000	6350/12000	15200/25500	25500/33400	36300/44700	-
Capacity BackUp[6c]	-	-	-	-	-	6350/44700
L2 Cache (MB) per processor	1.9	1.9	1.9	1.9	1.9	1.9
L3 Cache (MB) per processor	36	36	36	36	36	36
Main storage (GB minimum/maximum)	2/64	4/128	8/256	12/384	16/512	16/512
Main storage DIMMs (minimum/maximum)	4/8	8/16	16/32	24/48	32/64	32/64
Logical partitions (LPAR)[12]	10/20	20/40	50/80	90/120	120/160	20/160
Minimum i5/OS level/LIC level[8]	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0	V5R3M0/ V5R3M0
Software group [6c]	P30	P30	P40	P40	P40	P40
Disk storage (GB)[7d]						
Integrated minimum[7b]	0	0	0	0	0	0

	Model 570					
Processor feature	**#8971**	**#8971 x 2**	**#8971 x 4**	**#8971 x 6**	**#8971 x8**	**#8971**
Server feature	**#0930**	**#0921**	**#0922**	**#0924**	**#0926**	**#0928**
Total maximum [7a]	38949	77051	116000	154949	193898	193898
DASD arms maximum	276	546	822	1098	1374	1374
Internal arms	276	546	822	1098	1374	1374
External LUNs	276	546	822	1098	1374	1374
Physical packaging						
Rack Design - EIA units	4	4	8	12	16	16
External RIO-G ports	2	4	8	12	16	16
External RIO-G loops	1	2	4	6	8	8
PCI/PCI-X Expansion Tower	6	12	24	36	48	48
External xSeries Servers (IXA)	8	16	32	48	57	57
PCI card slots [10]	90	173	346	519	692	692
Communication lines [3]	278	320	480	480	480	480
LAN ports (includes embedded)	52	96	128	128	128	128
Integrated xSeries Servers	19	36	48	48	48	48
Twinaxial workstation controllers	69	134	180	180	180	180
Twinaxial workstations	2760	5360	7200	7200	7200	7200
Internal DVD-ROM/ DVD-RAM [4]	1	1	2	3	4	4
Internal CD-ROM/Tape	0	0	0	0	0	0
Feature I/O Tower Tape/CD-ROM /DVD (combined system partition)	13 (13)	18 (25)	26 (36)	26 (48)	26 (48)	26 (48)
External tape (LPAR) (combined system partition)	18 (36)	18 (36)	26 (48)	26 (48)	26 (48)	26 (48)
External optical/CD/DVD (combined system partition)	26 (48)	26 (48)	26 (48)	26 (48)	26 (48)	26 (48)
Cryptographic coprocessor (combined system partition)	8 (32)	8 (32)	8 (32)	8 (32)	8 (32)	8 (32)
Cryptographic accelerator (combined system partition)	4 (8)	4 (8)	4 (8)	4 (8)	4 (8)	4 (8)

3.15 System i5 Model 595 and Model 595+ overview

The following tables provide the minimum and maximum system capacities for all 595 models. The values are package dependent.

CPW: CPW has been the standard performance rating metric used for years to compare relative processor ratings among the IBM System i family of processor models. *5250 CPW* is an approximate value that represents the amount of total CPW processing power to be used to perform 5250 OLTP work. 5250 CPW has been known as *Interactive CPW* on earlier System i models.

Do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address:

http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address:

http://www.mpginc.com

In addition, consider using BMC Patrol for iSeries - Predict at the following address:

http://www.bmc.com

To review the footnotes for the following table, see 3.16, “Notes for System i5 Models 515, 520, 525, 550, 570, and 595” on page 90.

	Model 595+				
Processor feature	**#8968**	**#8968 x 2**	**#8968 x 4**	**#8968**	**#8968 x 2**
Server feature	**#0953**	**#0954**	**#0955**	**#0958**	**#0959**
Number/type/ speed of processor	8/16 /POWER5+/ 2.3 GHz	16/32 /POWER5+/ 2.3 GHz	32/64 /POWER+/ 2.3 GHz	2/16 /POWER5+/ 2.3 GHz	4/32 /POWER5+/ 2.3 GHz
Relative system performance[1, 2]					
Processor CPW	31500/58800	61000/108000	108000/216000	8200/58800	16000/108000
Mail and Calendar Users [2a, 9]	68400/131K[2c]	131K/242K[2c]	242K/460K [2c]	18300/131K[2c]	35800/242K[2c]
5250 CPW [5]					
Standard[6d]	0	0	0	0	0
Enterprise[6d]	31500/58800	61000/108000	108000/216000	-	-
High Availability[6d]	31500/58800	61000/108000	108000/216000	-	-
Capacity BackUp[6]	-	-	-	8200/58800	16000/108000
L2 Cache (MB per processor) MCM	1.9	1.9	1.9	1.9	1.9
L3 Cache (MB per processor) MCM	36	36	36	36	36
Main storage (GB minimum/maximum)[11]	8/512	16/1024	32/2048	8/512	16/1024
Main storage DIMMs (minimum/maximum)	4/16	4/32	4/64	4/16	4/32
Logical partitions (LPAR)[12]	160	254	254	160	254
Minimum i5/OS/LIC level [8]	V5R3/V5R3M5	V5R3/V5R3M5	V5R3/V5R3M5	V5R3/V5R3M5	V5R3/V5R3M5
Software group [6d]	P50	P50	P60	P50	P50
Disk storage (GB)[7d]					
Integrated minimum [7b]	0	0	0	0	0

Model 595+					
Processor feature	**#8968**	**#8968 x 2**	**#8968 x 4**	**#8968**	**#8968 x 2**
Server feature	**#0953**	**#0954**	**#0955**	**#0958**	**#0959**
Total maximum[7a]	228614	381024	381024	228614	381024
DASD arms maximum[7c]	1620	2700	2700	1620	2700
Internal arms	1620	2700	2700	1620	2700
External LUNs	1620	2700	2700	1620	2700
Physical packaging[13]					
Rack design - EIA units	18	18	18	18	18
External RIO-G ports	14	30	62	14	30
External RIO-G loops [10b]	7	15	31	7	15
PCI/PCI-X Expansion Tower	36	72	96	36	72
External xSeries Servers (IXA)	48	57	57	48	57
PCI card slots [10]	504	1008	1152	504	1008
Communication lines [3]	600	600	600	600	600
LAN ports (includes embedded)	160	160	160	160	160
Integrated xSeries Servers	60	60	60	60	60
System x Integration (min/max)					
Internal xSeries servers	0,1/60	0,1/60	0,1/60	0,1/60	0,1/60
External xSeries adapters (IXA)	0,1/48	0,1/57	0,1/57	0,1/48	0,1/57
iSCSI adapters	0,1/128	0,1/128	0,1/128	0,1/128	0,1/128
Twinaxial workstation controllers	180	180	180	180	180
Twinaxial workstations	7200	7200	7200	7200	7200
Internal DVD-ROM/DVD-RAM [4]	2	2	2	2	2
Internal CD-ROM/Tape	0	0	0	0	0
Feature I/O Tower Tape/CD-ROM/DVD (combined system partition)	26 (60)	26 (60)	26 (60)	26 (60)	26 (60)
External tape (combined system partition)	26 (60)	26 (60)	26 (60)	26 (60)	26 (60)
External optical/CD/DVD (combined system partition)	26 (60)	26 (60)	26 (60)	26 (60)	26 (60)
Cryptographic coprocessor (combined system partition)	8 (32)	8 (32)	8 (32)	8 (32)	8 (32)
Cryptographic accelerator (combined system partition)	4 (16)	4 (16)	4 (16)	4 (16)	4 (16)

Model 595				
Processor feature	**#8966, #8973**	**#8966, #8973 x 2**	**#8966, #8973 x 4**	**#8966, #8973 x 2**
Server feature	**#0940**	**#0941**	**#0943**	**#0944**
Number/type/ speed of processor	8/16 /POWER5/ 1.9 GHz	16/32 /POWER5/ 1.9 GHz	32/64 /POWER5/ 1.9 GHz	4/32/POWER5/ 1.9 GHz
Relative system performance[1, 2]				
Processor CPW	26700/50500	51000/92000	92000/184000	13600/92000
Mail and Calendar Users [2a, 9]	60500/114000	115000/213000[2c]	213000/405000[2c]	31500/213000[2c]
5250 CPW [5]				
Standard[6d]	0	0	0	0
Enterprise[6d]	26700/50500	51000/92000	92000/184000	-
High Availability[6d]	26700/50500	51000/92000	92000/184000	-
Capacity BackUp[6]	-	-	-	13600/92000
L2 Cache (MB per processor) MCM	1.9	1.9	1.9	1.9
L3 Cache (MB per processor) MCM	36	36	36	36
Main storage (GB minimum/maximum)[11]	8/512	16/1024	32/2048	16/1024
Main storage DIMMs (minimum/maximum)	4/16	4/32	4/64	4/32

Model 595				
Processor feature	**#8966, #8973**	**#8966, #8973 x 2**	**#8966, #8973 x 4**	**#8966, #8973 x 2**
Server feature	**#0940**	**#0941**	**#0943**	**#0944**
Logical partitions (LPAR)[12]	160	254	254	254
Minimum i5/OS level/LIC level [8]	V5R3M0/V5R3M0	V5R3M0/V5R3M0	V5R3M0/V5R3M0	V5R3M0/V5R3M0
Software group [6d]	P50	P50	P60	P50
Disk storage (GB)[7d]				
Integrated minimum [7b]	0	0	0	0
Total maximum[7a]	228614	381024	381024	381024
DASD arms maximum[7c]	1620	2700	2700	2700
Internal arms	1620	2700	2700	2700
External LUNs	1620	2700	2700	2700
Physical packaging[13]				
Rack design - EIA units	18	18	18	18
External RIO-G ports	14	30	62	30
External RIO-G loops [10b]	7	15	31	15
PCI/PCI-X Expansion Tower	36	72	96	72
External xSeries Servers (IXA)	48	57	57	57
PCI card slots [10]	504	1008	1152	1008
Communication lines [3]	600	600	600	600
LAN ports (includes embedded)	160	160	160	160
Integrated xSeries Servers	60	60	60	60
Twinaxial workstation controllers	180	180	180	180
Twinaxial workstations	7200	7200	7200	7200
Internal DVD-ROM/DVD-RAM [4]	2	2	2	2
Internal CD-ROM/Tape	0	0	0	0
Feature I/O Tower Tape/CD-ROM/DVD (combined system partition)	26 (60)	26 (60)	26 (60)	26 (60)
External tape (combined system partition)	26 (60)	26 (60)	26 (60)	26 (60)
External optical/CD/DVD (combined system partition)	26 (60)	26 (60)	26 (60)	26 (60)
Cryptographic coprocessor (combined system partition)	8 (32)	8 (32)	8 (32)	8 (32
Cryptographic accelerator (combined system partition)	4 (16)	4 (16)	4 (16)	4 (16)

	Model 595		
Processor feature	**#8981**	**#8981 x 2**	**#8981 x 4**
Server feature	**#0946**	**#0947**	**#0952**
Number/type/ speed of processor	8/16/POWER5/ 1.65 GHz	16/32/POWER5/ 1.65 GHz	32/64/POWER5/ 1.65 GHz
Relative system performance[1, 2]			
Processor CPW	24500/45500	46000/85000	86000/165000
Mail and Calendar Users [2a, 9]	54000/104000	105000/194000	196000/375000
5250 CPW [5]			
Standard[6d]	0	0	0
Enterprise[6d]	24500/45500	46000/85000	86000/165000
High Availability[6d]	24500/45500	46000/85000	86000/165000
Capacity BackUp[6]	-	-	-
L2 Cache (MB per processor) MCM	1.9	1.9	1.9
L3 Cache (MB per processor) MCM	36	36	36
Main storage (GB minimum/maximum)[11]	8/512	16/1024	32/2048

	Model 595		
Processor feature	**#8981**	**#8981 x 2**	**#8981 x 4**
Server feature	**#0946**	**#0947**	**#0952**
Main storage DIMMs (minimum/maximum)	4/16	4/32	4/64
Logical partitions (LPAR)[12]	160	254	254
Minimum i5/OS level/LIC level [8]	V5R3M0/V5R3M0	V5R3M0/V5R3M0	V5R3M0/V5R3M0
Software group [6d]	P50	P50	P60
Disk storage (GB)[7d]			
Integrated minimum [7b]	0	0	0
Total maximum[7a]	228614	381024	381024
DASD arms maximum [7c]	1620	2700	2700
Internal arms	1620	2700	2700
External LUNs	1620	2700	2700
Physical packaging			
Rack design - EIA units[13]	18	18	18
External RIO-G ports	14	30	62
External RIO-G loops [10b]	7	15	31
PCI/PCI-X Expansion Tower	36	72	96
External xSeries Servers (IXA)	48	57	57
PCI card slots [10]	504	1008	1152
Communication lines [3]	600	600	600
LAN ports (includes embedded)	160	160	160
Integrated xSeries Servers	60	60	60
Twinaxial workstation controllers	180	180	180
Twinaxial workstations	7200	7200	7200
Internal DVD-ROM/DVD-RAM [4]	2	2	2
Internal CD-ROM/Tape	0	0	0
Feature I/O Tower Tape/CD-ROM/DVD (combined system partition)	26 (60)	26 (60)	26 (60)
External tape (combined system partition)	26 (60)	26 (60)	26 (60)
External optical/CD/DVD (combined system partition	26 (60)	26 (60)	26 (60)
Cryptographic coprocessor (combined system partition)	8 (32)	8 (32)	8 (32)
Cryptographic accelerator (combined system partition)	4 (16)	4 (16)	4 (16)

3.16 Notes for System i5 Models 515, 520, 525, 550, 570, and 595

Note 1	CPW is used to measure the relative performance ratings of all System i model processors announced from September 1996 onward. The CPW value is measured on maximum configurations. The type and number of disk devices, the number of workstation controllers, the amount of memory, the system model, other factors, and the application running determine what performance is achievable. Do not use CPW to compare performance of System i models with other hardware platforms or real-world i5/OS applications. As a reminder, do not use CPW as the sole metric for sizing workloads on any IBM System i model. Additional considerations include disk I/O-per-second rates and application workload attributes. We recommend that you size an IBM System i model workload using a sizing tool, such as the IBM Systems Workload Estimator, which you can access at the following address: http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html You can also use Performance Navigator from the Midrange Performance Group, which you can learn more about at the following address: http://www.mpginc.com **Note**: The Models 515 and 525 require i5/OS V5R4 or later. The 520 1.9 GHz, 550 1.9 GHz, 570 2.2 GHz, and 595 2.3 GHz models all require either of the following releases: ► i5/OS V5R3 with machine code (LIC) level V5R3M5 ► i5/OS V5R4 or later
Note 2	Processor performance represents the relative performance (maximum capacity) of a processor feature running CPW in a client/server environment. Processor capacity is achievable when the commercial workload is not constrained by main storage and DASD. Performance of the 5250 CPW represents the relative performance available to perform host-centric workloads. The amount of 5250 CPW capacity consumed reduces the available processor capacity by the same amount.
Note 2a	Mail and Calendar Users (MCU) is a relative performance measurement that is derived by performing mail and calendar functions using Domino and Notes clients. The MCU workload represents users on a Notes client who are reading, updating, or deleting documents in an e-mail database. It also represents users who are performing lookups in the Domino directory and scheduling calendar appointments and invitations. Reported values reflect 70% processor utilization to allow for growth and peak loads in excess of customer workload estimates. While MCU ratings provide a better means to compare Domino capacities relative to other System i models running i5/OS than CPW, MCU should not be used as a sizing guideline for the number of Domino users in a real world environment. For sizing, we recommend that you use a formal sizing tool, such as IBM Systems Workload Estimator, which you can find on the Web at: http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html For references to other sizing references in this paper, refer to Chapter 16, “System i family upgrades” on page 599. Domino and Notes Mail and Calendar use is not recommended on Model 520 #8325 processors.
Note 2b	The optional Accelerator for System i5 feature provides a dramatic boost in processor CPW for additional workloads and partitions.
Note 2c	The MCU rating is a projected value.
Note 2d	No charge feature #9844 IOP on the Models 9407-515 Express Configurations #1 and #3, 9407-515 Base Configurations #1 and #2, and all 9406-525 configurations was removed from the configurator, e-config, on 9 October 2007 and orders received after 26 October 2007 with feature #9844 are invalid. If an IOP is required after this date, feature #2844 must be ordered instead of #9844. No charge feature #9844 remains a valid feature on 9407-515 Express Configuration #2.
Note 3	One line is used if #5544 System Console on Operations Console is used. One line can be used if #5546 System Console on 100 Mbps Token Ring or #5548 System Console on 100 Mbps Ethernet is selected and the #0367 Operations Console PCI Cable must be connected. The numbers include the ECS line.
Note 4	There must be one tape, DVD-ROM or DVD-RAM per system. See the details for each system. For Models 870 and 890, there must be one DVD-RAM or DVD-ROM in the #9094 Base PCI I/O Enclosure.

Note 5

5250 CPW (Interactive) is an approximate value that reflects the amount of Processor CPW that can be used for workloads performing 5250-based tasks. Keep in mind the following points:

- The System i Enterprise Edition provides maximum 5250 CPW support (up to 100% of the capacity of the active processor CPW).
- The System i Standard Edition provides zero CPW for 5250 work. Limited 5250 CPW is available for a system administrator to use 5250 display device I/O to manage various aspects of the server. Multiple administrative jobs exceed this capability.

  There is a single job/console exception for interactive (5250 OLTP) work. This means when a single job within an i5/OS partition (or the entire system i5/OS) is active and that job performs 5250 OLTP functions, almost total processor capacity of that partition (or system) is available for the work being done by that single job. This availability is regardless of the system limitations that are associated with interactive application capacity. Keep this in mind when performing certain functions, such as running a CPU-intensive query or service diagnostics. When multiple jobs performing 5250 functions become active, the single job exception is no longer available and their performance is severely restricted. This single job exception not only applies to Standard Edition partitions, but also to the older System i Base (no interactive 5250 capacity) models.

  When more than one job must be active, consider running these CPU-intensive functions as batch jobs rather than from a 5250 workstation.
- A task submitted through a 5250 session (5250 device or 5250 emulation) that does display or printer I/O requires 5250 CPW.
- A task submitted through a 5250 session (5250 device or 5250 emulation) as a "batch" job is not considered 5250 OLTP work and does not require any 5250 CPW unless the task does display or printer I/O.
- Maximum 5250 CPW is equivalent to the Processor CPW for the active processor.

Note 6a Models 515, 520+ 520, 525

Software group is determined by the combination of processor feature and edition feature. Display the QPRCFEAT system value or DSPHDWRSC TYPE(*AHW) to display the processor feature code value. This value is also shown for the Capacity Card CCIN value when using SST to perform a Capacity Upgrade on Demand. The following table provides a cross-reference.

Processor	Server feature	Edition/ configuration feature	Software group	Processor feature code or QPRCFEAT value/with accelerator
#8325	#0970	#7140 Express	P05	7140/7680
		#7141 Express	P05	7141/7681
		#7142 Express	P05	7142/7682
	#0975	#7350 Value	P05	7350/7355
#8327	#0970	#7143 Express	P10	7143/7354
		#7144 Express	P10	7144
		#7148 Express	P10	7148/7687
		#7152 Express	P10	7152
	#0975	#7352 Value	P10	7352/7357
	#0906	#7366 Solution	P10	7366
		#7373 High Availability	P10	7373
		#7374 High Availability	P10	7374
		#7381 Telephony 100	P10	7784
		#7382 Telephony 250	P10	7784
		#7383 Telephony 500	P10	7784
		#7691 Collaboration	P10	7690
		#7692 Oracle JDE	P10	7690
		#7710 CBU	P10	7734

Note 6a Models 515, 520+ 520, 525 (contd.)	Processor	Server feature	Edition/ configuration feature	Software group	Processor feature code or QPRCFEAT value/with accelerator
	#8327 (contd.)	#0906 (contd.)	#7711 CBU	P10	7735
			#7712 CBU Standard	P10	7784
			#7734 Enterprise	P10	7734
			#7735 Enterprise	P10	7735
			#7784 Standard	P10	7784
			#7786 Solution Entry	P10	7784
			#7788 1-way SAP	P10	7784
		#4901	#6010 515 Exp Cfg 1	P05	6010
			#6011 515 Exp cfg 2	P05	6011
			#6018 515 Base Cfg 1	P05	6018
	#8330	#0906	#7375 High Availability	P20	7375
			#7384 Telephony 1000	P20	7785
			#7720 CBU Standard	P20	7785
			#7721 CBU	P20	7736
			#7736 Enterprise	P20	7736
			#7785 Standard	P20	7785
			#7787 Solution Growth	P20	7785
			#7789 2-way SAP	P20	7785
		#0909	#6910 525 CBU	P10	6910
			$6913 525 Oracle JDE	P10	6913
			#6914 525 SAP	P10	6914
			#7790 525 Exp Cfg 1	P10	7790
			#7791 525 Exp Cfg 2	P10	7791
			#7792 525 Exp Cfg 3	P10	7792
		#4903	#6021 515 Exp Cfg 3	P05	6021
			#6028 515 Base Cfg 2	P05	6028
	#8950	#0900	#7390 Express	P05	7390
			#7391 Express	P05	7390
			#7393 Express	P05	7390
			#7411 Express	P05	7411
			#7413 Express	P05	7413
			#7417 Express	P05	7417
			#7450 Value	P05	7450

Note 6a Models 515, 520+ 520, 525 (contd.)	Processor	Server feature	Edition/ configuration feature	Software group	Processor feature code or QPRCFEAT value/with accelerator
	#8951	#0901	#7392 Express	P05	7392
			#7394 Express	P05	7392
			#7414 Express	P10	7414
			#7420 Express	P10	7420
			#7451 Value	P10	7451
	#8952	#0902	#7458 Standard	P10	7458
			#7459 Enterprise	P10	7459
			#7541 Solution	P10	7459
			#7552 High Availability	P10	7459
	#8953	#0903	#7452 Standard	P10	7452
			#7453 Enterprise	P10	7453
			#7553 High Availability	P10	7453
	#8954	#0904	#7454 Standard	P20	7454
			#7455 Enterprise	P20	7455
			#7554 High Availability	P20	7455
	#8955	#0905	#7456 Standard	P20	7456
			#7457 Enterprise	P20	7457
			#7555 High Availability	P20	7457
	#8972	#0912	#7395 Express	P10	7395
			#7396 Express	P10	7395
			#7397 Value	P10	7397

Note 6b Models 550+ 550

Software group is determined by the combination of processor feature and edition feature. Display the QPRCFEAT system value or DSPHDWRSC TYPE(*AHW) to display the processor feature code value. This value is also shown for the Capacity Card CCIN value when using SST to perform a Capacity Upgrade on Demand. The following table provides a cross-reference.

Processor	Server feature	Edition feature	Software group	Processor feature code or QPRCFEAT value
#8312	#0910	#7154 Standard	P20	7154
		#7155 Enterprise	P20	7155
		#7551 High Availability	P20	7551
		#7629 Domino	P20	7629
		#7630 Solution	P20	7630
		#7631 Oracle JDE Enterprise One	P20	7630
		#7632 C2CRM	P20	7630
		#7640 2-way SAP	P20	7640
		#7641 4-way SAP	P20	7640

	Processor	Server feature	Edition feature	Software group	Processor feature code or QPRCFEAT value
Note 6b Models 550+ 550 (contd.)	#8958	#0915	#7462 Standard	P20	7462
			#7463 Enterprise	P20	7463
			#7530 Domino	P20	7462
			#7558 Solution	P20	7463
			#7531 Solution Edition for PeopleSoft® Enterprise One	P20	7463
			#7532 C2CRM Solution Edition with Domino	P20	7463
			#7533 2-way SAP Solution Edition	P20	7462
			#7534 4-way SAP Solution Edition	P20	7462
Note 6c Models 570+ 570	Software group is determined by the combination of processor feature and edition feature. Display the QPRCFEAT system value or DSPHDWRSC TYPE(*AHW) to display the processor feature code value. This value is also shown for the Capacity Card CCIN value when using SST to perform a Capacity Upgrade on Demand. The following table provides a cross-reference.				
	Processor	**Server feature**	**Edition feature**	**Software group**	**Processor feature code or QPRCFEAT value**
	#8338	#0934	#7757 Standard	P30	7757
			#7747 Enterprise	P30	7747
			#7763 High Availability	P30	7763
		#0935	#7758 Standard	P40	7758
			#7748 Enterprise	P40	7748
			#7764 High Availability	P40	7764
		#0936	#7759 Standard	P40	7759
			#7749 Enterprise	P40	7749
			#7765 High Availability	P40	7765
		#0937	#7760 Capacity BackUp	P30	7760
	#8961	#0919	#7488 Standard	P30	7450
			#7489 Enterprise	P30	7451
		#0920	#7469 Standard	P30	7458
			#7470 Enterprise	P30	7459
	#8971	#0921	#7494 Standard	P30	7494
			#7495 Enterprise	P30	7495
			#7560 High Availability	P30	7495
		#0922	#7471 Standard	P40	7441
			#7472 Enterprise	P40	7472
			#7561 High Availability	P40	7472

Note 6c Models 570+ 570 (contd.)	**Processor**	**Server feature**	**Edition feature**	**Software group**	**Processor feature code or QPRCFEAT value**
	#8971 (contd.)	#0924	#7473 Standard	P40	7473
			#7474 Enterprise	P40	7474
			#7562 High Availability	P40	7474
		#0926	#7475 Standard	P40	7475
			#7476 Enterprise	P40	7476
			#7563 High Availability	P40	7476
		#0928	#7570 Capacity BackUp	P40	7570
		#0930	#7490 Standard	P30	7490
			#7491 Enterprise	P30	7491
			#7559 High Availability	P30	7491
Note 6d Model 595	Software group is determined by the combination of processor feature and edition feature. Display the QPRCFEAT system value or DSPHDWRSC TYPE(*AHW) to display the processor feature code value. This value is also shown for the Capacity Card CCIN value when using SST to perform a Capacity Upgrade on Demand. The following table provides a cross-reference.				
	Processor	**Server feature**	**Edition feature**	**Software group**	**Processor feature code or QPRCFEAT value**
	#8966	#0940	#7480 Standard	P50	7480
			#7481 Enterprise	P50	7481
			#7580 High Availability	P50	7481
		#0941	#7482 Standard	P50	7482
			#7483 Enterprise	P50	7483
			#7581 High Availability	P50	7483
		#0943	#7486 Standard	P60	7486
			#7487 Enterprise	P60	7487
			#7583 High Availability	P60	7487
		#0944	#7590 Capacity BackUp	P50	7590
	#8968	#0953	#5870 Standard	P50	5870
			#5890 Enterprise	P50	5890
		#0954	#5871 Standard	P50	5871
			#5891 Enterprise	P50	5891
		#0955	#5872 Standard	P60	5872
			#5892 Enterprise	P60	5892
		#0958	#5875 CBU Standard	P50	5875
			#5895 CBU	P50	5895
		#0959	#5876 CBU Standard	P50	5876
			#5896 CBU	P50	5896

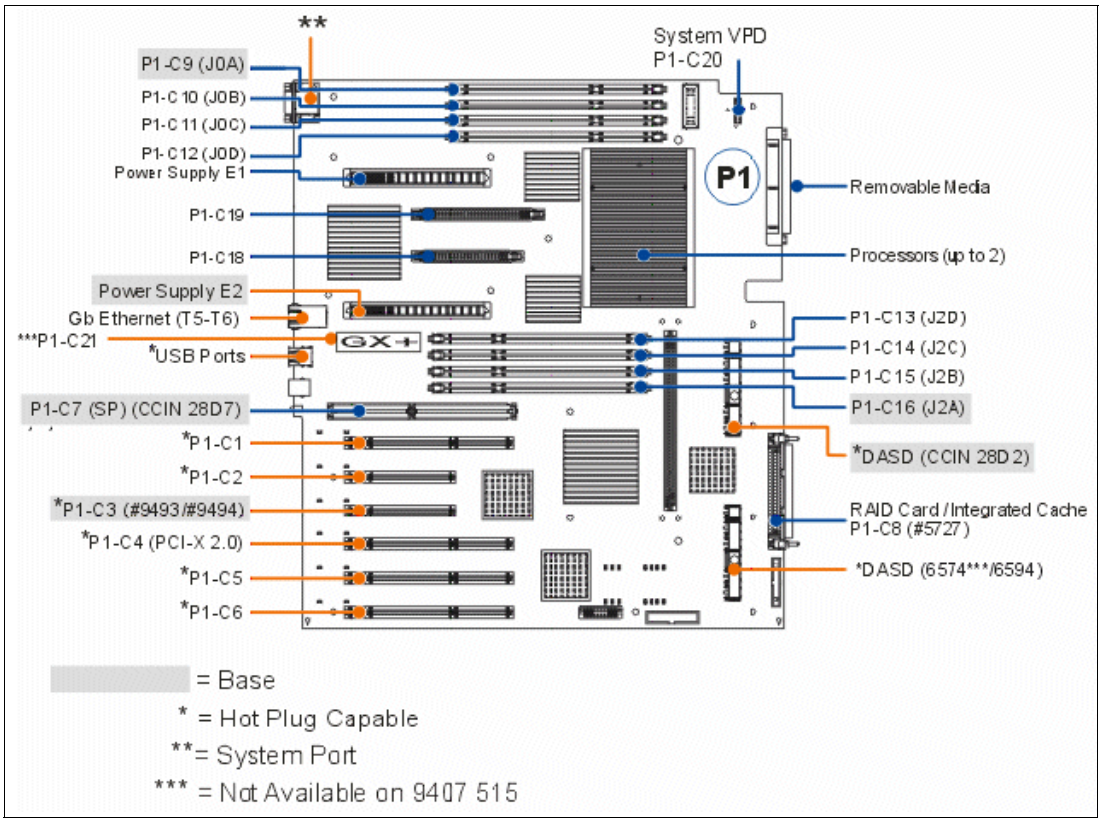
Note 6d Model 595 (contd.)	**Processor**	**Server feature**	**Edition feature**	**Software group**	**Processor feature code or QPRCFEAT value**
	#8973	#0940	#7900 Standard	P50	7900
			#7901 Enterprise	P50	7901
			#7902 High Availability	P50	7902
		#0941	#7903 Standard	P50	7903
			#7904 Enterprise	P50	7904
			#7905 High Availability	P50	7905
		#0943	#7906 Standard	P60	7906
			#7907 Enterprise	P60	7907
			#7908 High Availability	P60	7908
		#0944	#7912 CBU Standard	P50	7912
			#7909 CBU Enterprise	P50	7909
		#0957	#7910 CBU Standard	P50	7910
			#7911 CBU Enterprise	P50	7911
	#8981	#0946	#7496 Standard	P50	7496
			#7497 Enterprise	P50	7497
		#0947	#7498 Standard	P50	7498
			#7499 Enterprise	P50	7499
		#0952	#7984 Standard	P60	7984
			#7985 Enterprise	P60	7985
Note 7	External DASD cannot exceed the maximum system capacity or the maximum number of disk arms.				
Note 7a	Total maximum DASD capacity (no mirroring or RAID protections) assumes 141 GB disk drives. External DASD cannot exceed the maximum system capacity or the maximum number of disk arms. **Notes:** ► Depending upon your use of mirroring or RAID-5/RAID-6 protection, protected maximum storage is less than listed here. ► The 282.25 GB disk drive was announced in July 2007. This disk drive is not formally supported on System i POWER5 models. Contact your marketing representative if you have a requirement for 282.25 GB disk support on POWER5 technology systems.				
Note 7b	With the announcement of SAN Boot, there is no longer a requirement for an internal disk. San Boot requires #2847 PCI IOP for SAN Load Source.				
Note 7c	Maximum of 2000 DASD arms in a single i5/OS partition.				
Note 7d	Hot spares are not considered configured units. Therefore, they do not count against the system maximums.				
Note 8	i5/OS V5R3 and LIC V5R3M5 or i5/OS V5R4 with the latest level of LIC and Cumulative PTF package fixes available at installation time are required for the 520+ (1.9 GHz processor) and 595+ (2.3 GHz processor). For the latest information, refer to the IBM Prerequisite Web page at: http://www-912.ibm.com/e_dir/eServerPrereq.nsf/UpgradeCategories/Hardware?opendocument				
Note 8a	For Model 520 2-way processors shipped prior to 10 December 2004 that have keyed products installed, update the server firmware to accept the lower P20 software tier. See the following HMC Web page for the latest updates: http://www14.software.ibm.com/webapp/set2/sas/f/hmc/home.html				
Note 9	The server features used for iSeries for Domino specify the minimum amount of disk, memory, and Domino licenses required for an initial order.				

Note 10	When a second RIO-G loop is required, one PCI card slot is used for the RIO-G adapter.
Note 10a	The 520+ models have one PCI-X 2.0 card slot (P1-C4) that is for IOP-less cards only
Note 10b	The use of more than 24 RIO-G loops (48 cables) requires physical planning and careful cable placement and management. Closing the Model 595 door can be difficult.
Note 11	One terabyte (TB) of memory can be ordered after 28 October 2004. Two TB are available in 2005.
Note 12	A maximum of 10 active partitions per activated processor. A maximum of 64 i5/OS partitions applies to any model with six or more activated processors. There is a maximum of 32 processors per i5/OS partition (Model 595 or larger only).
Note 13	Rack containing the system unit is a 42U, 24-inch rack. The bulk power supplies are installed in 8U leaving 16U empty.

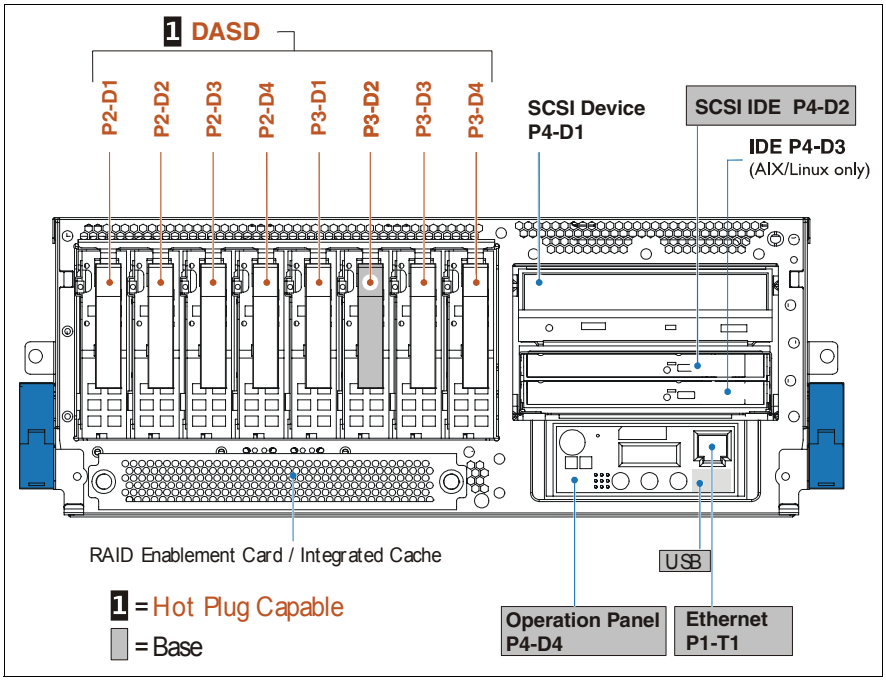
3.17 9405, 9406 and 9407 Models 515, 520+, 520, and 525 system unit schematics

3.17.1 Model 515, 520+, and 525 top view

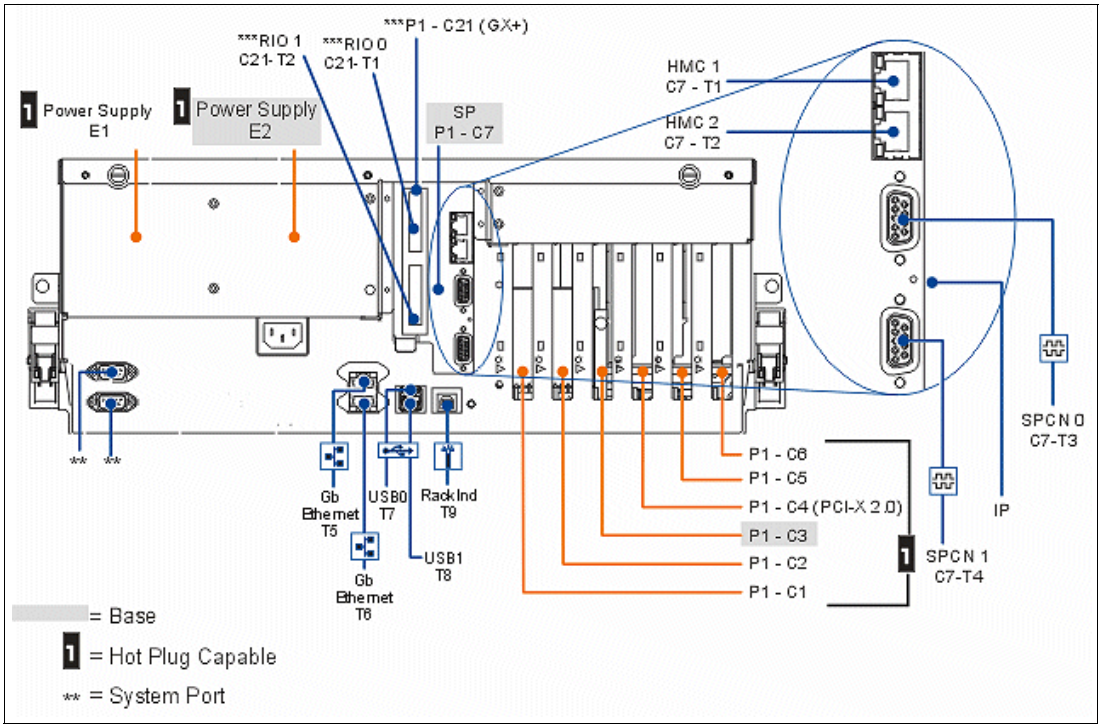
In the following schematic of the top view of the Model 520+, T5 is port 0 and T6 is port 1.



3.17.2 Model 515, 520+, and 525 front view



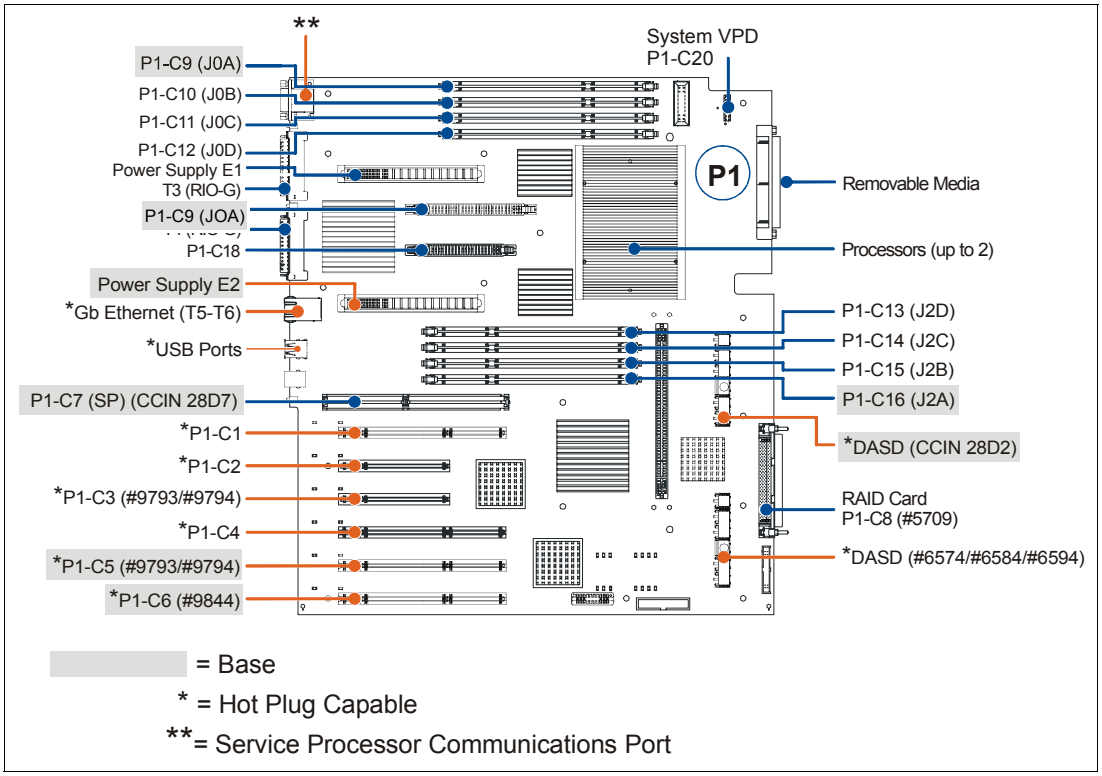
3.17.3 Model 515, 520+, and 525 back view



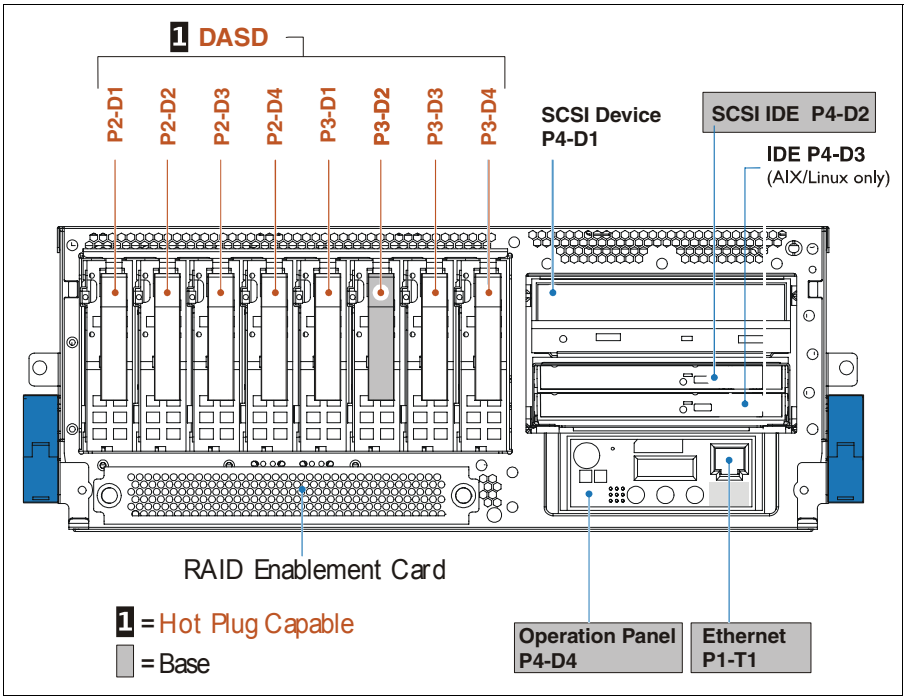
Notes:

- The #1827 Serial-UPS Conversion Cable connects to the top system port on a rack mounted system or the right system port on a desk-side system. T5 is the default port 0 for the embedded LAN console.
- The P1-C21 (GX+), C21-T1 RIO 0, and C21-T2 RIO 1 ports are not available on the 9407 Model 515.

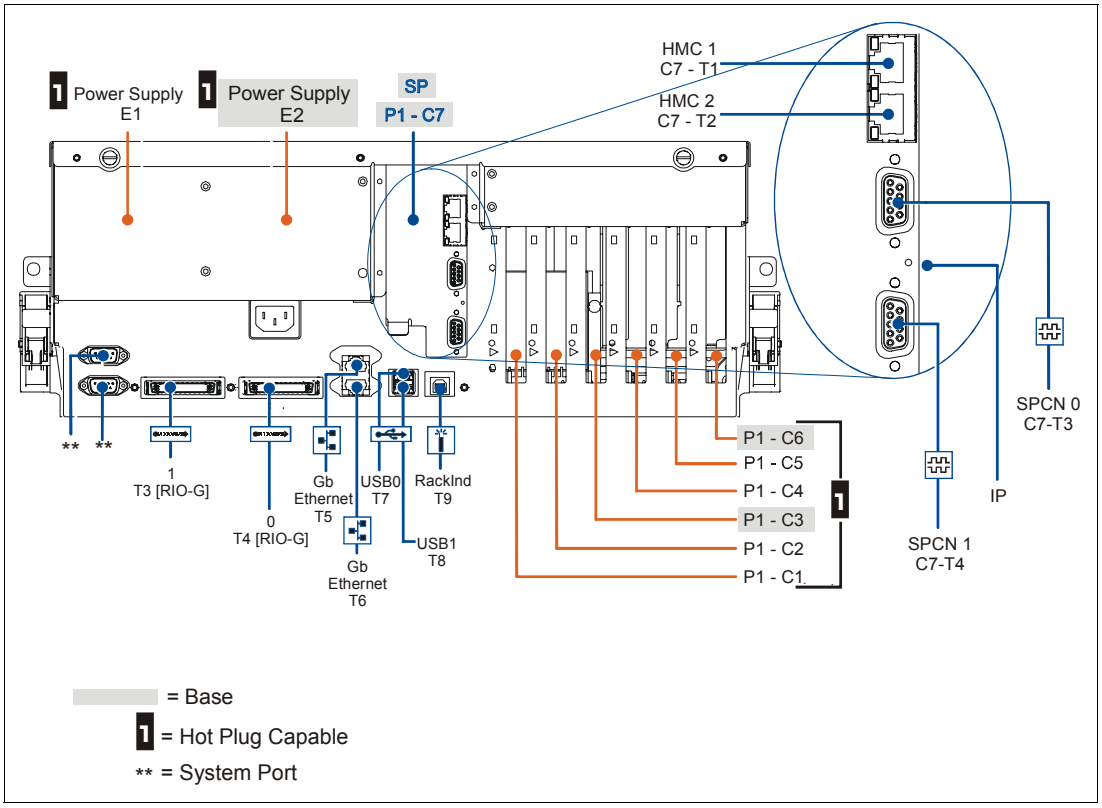
3.17.4 Model 520 top view



3.17.5 Model 520 front view

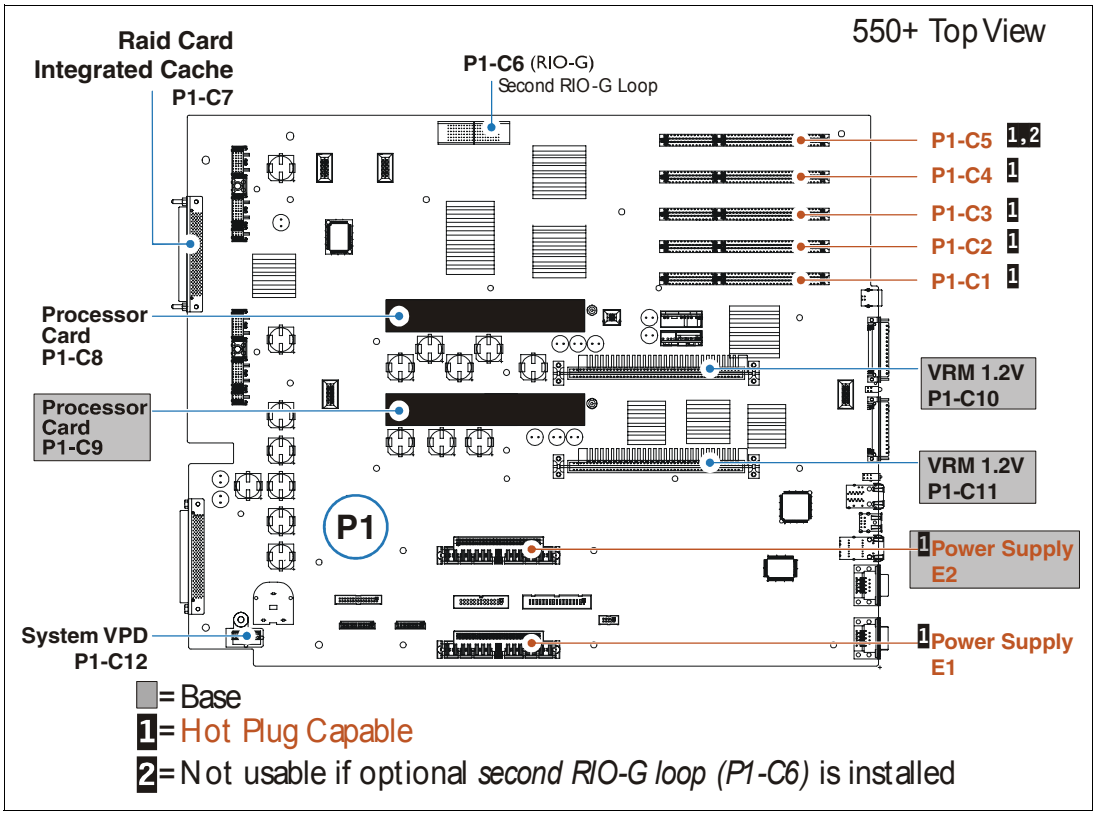


3.17.6 Model 520 back view

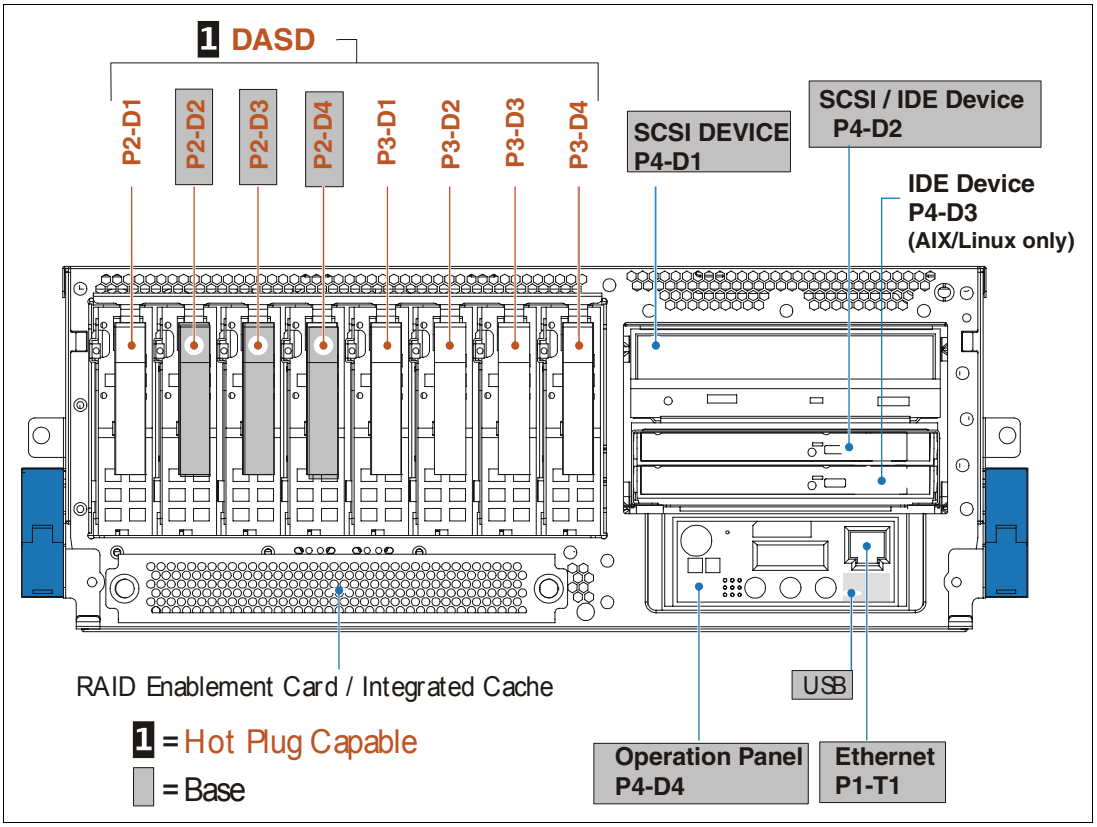


3.18 9406 Models 550+ and 550 system unit schematics

3.18.1 Models 550+ and 550 top view

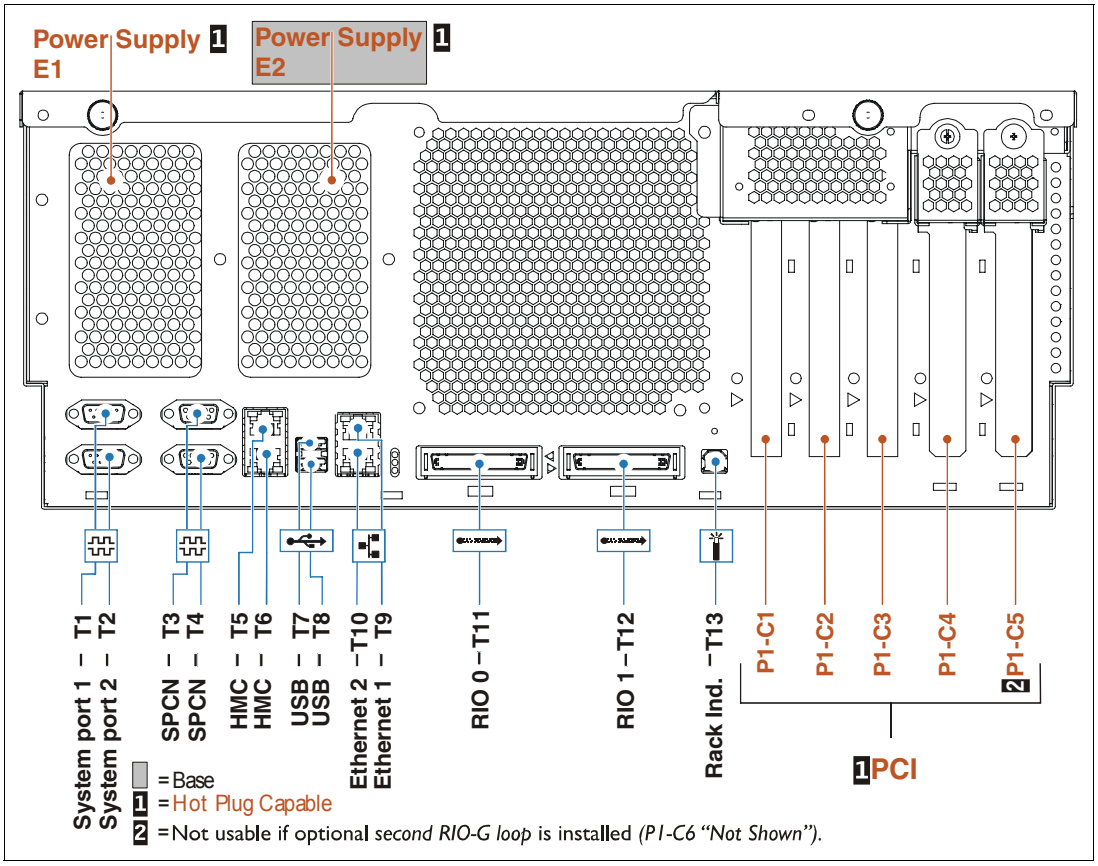


3.18.2 Models 550+ and 550 front view



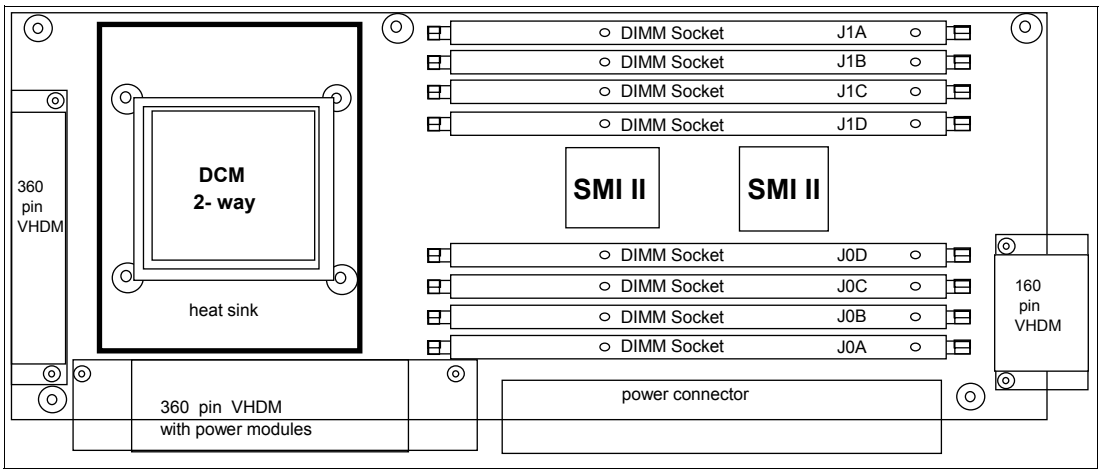
3.18.3 Models 550+ and 550 back view

The following figure represents the rear view of the Model 550.



Note: The #1827 Serial-UPS Conversion Cable connects to system port 2. T9 is the default port 0 for the embedded LAN console.

3.18.4 Models 550+ and 550 memory layout



Note: There are two of these cards in every Model 550 and 550+.

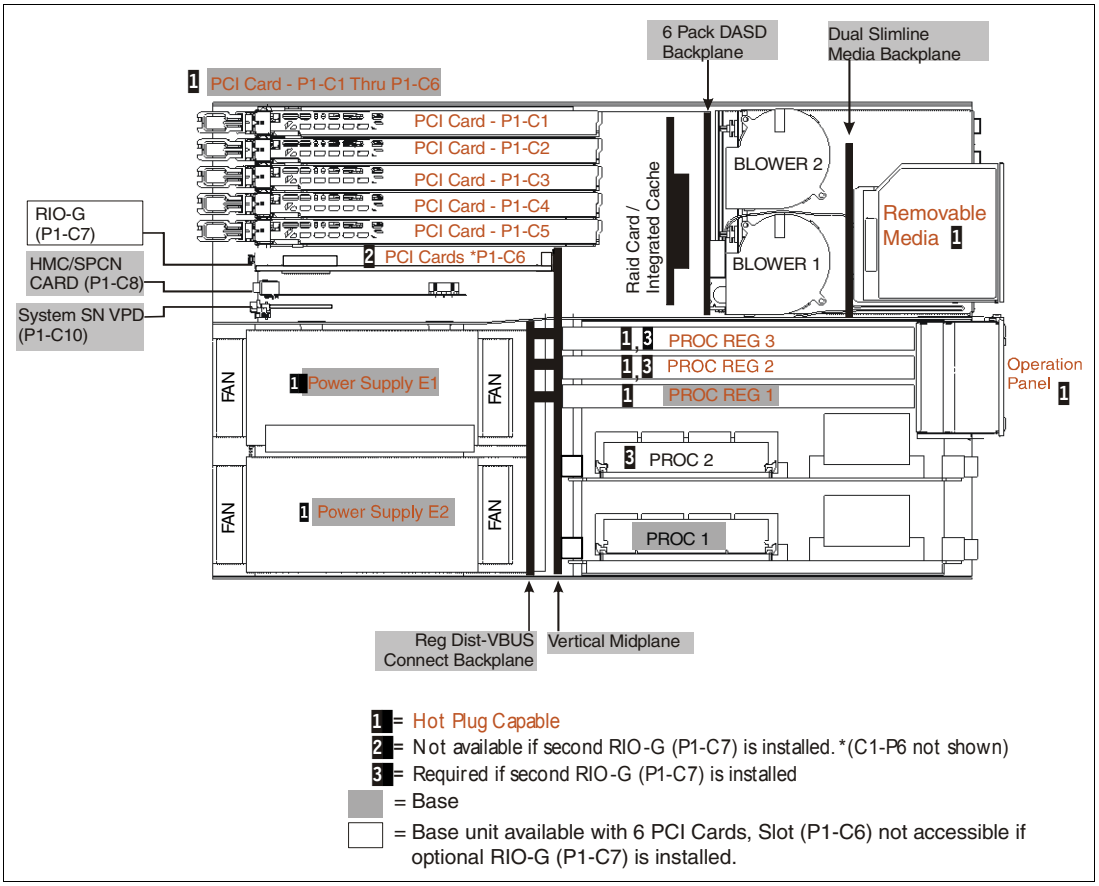
3.19 9406 Models 570+ and 570 processor enclosure schematics

3.19.1 Model 570+ top view

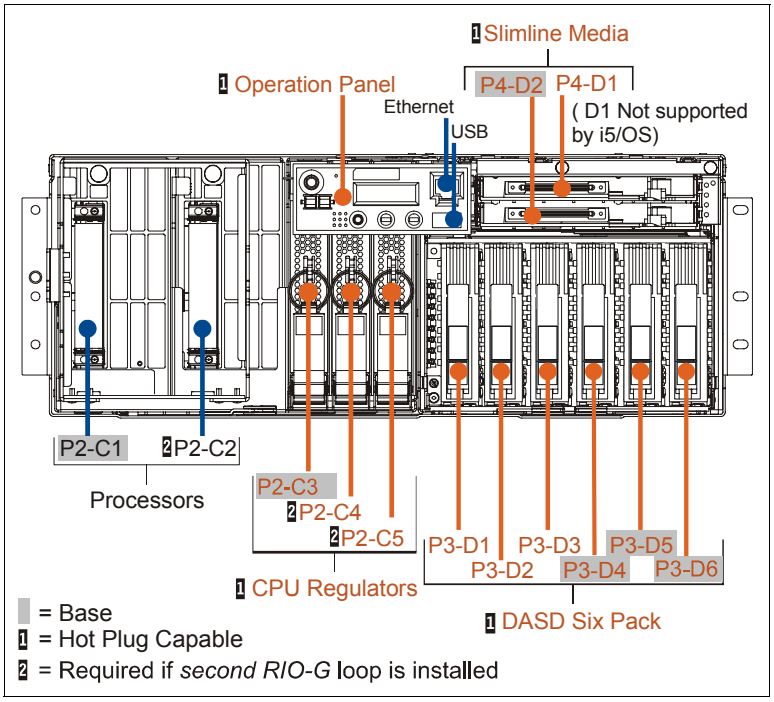
The following figure shows the top view of a Model 570+ processor enclosure. The 570+ is different from the 570 in that it has a RAID card placed just to the left of the blowers.

System unit and processor enclosure: In this paper, we use several terms such as *system unit* or *processor enclosure* or *node* to represent the physical enclosure that include a set of available processor cards, memory cards, and I/O slots for the IBM system i 5xx and 8xx models addressed in this publication. The IBM System i Model 595 “system unit” is actually contained within a larger frame.

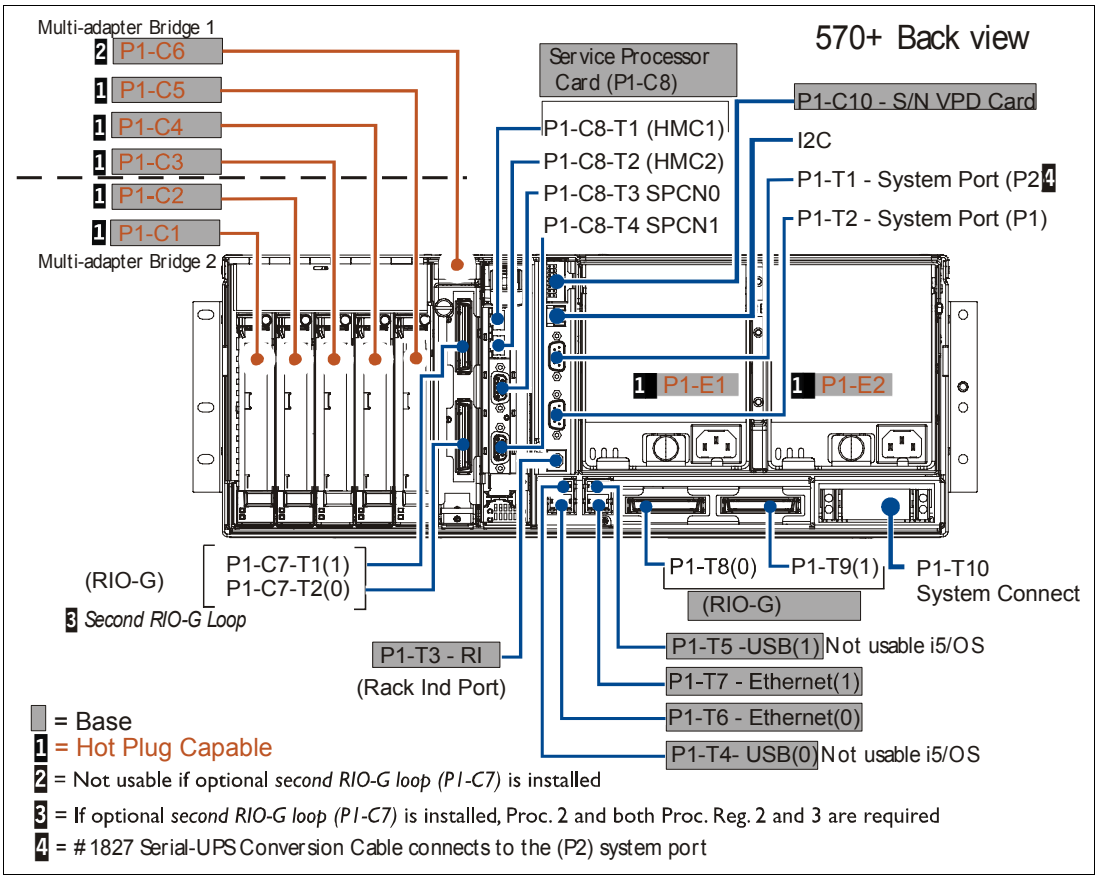
For the POWER5 and POWER6 570 models, some IBM documentation refers to each processor enclosure as simply a *building block*.



3.19.2 Models 570+ and 570 front view



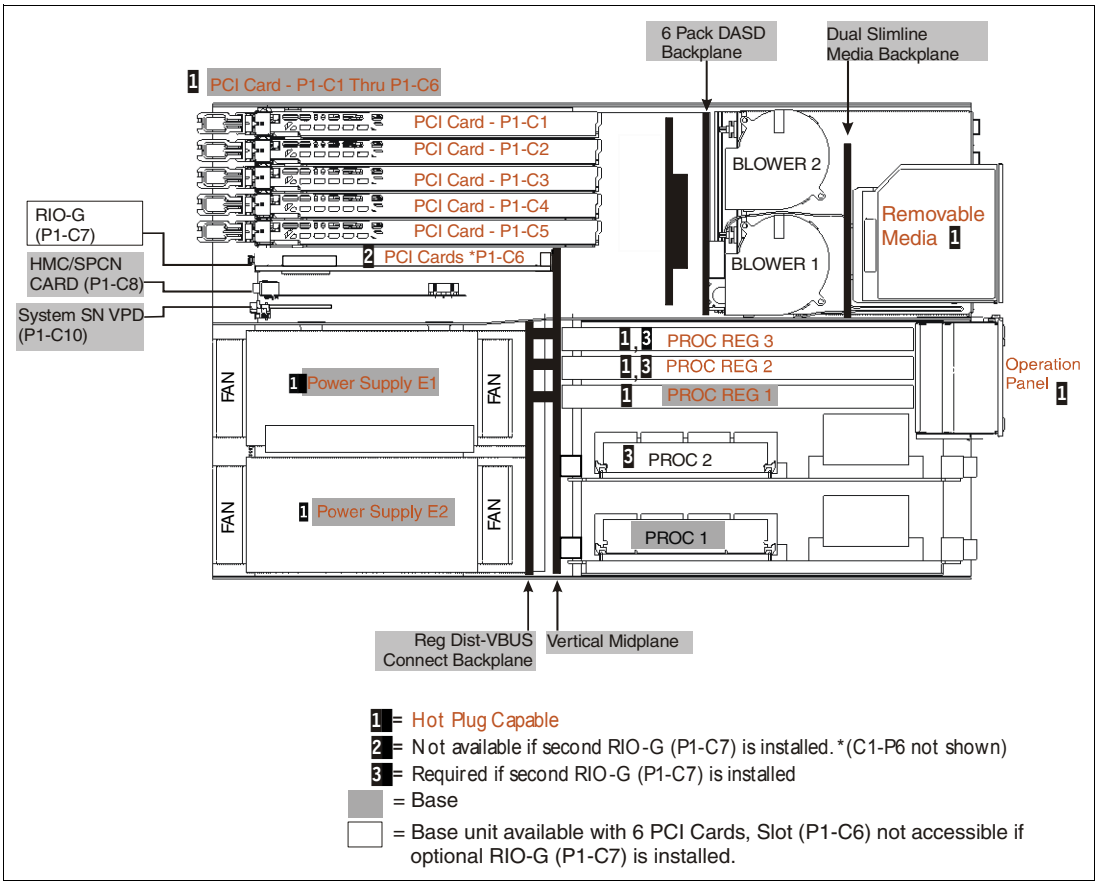
3.19.3 Models 570+ and 570 back view



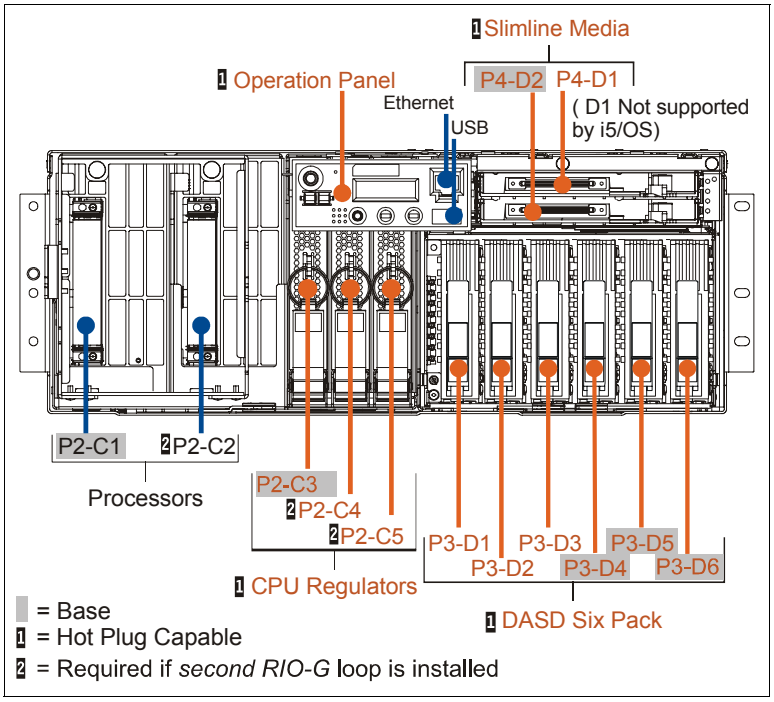
Note: The #1827 Serial-UPS Conversion Cable connects to system port 2. T6 is the default port 0 for the embedded LAN console.

3.19.4 Model 570 top view

The following figure shows the top view of a Model 570 processor enclosure.

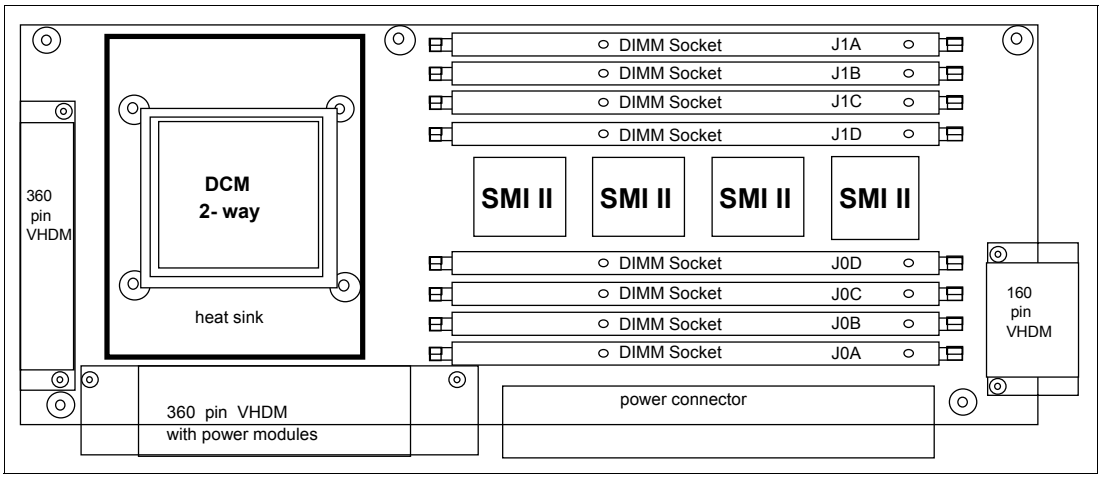


3.19.5 Model 570 front view



3.19.6 Models 570+ and 570 memory layout

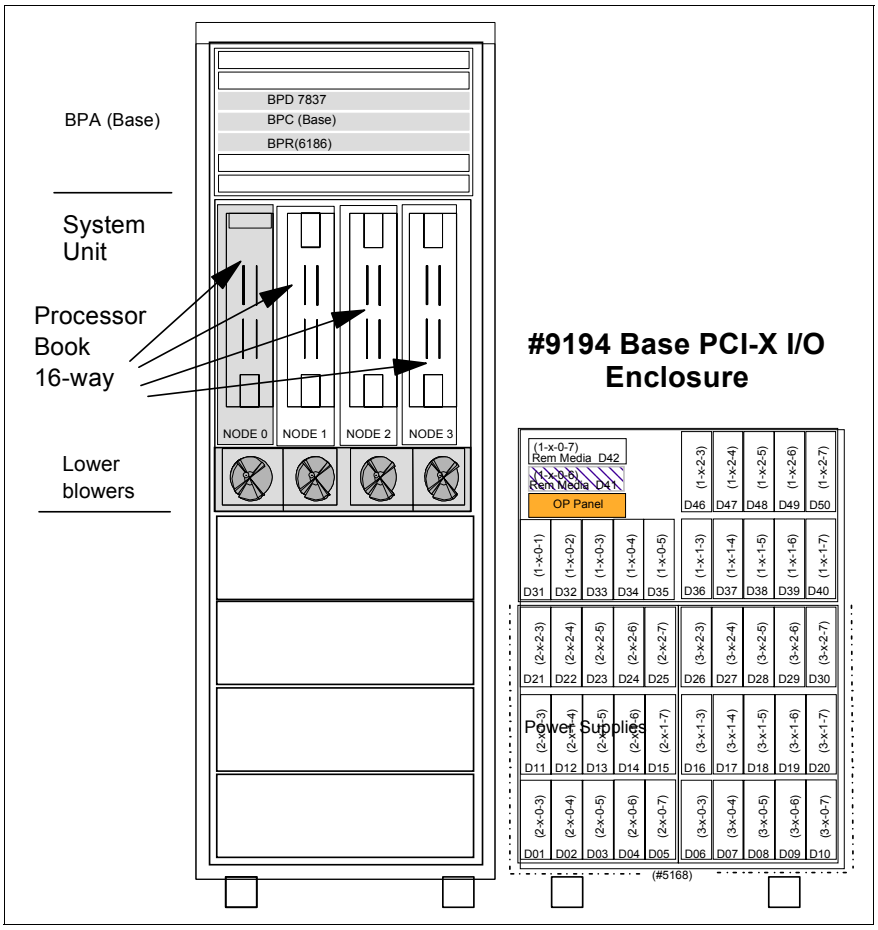
The following diagram is for a Model 570+, which includes four shared memory interface (SMI II) chips.



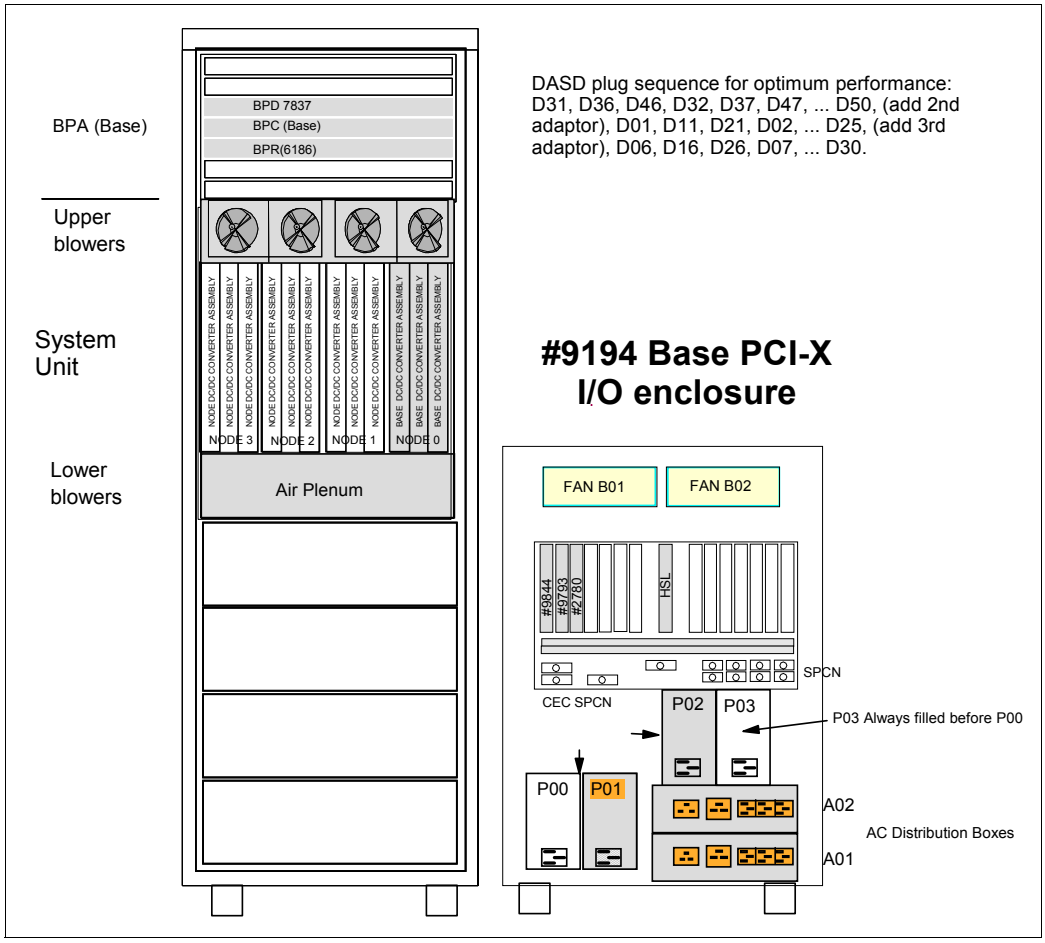
Note: The diagram shown is for a Model 570. The Model 570+ has two addtional SMI II chips.

3.20 9406 Model 595 system unit schematics

3.20.1 Model 595 front view

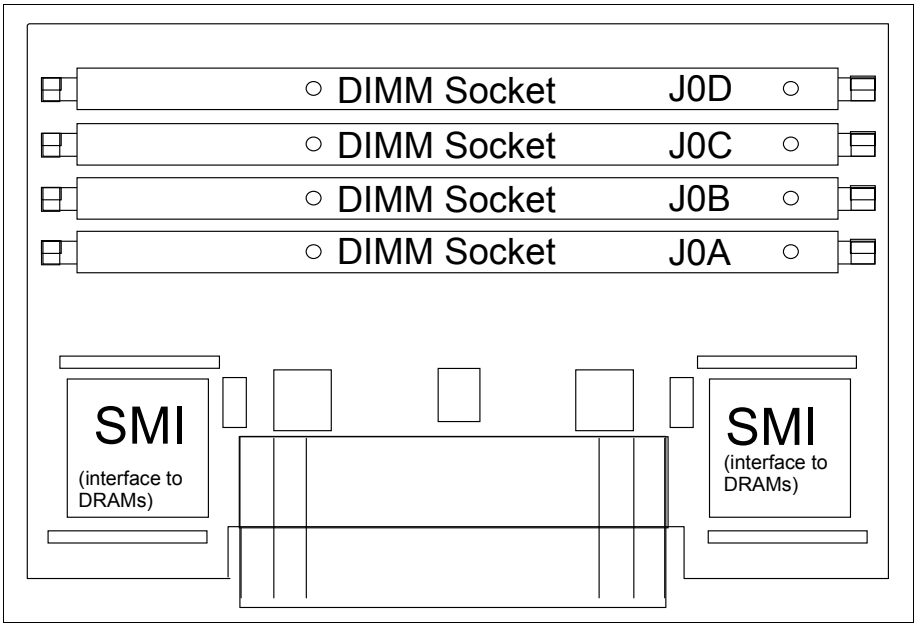


3.20.2 Model 595 back view

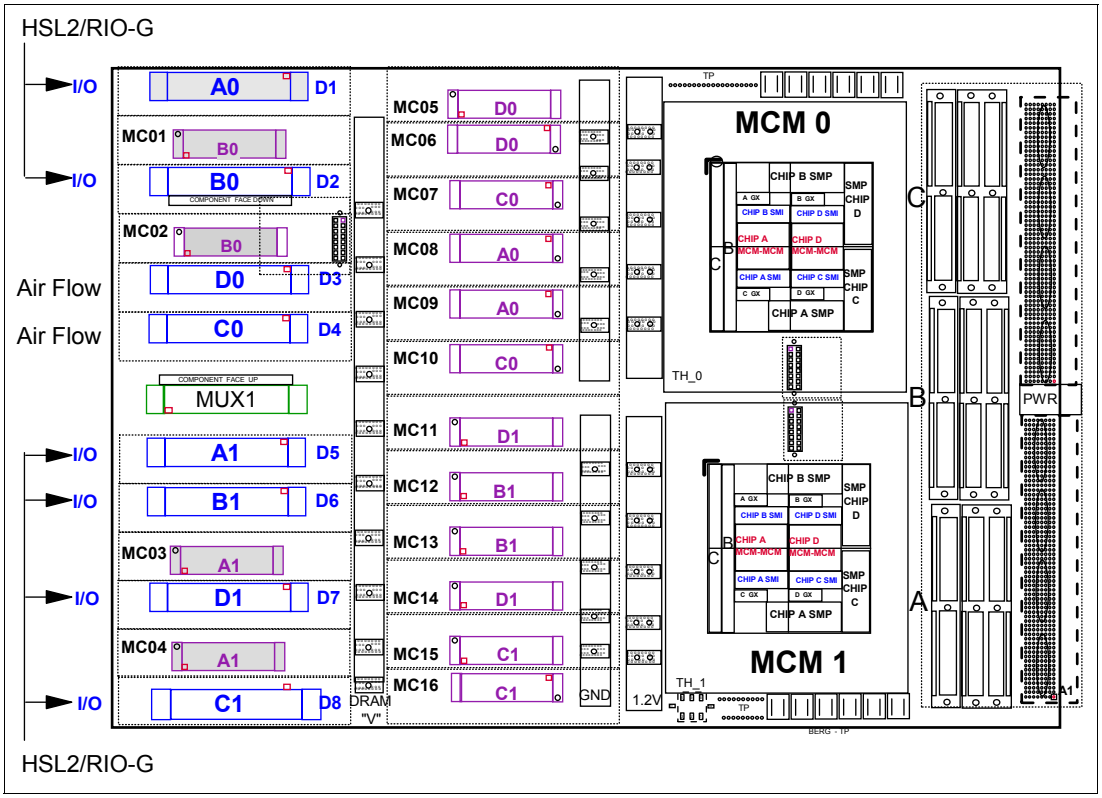


3.20.3 Models 595+ and 595 memory layout

The following schematic illustrates the memory cards for a Model 595+ and 595 processor.



The following schematic illustrates a single processor book and memory node for two MCMs for Models 595+ and 595.



3.21 System i Models 515, 520, 520+, and 525 processors

The initial installation of the System i Models 515, 520, 520+ and 525 is Customer Setup (CSU). Processor upgrades within models are performed by IBM Service Representatives.

Processor feature	Server feature	Edition/ Config. feature	Model 520+ and 520 processors
#8325			**#8325 600/3100 CPW Uni-Processor in Client/Server Environment** ► POWER5+ 1.9 GHz Uni processor (CCIN 8325). ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► No L3 cache. ► Processor Capacity Card (CCIN 528F).
	#0970	#7140	**#7140 520 Express Configuration** Provides 600 CPW processor performance. Provides 30 CPW for 5250 OLTP (CCIN 7140). Requires #7680 Accelerator for System i5 to achieve 3100 processor CPW. Machine type 9405.
		#7141	**#7141 520 Express Configuration** Provides 600 CPW processor performance. Provides 30 CPW for 5250 OLTP (CCIN 7141). Requires #7681 Accelerator for System i5 to achieve 3100 processor CPW. Machine type 9405.
		#7142	**#7142 520 Express Configuration** Provides 600 CPW processor performance. Provides 30 CPW for 5250 OLTP (CCIN 7142). Requires #7682 Accelerator for System i5 to achieve 3100 processor CPW. Machine type 9405.
	#0975	#7350	**#7350 Value Edition for #0975** Provides 600 CPW processor performance. Provides 30 CPW for 5250 OLTP (CCIN 7350). Requires #7355 Accelerator for System i5 to achieve 3100 processor CPW. Machine type 9406.
#8327			**#8327 1200/2800/3800 CPW Uni-Processor in Client/Server Environment** ► POWER5+ 1.9 GHz Uni processor (CCIN 8327) ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► 36 MB L3 cache. ► Processor Capacity Card (CCIN 528F).
	#0970	#7143	**#7143 520 Express Configuration** Provides 1200 CPW processor performance. Provides 60 CPW for 5250 OLTP (CCIN 7143). Requires #7354 Accelerator for System i5 to achieve 3800 processor CPW. Machine type 9405.
		#7148	**#7148 520 Express Configuration** Provides 1200 CPW processor performance. Provides 60 CPW for 5250 OLTP (CCIN 7148). Requires #7687 Accelerator for System i5 to achieve 3800 processor CPW. Machine type 9405.
		#7144	**#7144 520 Express Configuration** Provides 3800 CPW processor performance. Provides 60 CPW for 5250 OLTP (CCIN 7144). Machine type 9405.
		#7152	**#7152 520 Express Configuration** Provides 3800 CPW processor performance. Provides 60 CPW for 5250 OLTP (CCIN 7350). Machine type 9405.
	#0975	#7352	**#7352 Value Edition for #0975** Provides 1200 CPW processor performance. Provides 60 CPW for 5250 OLTP (CCIN 7352). Requires #7357 Accelerator for System i5 to achieve 3800 processor CPW. Machine type 9406.

Processor feature	Server feature	Edition/ Config. feature	Model 520+ and 520 processors
#8327	#0906	#7366	**#7366 Solution Edition for #0906** Provides 1200 CPW processor performance. Provides 1200 CPW for 5250 OLTP (CCIN 7366). Machine type 9406.
		#7373	**#7373 High Availabilty Edition for #0906** Provides 1200 CPW processor performance. Provides 1200 CPW for 5250 OLTP (CCIN 7373). Machine type 9406.
		#7374	**#7374 High Availability Edition for #0906** Provides 2800 CPW processor performance. Provides 2800 CPW for 5250 OLTP (CCIN 7374). Machine type 9406.
		#7734	**#7734 Enterprise Edition for #0906** Provides 1200 CPW processor performance. Provides 1200 CPW for 5250 OLTP (CCIN 7734). Machine type 9406.
		#7735	**#7735 Enterprise Edition for #0906** Provides 2800 CPW processor performance. Provides 2800 CPW for 5250 OLTP (CCIN 7735). Machine type 9406.
		#7784	**#7784 Standard Edition for #0906** Provides 3800 CPW processor performance. Provides 0 CPW for 5250 OLTP (CCIN 7748). Machine type 9406.
#8330			**#8330 3800/7100 CPW 0/2-way Processor in Client/Server Environment** ► POWER5+ 1.9 GHz 0/2-way processor (CCIN 8330). ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► A 36 MB L3 cache. ► Processor Capacity Card (CCIN 528F).
	#0906	#7375	**#7375 High Availability Edition for #0906** Provides 3800/7100 CPW processor performance. Provides 3800/7100 CPW for 5250 OLTP (CCIN 7375). Machine type 9406.
		#7736	**#7736 Enterprise Edition for #0906** Provides 3800/7100 CPW processor performance. Provides 3800/7100 CPW for 5250 OLTP (CCIN 7736). Machine type 9406.
		#7785	**#7785 Standard Edition for #0906** Provides 3800/7100 CPW processor performance. Provides 0 CPW for 5250 OLTP (CCIN 7785). Machine type 9406.

Processor feature	Server feature	Edition/ Config. feature	Model 520+ and 520 processors
#8950	#0900		**#8950 500 CPW Uni-Processor in Client/Server Environment** ► POWER5 1.5 GHz Uni (CCIN 522A). ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► No L3 cache. ► #7450 Processor Capacity Card (CCIN 7450).
		#7390	**#7390 Express Edition** Provides 30 CPW for 5250 OLTP (CCIN 7390). Machine type 9406.
		#7391	**#7391 Express Edition** Provides 30 CPW for 5250 OLTP (CCIN 7391). Machine type 9406.
		#7393	**#7393 Express Edition** Provides 30 CPW for 5250 OLTP (CCIN 7393). Machine type 9406.
		#7411	**#7411 Express Edition** Provides 30 CPW for 5250 OLTP (CCIN 7411). Machine type 9406. The #7411 Express Edition was withdrawn from marketing as of 01 April 2005.
		#7413	**#7413 Express Edition** Provides 30 CPW for 5250 OLTP (CCIN 7413). Machine type 9406. The #7413 Express Edition was withdrawn from marketing as of 01 April 2005.
		#7417	**#7417 Express Edition** Provides 30 CPW for 5250 OLTP (CCIN 7417). Machine type 9406. The #7417 Express Edition was withdrawn from marketing as of 01 April 2005.
		#7450	**#7450 Value Edition** Provides 30 CPW for 5250 OLTP (CCIN 7450).
#8951	#0901		**#8951 1000 CPW Uni-Processor in Client/Server Environment** ► POWER5 1.5 GHz Uni (CCIN 522A). ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► No L3 cache. ► #7451 Processor Capacity Card (CCIN 7451).
		#7392	**#7392 Express Edition** Provides 60 CPW for 5250 OLTP (CCIN 7392). Machine type 9405.
		#7394	**#7394 Express Edition** Provides 60 CPW for 5250 OLTP (CCIN 7394). Machine type 9405.
		#7414	**#7414 Express Edition** Provides 60 CPW for 5250 OLTP (CCIN 7414). Machine type 9406. The #7414 Express Edition was withdrawn from marketing for new orders only on 01 April 2005. Conversions to feature remain available.
		#7417	**#7417 Express Edition** Provides 60 CPW for 5250 OLTP (CCIN 7417). Machine type 9406. The #7417 Express Edition was withdrawn from marketing as of 01 April 2005.
		#7420	**#7420 Express Edition** Provides 60 CPW for 5250 OLTP (CCIN 7451). Machine type 9406. The #7420 Express Edition was withdrawn from marketing as of 01 April 2005.
		#7451	**#7451 Value Edition** Provides 60 CPW for 5250 OLTP (CCIN 7451).

Processor feature	Server feature	Edition/ Config. feature	Model 520+ and 520 processors
#8952	#0902		**#8952 1000 CPW Uni-Processor in Client/Server Environment** ► POWER5 1.5 GHz Uni (CCIN 522A). ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► No L3 cache. ► #7458/#7459 Processor Capacity Card (CCIN 7458/7459).
		#7458	**#7458 Standard Edition** Provides limited 5250 OLTP (CCIN 7458).
		#7459	**#7459 Enterprise Edition** Provides up to 1000 CPW for 5250 OLTP (CCIN 7459).
		#7541	**#7541 Solution Edition** Provides up to 1000 CPW for 5250 OLTP (CCIN 7451).
		#7552	**#7552 High Availability Edition** Provides up to 1000 CPW for 5250 OLTP (CCIN 7459).
#8953	#0903		**#8953 2400 CPW Uni-Processor in Client/Server Environment** ► POWER5 1.5 GHz Uni (CCIN 522A). ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► No L3 cache. ► #7452/#7453 Processor Capacity Card (CCIN 7452/7453).
		#7452	**#7452 Standard Edition** Provides limited 5250 OLTP (CCIN 7452).
		#7453	**#7453 Enterprise Edition** Provides up to 2300 CPW for 5250 OLTP (CCIN 7453).
		#7553	**#7553 High Availability Edition** Provides up to 2300 CPW for 5250 OLTP (CCIN 7453).
#8954	#0904		**#8954 3300 CPW Uni-Processor in Client/Server Environment** ► POWER5 1.65 GHz Uni (CCIN 5228) ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► A 36 MB L3 cache. ► #7454/#7455 Processor Capacity Card (CCIN 7454/7455).
		#7454	**#7454 Standard Edition** Provides limited 5250 OLTP (CCIN 7454).
		#7455	**#7455 Enterprise Edition** Provides up to 3300 CPW for 5250 OLTP (CCIN 7455).
		#7554	**#7554 High Availability Edition** Provides up to 3300 CPW for 5250 OLTP (CCIN 7455).
#8955	#0905		**#8955 6000 CPW 2-way Processor in Client/Server Environment** ► POWER5 1.65 GHz 2-way (CCIN 5229). ► Includes 8 DIMM memory positions (plug directly onto the backplane - direct attach). ► A 36 MB L3 cache. ► #7456/#7457 Processor Capacity Card (CCIN 7454/7455).
		#7456	**#7456 Standard Edition** Provides limited 5250 OLTP (CCIN 7456).
		#7457	**#7457 Enterprise Edition** Provides up to 6000 CPW for 5250 OLTP (CCIN 7457).
		#7555	**#7555 High Availability Edition** Provides up to 6000 CPW for 5250 OLTP (CCIN 7457).
#8972	#0912	#7395	**#7395 Express Edition** Provides up to 60 CPW for OLTP (CCIN 7395).
		#7396	**#7396 Express Edition** Provides up to 60 CPW for OLTP (CCIN 7395).
		#7397	**#7397 Value Edition** Provides up to 60 CPW for OLTP (CCIN 7395).

Models 515, 520, 520+ and 525 CUoD and OLTP features	
#7256	**#7256 520 Enterprise Enablement** The #7256 is ordered when additional 5250 OLTP capability is required on a permanently activated processor on a Model 520 Enterprise Edition system. An additional i5/OS license might be required. Supported on Model 520+. Minimum operating system level: i5/OS V5R3 Minimum LIC level: V5R3M5
#7320	**#7320 515, 520, 520+, 525 One Processor Activation** The #7326 provides an activation code that can be used to permanently activate one additional processor on a Capacity Upgrade on Demand (CUoD) system with the #9407 Model 515 or 9406 Models 520, 520+ and 525 and #8330 Processor Feature. Supported on Models 515, 520, 520+, and 525. For Models 520, 520+: ► Minimum operating system level: i5/OS V5R3 ► Minimum LIC level: V5R3M5 For Models 515 and 525: ► Minimum operating system level: i5/OS V5R3 ► Minimum LIC level: V5R4M0
#7575	**#7575 520 Enterprise Enablement** The #7575 is ordered when additional 5250 OLTP capability is required on a permanently activated processor on a Model 520 Enterprise Edition server. An additional i5/OS license might be required. Supported on Model 520. Minimum operating system level: i5/OS V5R3
#7620	**#7620 520 On/Off Processor Enablement** The #7620 is ordered to enable On/Off Capacity on Demand. When it is enabled, processors can be requested on a temporary basis. An On/Off Capacity on Demand contract must be signed before ordering this feature. Supported on Model 520+. Minimum operating system level: i5/OS V5R3 Minimum LIC level: V5R3M5
#7621	**#7621 520 On/Off Processor Day Billing** Order one #7621 for each billable processor day. Supported on Model 520+. Minimum operating system level: i5/OS V5R3 Minimum LIC level: V5R3M5
#7622	**#7622 520 Reserve Capacity Prepaid** The #7622 provides 30 processor days of reserve capacity on a CUoD system. Supported on Model 520+. Minimum operating system level: i5/OS V5R3 Minimum LIC level: V5R3M5
#8410	**#8410 520 Base Processor Activation** The #8410 provides an activation code that can be used to permanently activate one processor on a Model 520 CUoD system with #0906 Server Feature and #8330 Processor Feature. An additional i5/OS license might be required. Supported on Model 520+. Minimum operating system level: i5/OS V5R3 Minimum LIC level: V5R3M5
#9286	**#9286 Base Enterprise Enablement** The #9286 is placed on an order of an Enterprise Edition server to enable one processor's worth of 5250 OLTP capability. Multiple #9286s can be on the order. Supported on Models 520 (9406 only), 550, 570, and 595 Minimum operating system level: i5/OS V5R3
#9299	**#9299 Base Enterprise Enablement** The #9299 is placed on an order of an Enterprise Edition system to enable one processor's worth of 5250 OLTP capability. Supported on Model 520+ (9406 only) Minimum operating system level: i5/OS V5R3 Minimum LIC level: V5R3M5

3.22 System i5 Model 550+ and 550 processors

The Models 550+ and 550 initial installation is IBM installed. Processor upgrades within models are performed by IBM Service Representatives.

Processor feature	Server feature	Edition feature	Models 550+ and 550 processor
#8312	#0910		**#8312 3800/14000 CPW 1/4-way Processor in Client/Server Environment** ► Includes two #8312 0/2-way POWER5+ 1.9 GHz processors. ► Includes one #8413 550 Base Processor Activation. ► Includes eight main storage DIMM positions per processor card. ► 36 MB L3 cache.
		#7154	**#7154 Standard Edition for #0910** Provides limited 5250 OLTP (CCIN 7154).
		#7155	**#7155 Enterprise Edition for #0910** Provides up to 3800/14000 CPW for 5250 OLTP (CCIN 7155).
		#7551	**#7551 High Availablity Edition for #0910** Provides up to 3800/14000 CPW for 5250 OLTP. Processor Capacity Card (CCIN 7551).
		#7629	**#7629 Domino Edition for #0910** Provides limited 5250 OLTP. Processor Capacity Card (CCIN 7629).
		#7630	**#7630 Solution Edition for #0910** Provides up to 3800/14000 CPW for 5250 OLTP. Processor Capacity Card (CCIN 7630).
		#7631	**#7631 Solution Edition PeopleSoft EnterpriseOne** Provides up to 3800/14000 CPW for 5250 OLTP. Processor Capacity Card (CCIN 7631).
		#7632	**#7632 C2CRM Solution Edition with Domino** Provides up to 3800/14000 CPW for 5250 OLTP. Processor Capacity Card (CCIN 7632).
		#7640	**#7640 2-way SAP Solution Edition** Provides limited 5250 OLTP. Processor Capacity Card (CCIN 7640).
		#7641	**#7641 4-way SAP Solution Edition** Provides limited 5250 OLTP. Processor Capacity Card (CCIN 7641).
#8958	#0915		**#8958 3300/12000 CPW 1/4-way Processor in Client/Server Environment** ► Includes two #8958 0/2-way POWER5 1.65 GHz processors. ► Includes one #8450 550 Base Processor Activation. ► Includes eight main storage DIMM positions per processor card. ► 36 MB L3 cache.
		#7462	**#7462 Standard Edition** Provides limited 5250 OLTP (CCIN 7462).
		#7463	**#7463 Enterprise Edition** Provides up to 3300/12000 CPW for 5250 OLTP (CCIN 7463).
		#7530	**#7530 Domino Edition** Processor Capacity Card (CCIN 7530).
		#7531	**#7531 Solution Edition for PeopleSoft EnterpriseOne** Processor Capacity Card (CCIN 7531).
		#7532	**#7532 C2CRM Solution Edition with Domino** Processor Capacity Card (CCIN 7532).
		#7533	**#7533 2-Way SAP Solution Edition** Processor Capacity Card (CCIN 7533).
		#7534	**#7534 4-Way SAP Solution Edition** Processor Capacity Card (CCIN 7534).
		#7558	**#7558 Solution Edition** Processor Capacity Card (CCIN 7558).

Models 550+ and 550 CUoD and OLTP features	
#7257	**#7257 550 Enterprise Enablement** The #7257 is ordered when additional 5250 OLTP capability is required on a Model 550 Enterprise Edition, High Availability Edition or Solution Edition servers. One additional processor's worth of 5250 OLTP capacity is authorized with each feature. This 5250 capacity can be used across multiple physical #8312 processors that have been permanently activated. An additional i5/OS license might be required. Supported on the #8312 processor only. Minimum operating system level: i5/OS V5R3
#7323	**#7323 550 One Processor Activation** Ordering this feature results in an activation code that can be used to permanently activate one additional processor on a Model 550. One or more activation features can be ordered. Supported on the #8312 processor only. Minimum operating system level: i5/OS V5R3
#7341	**#7341 550 On/Off Processor Day Billing** After the #7930 On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, on/off usage must be reported to IBM at least monthly. This information is used to compute the billing data, which is then given to the local sales channel. The sales channel places an order for a quantity of #7341 On/Off Processor Day Billing features and its associated charges. One #7341 is ordered for each billable processor day. #7930 550 On/Off Processor Enablement is required. Supported on the #8312 processor only. Minimum operating system level: i5/OS V5R3
#7576	**#7576 550 Enterprise Enablement** The #7576 is ordered when additional 5250 OLTP capability is required on a permanently activated processor on a Model 550 #8958 Enterprise Edition server. An additional i5/OS license might be required. Supported on the #8958 processor only. Minimum operating system level: i5/OS V5R3
#7741	**#7741 550 Reserve Capacity Prepaid** The #7741 provides 30 processor-days of reserve capacity on a Model 550 #8312 processor. CUoD server. Reserve capacity is established on a server by selecting a quantity of inactive processors to be placed in the server's Shared Processor Pool as reserve processors. When the server recognizes that non-reserve processors (permanently activated processors) are either assigned or available to the uncapped partitions are 100% utilized, a processor day (valid for a 24-hour period) is subtracted from the prepaid amount of days. Supported on the #8312 processor only. Minimum operating system level: i5/OS V5R3
#7871	**#7871 550 CUoD Processor Activation** The #7871 feature results in an activation code that can be used to permanently activate one additional processor on an eServer i5 550 server. One or more activation features can be ordered. Supported on the #8958 processor only. Minimum operating system level: i5/OS V5R3
#7930	**#7930 550 On/Off Processor Enablement** The #7930 is ordered to enable a 550 server for On/Off Capacity on Demand. When enabled, processors can be requested on a temporary basis. On/Off Capacity on Demand contracts must be signed before this feature is ordered. Prior to reaching the limit of enabled temporary processor days, this feature can be reordered. Supported on the #8312 and #8958 processors. Minimum operating system level: i5/OS V5R3
#7931	**#7931 550 On/Off Processor Day Billing** After the #7930 On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, on/off usage must be reported to IBM at least monthly. This information is used to compute the billing data, which is then given to the local sales channel. The sales channel places an order for a quantity of the #7931On/Off Processor Day Billing features and its associated charges. Order one #7931 for each billable processor day. The #7958 is supported on the #8958 processor only. Minimum operating system level: i5/OS V5R3
#7934	**#7934 550 Reserve Capacity Prepaid** The #7934 provides 30 processor days of reserve capacity on a Model 550 CUoD server. To establish reserve capacity on the server, select a quantity of inactive processors to be placed in the server's shared processor pool as reserve processors. When the server recognizes that non-reserve processors (permanently activated processors) are either assigned or available to the uncapped partitions have been 100% utilized, a processor day (good for a 24-hour period) is subtracted from the prepaid amount of days. Supported on #8958 processor only. Minimum operating system level: i5/OS V5R3

Models 550+ and 550 CUoD and OLTP features	
#8413	**#8413 550 Base Processor Activation** The #8413 feature provides an activation code that can be used to permanently activate one additional processor on a Model 550 server. One or more of these no-charge activation features can be ordered, depending on the configuration rules. The #7741 is supported on the #8312 processor only. Minimum operating system level: i5/OS V5R3
#8450	**#8450 550 Base Processor Activation** The #8450 feature provides an activation code that can help permanently activate one additional processor on an eServer i5 #8958 550 server. One or more of these no-charge activation features can be ordered, depending on configuration rules. The #8450 is supported on the #8958 processor only Minimum operating system level: i5/OS V5R3
#9286	**#9286 Base Enterprise Enablement** The #9286 is placed on an order of an Enterprise Edition server to enable one processor's worth of 5250 OLTP capability. Multiple #9286s can be on the order. Supported on Models 520 (9406 only), 550, 570, and 595 Minimum operating system level: i5/OS V5R3
#9299	**#9299 Base Enterprise Enablement** The #9299 is placed on an order of an Enterprise Edition server to enable one processor's worth of 5250 OLTP capability. Multiple #9299s can be on the order. Supported on #8312 processor only. Minimum operating system level: i5/OS V5R3

3.23 System i5 Model 570+ and 570 processors

The initial installation of Models 570+ and 570 is IBM installed. Processor upgrades within models are performed by IBM Service Representatives.

Processor	Processor activation feature	Server feature	Edition feature	Model 570+ processor
#8338	#7618	#0934		**#8338 8400/16000 CPW 2/4-way Processor in Client/Server Environment** ► Includes two #8338 0/2-way POWER5+ 2.2 GHz processors (CCIN 8338). ► Includes two #7738 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7757	**#7757 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7757).
			#7747	**#7747 Enterprise Edition** Provides up to16000 CPW for 5250 OLTP CPW (CCIN 7747).
			#7763	**#7763 High Availability Edition** Provides up to16000 CPW for 5250 OLTP CPW (CCIN 7763).
#8338	#7618	#0935		**#8338 16700/31100 CPW 4/8-way Processor in Client/Server Environment** ► Includes four #8338 0/2-way POWER5+ 2.2 GHz processors (CCIN 8338). ► Includes four #7738 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7758	**#7758 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7758).
			#7748	**#7748 Enterprise Edition** Provides up to 311000 CPW for 5250 OLTP CPW (CCIN 7748).
			#7764	**#7764 High Availability Edition** Provides up to 311000 CPW for 5250 OLTP CPW (CCIN 7764).

Processor	Processor activation feature	Server feature	Edition feature	Model 570+ processor
#8338	#7618	#0936		**#8338 31100/58500 CPW 8/16way Processor in Client/Server Environment** ► Includes eight #8338 0/2-way POWER5+ 2.2 GHz processors (CCIN 8338). ► Includes eight #7738 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7759	**#7759 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7759).
			#7749	**#7749 Enterprise Edition** Provides up to 58500 CPW for 5250 OLTP CPW (CCIN 7749).
			#7765	**#7765 High Availability Edition** Provides up to 58500 CPW for 5250 OLTP CPW (CCIN 7765).
#8338	#7618	#0937		**#8338 18100/58500 CPW 2/16-way Processor in Client/Server Environment** ► Includes eight #8338 0/2way POWER5+ 2.2 GHz processors (CCIN 8338). ► Includes two #7738 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7760	**#7760 Capacity BackUp Edition** Provides limited 5250 OLTP CPW (CCIN 7760).

Processor	Processor activation feature	Server feature	Edition feature	Model 570+ processor
#8961	#7897	#0919		**#8961 3300/6000 CPW 0/2-way Processor in Client/Server Environment** ► Includes one #8961 0/2-way POWER5 1.65 GHz processor (CCIN 26EA). ► Includes one #8452 Base Processor Activation feature. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card. The #8961 0/2-way processor was withdrawn from marketing as of 01 October 2004.
			#7488	**#7488 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7488). The #7488 Standard Edition was withdrawn from marketing as of 01 October 2004.
			#7489	**#7489 Enterprise Edition** Provides up to 6000 CPW for 5250 OLTP CPW (CCIN 7489). The #7489 Enterprise Edition was withdrawn from marketing as of 01 October 2004.
#8961	#7897	#0920		**#8961 6350/11700 CPW 2/4-way Processor in Client/Server Environment** ► Includes two #8961 0/2-way POWER5 1.65 GHz processors (CCIN 26F2). ► Includes two #8452 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card. The #8961 2/4-way processor was withdrawn from marketing as of 01 October 2004.
			#7469	**#7469 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7469).
			#7470	**#7470 Enterprise Edition** Provides up to 12000 CPW for 5250 OLTP CPW (CCIN 7470). The #7470 Enterprise Edition for the #8961 Processor feature was withdrawn from marketing as of 01 October 2004. The #7495 Standard Edition for #0921 is the recommended replacement.

Processor	Processor activation feature	Server feature	Edition feature	Model 570+ processor
#8971	#7897	#0921		**#8971 6350/12000 CPW 2/4way Processor in Client/Server Environment** ► Includes one #8971 0/2-way POWER5 1.65 GHz processor (CCIN 26F2). ► Includes two #8452 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7494	**#7494 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7494).
			#7495	**#7495 Enterprise Edition** Provides up to 11200 CPW for 5250 OLTP CPW (CCIN 7470).
			#7560	**#7560 High Availability Edition** Processor Capacity Card (CCIN 7495).
#8971	#7897	#0922		**#8971 15200/23650 CPW 4/8-way Processor in Client/Server Environment** ► Includes two #8971 0/2way POWER5 1.65 GHz processor (CCIN 26F2). ► Includes five #8452 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7471	**#7471 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7494).
			#7472	**#7472 Enterprise Edition** Provides up to 23650 CPW for 5250 OLTP CPW (CCIN 7470).
			#7561	**#7561 High Availability Edition** Processor Capacity Card (CCIN 7472).
#8971	#7897	#0924		**#8971 25500/33400 CPW 9/12 Processor in Client/Server Environment** ► Includes four #8971 0/2-way POWER5 1.65 GHz processor (CCIN 26F2). ► Includes nine #8452 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7473	**#7473 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7494).
			#7474	**#7474 Enterprise Edition** 33400 CPW for 5250 OLTP CPW (CCIN 7474).
			#7562	**#7562 High Availability Edition** Processor Capacity Card (CCIN 7474).
#8971	#7897	#0926		**#8971 36300/44700 CPW 13/16 Processor in Client/Server Environment** ► Includes eight #8971 0/2-way POWER5 1.65 GHz processor (CCIN 26F2). ► Includes thirteen #8452 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7475	**#7475 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7494).
			#7476	**#7476 Enterprise Edition** Provides up to 44700 CPW for 5250 OLTP CPW (CCIN 7476).
			#7563	**#7563 High Availability Edition** Processor Capacity Card (CCIN 7476).
#8971	#7897	#0928		**#8971 6350/44700 CPW 13/16 Processor in Client/Server Environment** ► Includes eight #8971 0/2-way POWER5 1.65 GHz processor (CCIN 26F2). ► Includes two 8452 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor card. ► Includes eight main memory DIMM slots per processor card.
			#7570	**#7570 Capacity BackUp Edition** Provides up to 37400 CPW for 5250 OLTP for the Capacity BackUp Edition (CCIN 7570).
#8971	#7897	#0930	#7559	**#7559 High Availability Edition** Provides up to 37400 CPW for 5250 OLTP for the High Availability Edition (CCIN 7559).

Model 570+ and 570 CUoD and OLTP features	
#7258	**#7258 570 Full Enterprise Enablement** The #7258 - 570 Full Enterprise Enable is ordered when complete 5250 OLTP capability is required for all permanently activated processors on 2/4-way, 4/8-way and 8/16-way Model 570 Enterprise Edition or High Availability Edition systems. An additional i5/OS license might be required. Supported on Model 570+ Enterprise Edition or High Availability Edition systems Minimum operating system level: i5/OS V5R3
#7260	**#7260 570 Enterprise Enablement** The #7260 570 Enterprise Enablement is ordered when additional 5250 OLTP capability is required on a Model 570 Enterprise Edition or High Availability Edition system. One additional processor's worth of 5250 OLTP capacity is authorized with each feature. This 5250 capacity can be used across multiple physical #8338 processors that have been permanently activated. An additional i5/OS license might be required. Supported on Model 570+ Enterprise Edition or High Availability Edition systems Minimum operating system level: i5/OS V5R3
#7570	**#7570 On/Off Prepaid for Model 570 Capacity BackUp Edition** The #7570 On/Off Prepaid for Model 570 Capacity BackUp Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days.
#7577	**#7577 570 Enterprise Enablement** The #7577 is ordered when additional 5250 OLTP capability is required on a permanently activated processor on a Model 570 Enterprise Edition server. An additional i5/OS license might be required. Minimum operating system level: i5/OS V5R3 Supported on Model 570
#7597	**#7597 570 Full Enterprise Enablement** The #7597 is ordered when complete 5250 OLTP capability is required for all permanently activated processors on 5/8-way, 9/12-way, and 13/16-way Model 570 Enterprise Edition servers. An additional i5/OS license might be required. Minimum operating system level: i5/OS V5R3 Supported on Model 570
#7618	**#7618 570 One Processor Activation** The #7618 provides an activation code that can be used to permanently activate one additional processor on a Model 570+ CUoD server with #8338 Processor Feature. One or more activation features can be ordered, up to the maximum for the server. Supported on Model 570+ CUoD servers
#7624	**#7624 570 On/Off Processor Day Billing** The #7624 On/off Processor Day Billing is for temporary use of a processor on a daily base. When an #7624 On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, you must report your on/off usage to IBM at least monthly. This information, which is used to compute your billing data, is then provided to your sales channel. The sales channel places an order for a quantity of on/off processor day billing features and bills you. Order one #7624 for each billable processor day. Supported on Models 570+ with On/Off Processor Enablement feature Minimum operating system level: i5/OS V5R3
#7663	**#7663 570 1GB Memory Activation** The #7663 570 1GB Memory Activation provides the activation of 1 GB of additional Capacity on Demand memory. Multiple #7663 features are allowed up to the maximum CUoD memory of the server. Memory activations are stored in the server. If CUoD memory is moved to a different server, the additional activations remain with the original server. Supported on Models 570+ with CUoD memory available for activation Minimum operating system level: i5/OS V5R3
#7728	**#7728 570 Reserve Capacity Prepaid** The #7728 570 Reserve Capacity Prepaid provides 30 processor-days of reserve capacity on a Capacity on Demand server. To establish reserve capacity on the server, select a quantity of inactive processors to be placed in the server's shared processor pool as reserve processors. When the system recognizes that non-reserve processors (permanently activated processors) that are assigned or available to the uncapped partitions have been 100% utilized, and 10% of a Reserve CoD processor is put into use for more than 30 consecutive seconds, a processor day (good for a 24-hour period) is subtracted from the prepaid amount of days. You can use the HMC to view all processor activation statistics, including reserve processor on demand utilization. Supported on Models 570+ CUoD server with Reserve Capacity on Demand enabled. Minimum operating system level: i5/OS V5R3

Model 570+ and 570 CUoD and OLTP features	
#7738	**#7738 570 Base Processor Activation** The #7738 570 Base Processor Activation provides an activation code that can be used to permanently activate one processor on a Model 570 Capacity Upgrade on Demand system. One or more of these no-charge activation features can be ordered, depending on the configuration rules. Supported on Model 570+ CUoD server Minimum operating system level: i5/OS V5R3
#7890	**#7890 Orderable on Demand Memory** The #7890 Orderable on Demand Memory is used to order on demand memory. The #7890 provides 4 GB of activated memory and an additional 4 GB of memory available for activation. The 4 GB of additional memory can be activated in increments of 1 GB with #7950 and #7954 or #7957. Supported on Model 570 Minimum operating system level: i5/OS V5R3
#7897	**#7897 570 CUoD Processor Activation** The #7897 570 CUoD Processor Activation is used to order a password to permanently activate one additional processor on an #8961 or #8971 processor. One or more #7897s can be ordered on initial orders or via MES to activate additional processors. Supported on Model 570 Minimum operating system level: i5/OS V5R3 Customer Install Feature: Yes
#7950	**#7950 On Demand Memory Activation for Model 570 (Permanent Activation)** The #7950 On Demand Memory Activation for Model 570 provides the activation of 1 GB of additional CUoD memory on a CUoD server. Multiple #7950s are allowed on a CUoD server up to the maximum CUoD memory of the server. When ordered, a password to permanently activate memory in 1 GB increments is provided for a Model 570 with an #8961 or #8971 Processor. One or more #7950s can be ordered on initial orders or via MES to activate additional 1 GB memory increments. One or more #7890 4/8 GB DDR-1 Main Storage (#7890 Orderable on Demand Memory) with nonactivated memory features are required. Supported on Model 570 Minimum operating system level: i5/OS V5R3
#7951	**#7951 On/Off Prepaid for Model 570** The #7951 On/Off Prepaid for Model 570 is ordered to enable On/Off Capacity on Demand to temporarily enable processor or processors. When enabled, processors are requested on a temporary basis. An On/Off Capacity on Demand contract must be signed to order this feature. A #7951 can be reordered prior to reaching the enabled limit of usable temporary processor days. Available processors are required for activation. Supported on Model 570 Minimum operating system level: i5/OS V5R3
#7952	**#7952 On/Off Capacity on Demand Billing** A #7952 On/Off Capacity on Demand Billing feature code is used for On/Off Capacity on Demand billing for the temporary use of a processor on a daily basis. After a #7951 On/Off Capacity on Demand feature is ordered and the associated enablement code is installed on the system, On/Off Capacity on Demand usage must be reported monthly to IBM. Order one #7952 for each billable processor day that is used for temporary capacity. The number of processor days that are agreed to in the contract that is signed prior to ordering the On/Off Capacity on Demand feature is limited. A new contract is required to continue using temporary capacity after the initial limit has been reached and a second #7951 On/Off Capacity on Demand feature is ordered. An On/Off Capacity on Demand feature cannot be concurrently ordered with an On/Off Capacity on Demand billing feature. Supported on Model 570 Minimum operating system level: i5/OS V5R3
#7954	**#7954 On Demand Memory for Model 570** The #7954 On Demand Memory for Model 570 is ordered to enable On/Off Capacity on Demand. When enabled, memory activation can be requested on a temporary basis. An On/Off Capacity on Demand contract must be signed before the #7954 is ordered. The #7954 can be reordered prior to reaching the enabled limit of usable temporary memory days. One or more #7890 Orderable on Demand Memory with nonactivated memory is required. Supported on Model 570 Minimum operating system level: i5/OS V5R3

Model 570+ and 570 CUoD and OLTP features	
#7956	**#7956 570 Reserve Capacity on Demand** The #7956 570 Reserve Capacity on Demand provides 30 processor days of reserve capacity. After purchasing feature #7956, enter the resulting activation code and assign a quantity of the server's currently inactive processors to the shared processor pool as reserve capacity. When the server recognizes that the number of base (purchased or active) processors assigned across uncapped partitions is 100% utilized, and at least 10% of an additional processor is needed (based on multiple hits over a measured period), then a processor day (good for 24 hours) is deducted from the total number of prepaid processor days. Ordered via MES or as part of initial system order. A server with inactive (un-purchased) processor capacity is required. Supported on Model 570. Minimum operating system level: i5/OS V5R3
#7957	**#7957 On Demand Memory Billing** A #7957 On Demand Memory Billing feature code is used to bill for On/Off Capacity on Demand memory requests to use 1 GB of memory for one day (one 24-hour period). Begin reporting temporary memory usage to IBM at least once quarterly after a #7954 On/Off Memory Enablement feature is ordered and the associated enablement code is installed on the server. One #7957 must be ordered to pay for its use (after the fact) for every GB day of memory requested during a billing period (a quarter). Ordered via MES. Supported on Model 570. Minimum operating system level: i5/OS V5R3
#8452	**#8452 570 One Processor Activation** The #8452 provides an activation code that can be used to permanently activate one additional processor on a Model 570. One or more of these no-charge activation features can be ordered, depending on the configuration rules. Supported on Model 570. Minimum operating system level: i5/OS V5R3
#8459	**#8459 570 1 GB CUoD Memory activation** The #8459 is ordered with 570 to 570 model upgrades when 1 GB of system memory activation is desired. Multiple #8459 are allowed. Supported on Model 570. Minimum operating system level: i5/OS V5R3
#8470	**#8470 570 Base 1GB Memory Activation** The #8470 570 Base 1GB Memory Activation activates 1 GB of main storage on a Model 570+ system with Capacity on Demand memory. Depending on the on demand memory features ordered, several #8470s can be ordered. Supported on Model 570+ CoD memory Minimum operating system level: i5/OS V5R3
#9286	**#9286 Base Enterprise Enablement** The #9286 Base Enterprise Enablement is placed on an order of an Enterprise Edition server to enable one processor's worth of 5250 OLTP capability. Multiple #9286s can be on the order. Supported on Models 520 (9406 only), 550, 570, and 595 Minimum operating system level: i5/OS V5R3
#9298	**#9298 Full Enterprise Enablement** The #9298 Full Enterprise Enablement is ordered with 570-to-570 or 595-to-595 upgrades when the starting 570 or 595 configuration already has full enterprise enablement. It provides complete 5250 OLTP capability for all permanently activated processors on the upgraded Enterprise Edition server. Supported on Models 570 and 595 Minimum operating system level: i5/OS V5R3
#9299	**#9299 Base Enterprise Enablement** The #9299 Base Enterprise Enablement is placed on an order of an Enterprise Edition server to enable one processor's worth of 5250 OLTP capability. Multiple #9299s can be on the order. Supported on Model 520+, 550+, 570+, 595 1.9 GHz Enterprise Edition Minimum operating system level: i5/OS V5R3 with V5R3M5 LIC for 520+; V5R3 for 550+, 570+, 595 1.9 GHz

3.24 System i5 Model 595 processors

The initial installation of Models 595+ and 595 is IBM installed. Processor upgrades within the models are performed by IBM Service Representatives.

Processor	Processor Activation feature	Server feature	Edition feature	Model 595 processors
#8968	#7668	#0953		**31500/58800 CPW 8/16 Processor in Client/Server Environment** ► Includes one #8968 with two 8-way POWER5+ 2.3 GHz processor (MCM) (CCIN 53BE). ► Includes eight #8427 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8968.
			#5870	**#5870 Standard Edition for #0953** Provides limited 5250 OLTP CPW (CCIN 5870)
			#5890	**#5890 Enterprise Edition for #0953** Provides up to 58800 CPW for 5250 OLTP CPW (CCIN 5890)
	#7668	#0954		**61000/108000 CPW 16/32 Processor in Client/Server Environment** ► Includes two #8968 with two 8-way POWER5+ 2.3 GHz processor (MCM) (CCIN 53BE). ► Includes sixteen #8427 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8968.
			#5871	**#5871 Standard Edition for #0954** Provides limited 5250 OLTP CPW (CCIN5871).
			#5891	**#5891 Enterprise Edition for #0954** Provides up to 108000 CPW for 5250 OLTP CPW (CCIN 5891).
	#7668	#0955		**108000/216000 CPW 32/64 Processor in Client/Server Environment** ► Includes four #8968 with two 8-way POWER5+ 2.3 GHz processor (MCM) (CCIN 53BE). ► Includes thirty-two #8427 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8968.
			#5872	**#5872 Standard Edition for #0955** Provides limited 5250 OLTP CPW (CCIN 5872).
			#5892	**#5892 Enterprise Edition for #0955** Provides up to 216000 CPW for 5250 OLTP CPW (CCIN 5892).
	#7668	#0958		**8200/58800 CPW 2/16 Processor in Client/Server Environment** ► Includes one #8968 with two 8-way POWER5+ 2.3 GHz processor (MCM) (CCIN 53BE). ► Includes two #8427 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8968.
			#5875	**#5875 CBU Standard Edition for #0958** Provides limited 5250 OLTP CPW (CCIN 5875).
			#5895	**#5895 CBU Edition for #0958** Provides up to 58000 CPW for 5250 OLTP CPW (CCIN 5895).
	#7668	#0959		**16000/108000 CPW 4/32 Processor in Client/Server Environment** ► Includes two #8968 with two 8-way POWER5+ 2.3 GHz processor (MCM) (CCIN 53BE). ► Includes four #8427 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8968.
			#5876	**#5876 CBU Standard Edition for #0959** Provides limited 5250 OLTP CPW (CCIN 5876).
			#5896	**#5896 CBU Edition for #0959** Provides up to 108000 CPW for 5250 OLTP CPW (CCIN 5896).

Processor	Processor Activation feature	Server feature	Edition feature	Model 595 processors
#8966	#7815	#0940		**26700/50500 CPW 8/16 Processor in Client/Server Environment** ► Includes one #8966 with two 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes eight #8457 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8966
			#7480	**#7480 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7480).
			#7481	**#7481 Enterprise Edition** Provides up to 50500 CPW for 5250 OLTP CPW (CCIN 7481).
			#7580	**#7580 High Availability Edition** Provides a High Availability Edition for a Model 595 with #0940 Server Feature (8/16-way) (CCIN 7580).
#8966	#7815	#0941		**51000/92000 CPW 16/32 Processor in Client/Server Environment** ► Includes two #8966 with four 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes sixteen #8457 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8966 (32 in total).
			#7482	**#7482 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7482).
			#7483	**#7483 Enterprise Edition** Provides up to 92000 CPW for 5250 OLTP CPW (CCIN 7483).
			#7581	**#7581 High Availability Edition** Provides a High Availability Edition for a Model 595 with #0941 Server Feature (16/32-way) (CCIN 7581).
#8966	#7815	#0943		**92000/184000 CPW 32/64 Processor in Client/Server Environment** ► Includes four #8966 with eight 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes thirty-two #8457 595 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM) ► Includes 16 main memory slots per processor card #8966 (64 total)
			#7486	**#7486 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7486).
			#7487	**#7487 Enterprise Edition** Provides up to 184000 CPW for 5250 OLTP CPW (CCIN 7487).
			#7583	**#7583 High Availability Edition** Provides a High Availability Edition for a Model 595 with #0943 Server Feature (32/64-way) (CCIN 7583).
#8966	#7815	#0944		**13600/92000 CPW 4/32-way processor in Client/Server Environment** ► Includes two #8966 with four 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes four #8457 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8966 (32 in total)
			#7590	**#7590 Capacity BackUp Edition** Provides a Capacity BackUp Edition for a Model 595 with #0944 Server Feature (4/32-way) (CCIN 7590).

Processor	Processor Activation feature	Server feature	Edition feature	Model 595 processors
8973	#7815	#0940		**26700/50500 CPW 8/16 Processor in Client/Server Environment** ► Includes one #8973 with two 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes eight #8457 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8973.
			#7900	**#7900 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7900).
			#7901	**#7901 Enterprise Edition** Provides up to 50500 CPW for 5250 OLTP CPW (CCIN 7901).
			#7902	**#7580 High Availability Edition** Provides a High Availability Edition for a Model 595 with #0940 Server Feature (8/16-way) (CCIN 7902).
#8973	#7815	#0941		**51000/92000 CPW 16/32 Processor in Client/Server Environment** ► Includes two #8973 with four 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes sixteen #8457 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8973 (32 in total).
			#7903	**#7903 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7903).
			#7904	**#7904 Enterprise Edition** Provides up to 92000 CPW for 5250 OLTP CPW (CCIN 7904).
			#7905	**#7905 High Availability Edition** Provides a High Availability Edition for a Model 595 with #0941 Server Feature (16/32-way) (CCIN 7905).
#8973	#7815	#0943		**92000/184000 CPW 32/64 Processor in Client/Server Environment** ► Includes four #8973 with eight 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes thirty-two #8457 595 Base Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8973 (64 total).
			#7906	#7906 **Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7906).
			#7907	**#7907 Enterprise Edition** Provides up to 184000 CPW for 5250 OLTP CPW (CCIN 7907).
			#7908	**#7908 High Availability Edition** Provides a High Availability Edition for a Model 595 with #0943 Server Feature (32/64-way) (CCIN 7908).
#8973	#7815	#0944		**13600/92000 CPW 4/32-way processor in Client/Server Environment** ► Includes two #8973 with four 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes four #8457 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8973 (32 in total).
			#7909	**#7909 Enterprise Capacity BackUp Edition** Provides a Capacity BackUp Standard Edition for a Model 595 with #0944 Server Feature (4/32-way) (CCIN 7909).
			#7912	**#7912 Standard Capacity BackUp Edition** Provides a Capacity BackUp Standard Edition for a Model 595 with #0944 Server Feature (4/32-way) (CCIN 7912).

Processor	Processor Activation feature	Server feature	Edition feature	Model 595 processors
#8973	#7815	#0957		**50500 CPW 2/16-way processor in Client/Server Environment** ► Includes one #8973 with two 8-way POWER5 1.9 GHz processor (MCM) (CCIN 528C). ► Includes two #7815 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8973.
			#7910	**#7910 Standard Capacity BackUp Edition** Provides a Capacity BackUp Standard Edition for a Model 595 with #0957 Server Feature (2/16-way) (CCIN 7910).
			#7911	**#7911 Enterprise Capacity BackUp Edition** Provides a Capacity BackUp Standard Edition for a Model 595 with #0957 Server Feature (2/16-way) (CCIN 7911).
#8981	#7925	#0947		**46000/85000 CPW 16/32 Processor in Client/Server Environment** ► Includes two #8981s with four 8-way POWER5 1.65 GHz processor (MCM) (CCIN 52A4). ► Includes sixteen #8461 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8981 (32 in total).
			#7498	**#7498 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7498).
			#7499	**#7499 Enterprise Edition** Provides up to 85000 CPW for 5250 OLTP CPW (CCIN 7499).
#8981	#7925	#0952		**86000/165000 CPW 32/64 Processor in Client/Server Environment** ► Includes four #8981 with eight 8-way POWER5 1.65 GHz processor (MCM) (CCIN 52A4) ► Includes thirty-two #8461 Base Processor Activation features. ► Includes a 36 MB L3 cache per processor node (MCM). ► Includes 16 main memory slots per processor card #8981 (64 total).
			#7984	**#7984 Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7984).
			#7985	**#7985 Enterprise Edition** Provides up to 165000 CPW for 5250 OLTP CPW (CCIN 7985).

Model 595+ and 595 CUoD and OLTP features	
#5870	**#5870 Standard Edition for #0953** The #5870 Standard Edition for #0953 is ordered when a Standard Edition of a Model 595 system with #0953 8/16-way Server Feature 595 1x8968 is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#5871	**#5871 Standard Edition for #0954** The #5871 Standard Edition for #0954 is ordered when a Standard Edition of a Model 595 system with #0954 16/32-way Server Feature 595 2x8968 is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#5872	**#5872 Standard Edition for #0955** The #5872 Standard Edition for #0955 is ordered when a Standard Edition of a Model 595 system with #0955 32/64-way Server Feature 595 4x8968 is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#5875	**#5875 CBU Standard Edition for #0958** The #5875 CBU Standard Edition for #0958 is ordered when a Capacity Backup Edition of a Model 595 system with #0958 2/16-way Server Feature 595 1x8968 and no 5250 OLTP capability is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No

Model 595+ and 595 CUoD and OLTP features	
#5876	**#5876 CBU Standard Edition for #0959** The #5876 CBU Standard Edition for #0959 is ordered when a Capacity Backup Edition of a Model 595 system with #0959 4/32-way Server Feature 595 2x8968 and no 5250 OLTP capability is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#5890	**#5890 Enterprise Edition for #0953** The #5890 Enterprise Edition for #0953 is ordered when an Enterprise Edition of a Model 595 system with #0953 8/16-way Server Feature 595 1x8968 is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#5891	**#5891 Enterprise Edition for #0954** The #5891 Enterprise Edition for #0954 is ordered when an Enterprise Edition of a Model 595 system with #0954 16/32-way Server Feature 595 2x8968 is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#5892	**#5892 Enterprise Edition for #0955** The #5892 Enterprise Edition for #0955 is ordered when an Enterprise Edition of a Model 595 system with #0955 32/64-way Server Feature 595 4x8968 is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#5895	**#5895 CBU Edition for #0958** The #5895 CBU Edition for #0958 is ordered when a Capacity Backup Edition of a Model 595 system with #0958 2/16-way Server Feature 595 1x8968 and 5250 OLTP capability is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#5896	**#5896 CBU Edition for #0959** The #5896 CBU Edition for #0959 is ordered when a Capacity Backup Edition of a Model 595 system with #0959 4/32-way Server Feature 595 2x8968 and 5250 OLTP capability is required. Minimum operating system level: i5/OS V5R3M0 with LIC V5R3M5 or later releases Customer Install Feature: No
#7259	**#7259 595 Full Enterprise Enablement** The #7259 595 Full Enterprise Enablement is ordered when complete 5250 OLTP capability is required for all permanently activated processors on a 8/16-way, 16/32-way and 32/64-way Model 595 Enterprise Edition or High Availability Edition system. An additional i5/OS license might be required.
#7261	**#7261 595 Enterprise Enablement** A #7261 595 Enterprise Enablement is ordered when additional 5250 OLTP capability is required on a Model 595 Enterprise Edition or High Availability Edition system. One additional processor's worth of 5250 OLTP capacity is authorized with each feature. This 5250 capacity can be used across multiple physical #8966 processors are permanently activated. An additional i5/OS license might be required.
#7496	**#7496 Standard Edition for #0946** The #7496 Standard Edition for #0946 is ordered when a Standard Edition of a Model 595 system with #0946 8/16-way Server Feature is required. Minimum operating system level: i5/OS V5R3 Customer Install Feature: No
#7497	**#7497 Enterprise Edition for #0946** The #7497 Enterprise Edition for #0946 is ordered when an Enterprise Edition of a Model 595 system with #0946 8/16-way Server Feature is required. Minimum operating system level: i5/OS V5R3 Customer Install Feature: No
#7498	**#7498 Standard Edition for #0947** The #7498 Standard Edition for #0947 is ordered when a Standard Edition of a Model 595 system with #0947 16/32-way Server Feature is required. Minimum operating system level: i5/OS V5R3 Customer Install Feature: No

Model 595+ and 595 CUoD and OLTP features	
#7499	**#7499 Enterprise Edition for #0947** The #7499 is ordered when an Enterprise Edition of a Model 595 system with #0947 16/32-way Server Feature is required. Minimum operating system level: i5/OS V5R3 Customer Install Feature: No
#7579	**#7579 595 Enterprise Enablement** The #7579 595 Enterprise Enablement is ordered when additional 5250 OLTP capability is required on a permanently activated processor on a Model 595 Enterprise Edition server. An additional i5/OS license might be required. Minimum operating system level: i5/OS V5R3 Customer Install Feature: Yes
#7593	**#7593 595 On/Off Processor Day Billing** Once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, you must report your on/off usage to IBM at least monthly. This information, which is used to compute your billing data, is then provided to your sales channel. The sales channel places an order for a quantity of on/off processor day billing features and bills you. Order one #7593 for each billable processor day on a Model 595 with #8968 Processor Feature. Supported on Model 595.
#7598	**#7598 595 Full Enterprise Enablement** The #7598 595 Full Enterprise Enablement is ordered when complete 5250 OLTP capability is required for all permanently activated processors on Model 595 Enterprise Edition servers. An additional i5/OS license might be required. Minimum operating system level: i5/OS V5R3 Initial order only
#7668	**#7668 595 One Processor Activation** Ordering the #7668 595 One Processor Activation feature results in an activation code that can be used to permanently activate one additional processor on a Model 595 CUoD server with #8968 Processor Feature. One or more activation features can be ordered, up to the maximum for the server. Supported on Model 595.
#7799	**#7799 595 256GB Memory Activation** The #7799 595 256GB Memory Activation provides the activation of 256 GB of additional CUoD memory on a CUoD server. Multiple #7799s are allowed on a CUoD server up to the maximum CUoD memory of the server. A CUoD server with memory available for activation must be available. Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3 Ordered via MES or as part of initial system order Supported on Model 595 Customer Install Feature: Yes
#7815	**#7815 595 One Processor Activation** Ordering the #7815 595 One Processor Activation feature results in an activation code that can be used to permanently activate one additional processor on a Model 595 CUoD server with #8966 Processor Feature. One or more activation features can be ordered, up to the maximum for the server. Supported on Model 595.
#7839	**#7839 595 On/Off Processor Enablement** The #7839 595 On/Off Processor Enablement feature is ordered to temporarily enable a Model 595 for On/Off Capacity on Demand. When enabled, processors are requested on a temporary basis. An On/Off Capacity on Demand contract must be signed prior to ordering a #7839. The #7839 can be reordered prior to reaching the enabled limit of usable temporary processor days. Supported on Model 595.
#7925	**#7925 595 One Processor Activation** Ordering the #7925 595 One Processor Activation feature results in an activation code that can be used to permanently activate one additional processor on a Model 595 with #8981 Processor Feature. One or more activation features can be ordered. Ordered via MES or as part of initial system order. Customer Install Feature: Yes

Model 595+ and 595 CUoD and OLTP features	
#7926	**#7926 595 Reserve Capacity Prepaid** The #7926 595 Reserve Capacity Prepaid provides 30 processor-days of reserve capacity on a CUoD server. To establish reserve capacity on the server, select a quantity of inactive processors to be placed in the server's Shared Processor Pool as reserve processors. When the server recognizes that permanently activated processors assigned or available to the uncapped partitions have been 100% utilized, a processor day (good for a 24-hour period) is subtracted from the prepaid amount of days. CUoD server with Reserve Capacity on Demand enabled Model 595 is required. Ordered via MES or as part of initial system order Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3 Customer Install Feature: Yes
#7970	**#7970 595 1GB Memory Activation** The #7970 595 1GB Memory Activation provides the activation of 1 GB of additional CUoD memory on a CUoD server. Multiple #7970 features are allowed on a CUoD server up to the maximum CUoD memory of the server. CUoD 595 server with memory available for activation is required. Supported on Model 595. Customer Install Feature: Yes
#7971	**#7971 595 On/Off Processor Enablement** The #7971 595 On/Off Processor Enablement is ordered to enable your server for On/Off Capacity on Demand on a Model 595 with #8966 Processor Feature. When it is enabled, you can request processors on a temporary basis. You must sign an On/Off Capacity on Demand contract before you order this feature. Prior to reaching your enabled limit of usable temporary processor days, you can reorder this feature. Supported on Model 595.
#7972	**#7972 595 On/Off Processor Day Billing** When an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, you must report your on/off usage to IBM at least monthly. This information, which is used to compute your billing data, is then provided to your sales channel. The sales channel places an order for a quantity of on/off processor day billing features and bills you. Order one #7972 for each billable processor day on a Model 595 with #8966 Processor Feature. Supported on Model 595.
#7973	**#7973 595 On/Off Memory Enablement** The #7973 595 On/Off Memory Enablement is ordered to enable On/Off Capacity on Demand. When enabled, memory is activated on a temporary basis. An On/Off Capacity on Demand contract must be signed before this feature is ordered. The #7973 can be re-ordered prior to reaching the enabled limit of usable temporary memory days. Supported on Model 595. Customer Install Feature: Yes
#7974	**#7974 595 1GB Memory Day Billing** When an On/Off Memory Enablement feature is ordered and the associated enablement code is entered into the system, on/off usage must be reported to IBM at least monthly. Order one #7974 595 1GB Memory Day Billing for each billable memory day. Supported on Model 595. Customer Install Feature: Yes
#7975	**#7975 595 Reserve Capacity Prepaid** A #7975 595 Reserve Capacity Prepaid provides 30 processor-days of reserve capacity on a CUoD server. To establish reserve capacity on the server, select a quantity of inactive processors to be placed in the server's shared processor pool as reserve processors. When the server recognizes that non-reserve processors (permanently activated processors) that are assigned or available to the uncapped partitions have been 100% utilized, a processor day (good for a 24-hour period) is subtracted from the prepaid amount of days. Supported on Model 595.
#7984	**#7984 Standard Edition for #0952** The #7984 Standard Edition for #0952 is ordered when a Standard Edition of a Model 595 system with #0952 32/64-way Server Feature is required. Supported on Model 595. Minimum operating system level: i5/OS V5R3 Customer Install Feature: No

Model 595+ and 595 CUoD and OLTP features	
#7985	**#7985 Enterprise Edition for #0952** The #7985 Enterprise Edition for #0952 is ordered when an Enterprise Edition of a Model 595 system with #0952 32/64-way Server Feature is required. Ordered via MES or as part of initial system order. Supported on Model 595. Minimum operating system level: i5/OS V5R3 Customer Install Feature: No
#7993	**#7993 595 On/Off Processor Day Billing** Report on/off usage to IBM at least monthly once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system. Order one #7993 595 On/Off Processor Day Billing for each billable processor day. Ordered via MES Supported on Model 595. Customer Install Feature: Yes
#8427	**#8427 Base Single Processor Activation for FC8968** The #8427 Base Single Processor Activation for FC8968 provides base activation code that is used to permanently activate processors on a Model 595 server with #8968 Processor Feature. One or more of these no charge activation features is ordered, depending on the configuration rules. Ordered via MES or as part of initial system order Supported on Model 595. Customer Install Feature: Yes
#8457	**#8457 595 Base Processor Activation** The #8457 595 Base Processor Activation provides an activation code that can be used to permanently activate one processor on a Model 595 system with #8966 Processor Feature. One or more of these no-charge activation features can be ordered, depending on the configuration rules. Supported on Model 595.
#8460	**#8460 595 1GB CUoD Memory Activation** The #8460 595 1GB CUoD Memory Activation is ordered with Model 595 to Model 595 upgrades when 1 GB of system memory activation is desired. Multiple #8460s are allowed. Ordered via MES or as part of initial system order Supported on Model 595. Customer Install Feature: Yes
#8461	**#8461 Base One Processor Activation** The #8461 Base One Processor Activation provides base activation code that is used to permanently activate processor on a Model 595 server with #8981 Processor Feature. One or more of these no charge activation features is ordered, depending on the configuration rules. Ordered via MES or as part of initial system order Supported on Model 595. Customer Install Feature: Yes
#8468	**#8468 595 Reserve Capacity Prepaid** A #8468 595 Reserve Capacity Prepaid provides 30 processor days of reserve capacity on a CUoD server. To establish reserve capacity on the server, select a quantity of inactive processors to be placed in the server's shared processor pool as reserve processors. When the server recognizes that non-reserve processors (permanently activated processors) assigned or available to the uncapped partitions have been 100% utilized, a processor day (good for a 24-hour period) is subtracted from the prepaid amount of days. Supported on Model 595.
#8966	**#8966 595 1.9 Ghz Proccessor 0/16-way** The #8966 595 1.9 Ghz Proccessor 0/16-way provides a 0/16-way POWER5 processor book for the Model 595. The 1.9 GHz processors are packaged on two 8-way MCMs. The first #8966 in the system provides seven RIO-G adapter slots, and subsequent #8966s provide eight RIO-G adapter slots. The #8966 has 16 memory card slots, and a minimum of four memory features (four memory cards) are required for each processor book. Supported on Model 595. **Note:** When viewed from the HMC, the HSL/RIO-G adapter slots may be generically identified only with the characters *GX Adapter Card,* rather than a feature number.

Model 595+ and 595 CUoD and OLTP features	
#8968	**#8968 595 2.3GHz Processor 0/16-way** The #8968 595 2.3GHz Processor 0/16-way provides a 0/16-way POWER5 processor book for the Model 595. The 2.3 GHz processors are packaged on two 8-way MCMs. The first #8968 in the system provides seven RIO-G adapter slots and subsequent #8968s provide eight RIO-G adapter slots. The #8968 has 16 memory card slots and a minimum of four memory features (four memory cards) are required for each processor book. Supported on Model 595. **Note:** When viewed from the HMC, the HSL/RIO-G adapter slots may be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#8973	**#8973 595 1.9 Ghz Processor 0/16-way** The #8973 595 1.9 Ghz Processor 0/16-way provides a 0/16-way POWER5 processor book for the Model 595. The 1.9 GHz processors are packaged on two 8-way MCMs. The first #8973 in the system provides seven RIO-G adapter slots and subsequent #8973s provide eight RIO-G adapter slots. The #8973 has 16 memory card slots and a minimum of four memory features (four memory cards) are required for each processor book. Supported on Model 595. **Note:** When viewed from the HMC, the HSL/RIO-G adapter slots may be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#9286	**#9286 Base Enterprise Enablement** The #9286 is placed on an order of an Enterprise Edition server to enable one processor's worth of 5250 OLTP capability. Multiple #9286s can be on the order. Supported on Models 520 (9406 only), 550, 570, and 595 Minimum operating system level: i5/OS V5R3
#9298	**#9298 Full Enterprise Enablement** The #9298 Full Enterprise Enablement is ordered with a Model 570 to Model 570 or Model 595 to Model 595 upgrades when the starting Model 570 or 595 configuration already has full enterprise enablement. It provides complete 5250 OLTP capability for all permanently activated processors on the upgraded Enterprise Edition server. Ordered via MES Minimum operating system level: i5/OS V5R3 Customer Install Feature: Yes
#9299	**#9299 Base Enterprise Enablement** A #9299 Base Enterprise Enablement is placed on an order of an Enterprise Edition server to enable one processor's worth of 5250 OLTP capability. Multiple #9299s can be on the order. Minimum operating system level: i5/OS V5R3 Customer Install Feature: Yes

3.25 System i5 and eServer i5 features

You can find feature descriptions, including details about power and packaging, main storage, PCI IOP controllers, workstation controllers, LAN/WAN adapters, disk units, internal tape, CD-ROM, and other magnetic media controllers in Chapter 4, "POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement" on page 135.

3.26 Supported upgrades for System i5 and eServer i5 models

Refer to Chapter 16, "System i family upgrades" on page 599, for an overview of the upgrades that are supported for System i5 and eServer i5 models.

4

POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement

In this chapter, we describe the supported features for the System i and iSeries 800, 810, 825, 870, and 890 system units and towers, such as the power and packaging, main storage, workstation controller and console features, and communications features. This includes local area networks (LANs) and wide area networks (WANs), disk units, internal tape units, CD-ROM, DVD-RAM, DVD-ROM, and magnetic media controllers. We describe processor features in Chapter 3, “System i POWER5-based models” on page 43, and Chapter 15, “iSeries Model 800, 810, 825, 870, 890 processor features” on page 561.

System unit and processor enclosure: In this paper, we use several terms such as *system unit* or *processor enclosure* or *node* to represent the physical enclosure that include a set of available processor cards, memory cards, and I/O slots for the IBM System i Models 5xx and 8xx addressed in this paper. The IBM System i Model 595 system unit is actually contained within a larger frame.

For the POWER5 and POWER6 570 models, some IBM documentation refers to each processor enclosure as simply a *building block*.

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4.1 System i model features and card placement

In this chapter, we group the available IBM System i specify codes and feature codes into various categories. Within each description, we list the System i models to which the description applies, the i5/OS release level, and where appropriate, the microcode level (Licensed Internal Code).

Notes:

- Full card placement rules for PCI and PCI-x technology features is documented in *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011.
- For the latest information about which I/O device attaches to which I/O adapter on a specific IBM System i and System p processor model, refer to the IBM Prerequisite Web page at:

  http://www-912.ibm.com/e_dir/eServerPrereq.nsf

For reference purposes, in this chapter, we provide summary table feature information for direct-attached disks and disk controllers in 4.13, “Summary: System i direct attach disks, disk controller features, CCINs” on page 308.

Notes:

- Some feature descriptions in this chapter do not specifically state whether the feature is supported in a specific server. For example, some feature codes might be supported in the System i Model 520+, 550+, 570+, and 595+, but not in the eServer i Model 520, 550, 570, or 595, or even in the iSeries 800, 810, 825, 870, and 890 servers.
- We have attempted to indicate clearly if a processor hardware technology does or does not support the feature. In cases where, for example, a model 550 is listed without qualification, this means both the POWER5 and the POWER5+ technology supports the feature. Also when a model 570 is listed without qualification, this means the POWER5, POWER5+ and the POWER6 technology supports the feature.

  Recall that the models 515 and 525 require a minimum of i5/OS V5R4M0 and Licensed Internal Code V5R4M0.

  WAN adapters announced during 4Q 2007 usually require LIC level V5R4M5 and a minimum CUM package level as listed in the description.

  If your have doubts about code level, please consult the product announcement letter or the IBM Sales Manual, or check with your IBM representative.
- The darker shaded areas in the following tables and graphics indicate the base features.
- Some feature descriptions in this chapter do not fully identify the required minimum operating system level. For example, a feature that is supported with i5/OS V5R4 might require additional PTFs when installed in an i5/OS V5R3 or OS/400 V5R2 system. Some features require a different LIC level.

  To see the PTF prerequisites for a specific feature code, on the Hardware tab of the IBM eServer Prerequisite tool, specify the model and machine type and click **Go**. Then in the Search results box, click necessary link under Feature code. The IBM eServer Prerequisite tool is located on the Web at:

  `http://www-912.ibm.com/e_dir/eServerPrereq.nsf`
- You can find the high-speed link (HSL), 12X, System Power Control Network (SPCN), and dual-line cord feature codes and descriptions in Chapter 13, “HSL, 12X, SPCN, line cord, and communication cables for the System i family of models” on page 539.

4.2 PCI card placement for System i family of processor models

The implementation of Peripheral Component Interconnect (PCI) architecture in iSeries servers provides flexibility in the placement of input/output processors (IOPs) and input/output adapters (IOAs). This flexibility can result in a more efficient use of card slots, which in turn can lower the cost of implementation. For example, a specific PCI IOP can support two high-performance IOAs, or four slower IOAs. However, it might not have the capacity to support one high-performance IOA and two slower IOAs.

PCI architecture changes the configuration rules that are associated with card placement in System i POWER5 and POWER6 models and iSeries Models 800, 810, 825, 870, and 890 servers. PCI cards are subject to plugging rules. Earlier models require IOPs to be in specific slots in the system and expansion towers. Increased configuration flexibility reinforces a requirement to understand the detailed configuration rules.

Important:

- If you do not fully understand and follow the configuration rules and restrictions, it is possible to create a hardware configuration that does not work properly, marginally works, or quits working when a system is upgraded to future software releases.
- The POWER6 model processor enclosures do not support IOP cards.

The following IBM Redpaper publications describe the configuration and card placement rules that you must understand and follow to develop valid configurations. Use these papers as a guide when configuring IOAs and IOPs to size the system to meet client expectations.

- *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011
- *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for OS/400 V5R2 and earlier releases

4.3 Power and packaging

Power and packaging	
#0006	**#0006 LPAR Restrict Build Process** The #0006 is added to an initial order where LPAR #0140 is requested. This #0006 instructs manufacturing to only load SLIC on the minimum number of disk drives. The #0006 is mutually exclusive with #5000 SW Preload and with #0205 RISC-to-RISC migration. Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models.

#0092	**#0092 External xSeries Attach Specify** The #0092 is used to specify the number of external xSeries servers connected to the system. The IBM marketing configurator uses this specify code to determine the number of HSL and SPCN cables required and to ensure that the number of external xSeries servers does not exceed the system limit. Each external xSeries server is cabled with HSL cables and attached to the SPCN string like all other HSL attached I/O towers. A 1519-100 Integrated xSeries Adapter for iSeries or 1519-200 Integrated xSeries Adapter for System i5 model is required in each external xSeries server attached. Minimum operating system level: OS/400 V5R1 for 1519-100 Integrated xSeries Adapter for iSeries and i5/OS V5R3 for 1519-200 Integrated xSeries Adapter Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100.
#0123	**#0123 - #5074 Lower Unit in Rack** The #0123 feature specifies that one #5074 PCI Expansion Tower is to be mounted in the bottom of a #0551 System i 36U 1.8m Rack. The #0123 can be specified on initial orders and on Miscellaneous Equipment Specification (MES) orders. However, support for the field merging a #5074 into a #0551 System i 36U 1.8m Rack is not offered due to the weight of the #5074. A line cord for the #5074 must be ordered with the #5074. Corequisites: ► #0551 System i 36U 1.8m Rack ► #5074 PCI Expansion Tower ► #5101/#5111 30 Disk Expansion with Dual Line Cords Supported on Models (including "+ models") 520 (9406 only), 550, 570, 595, 810, 820, 825, 830, 840, 870, and 890. The #0123 was withdrawn from marketing as of 03 December 2002.
#0126	**#0126 CEC EIA Reduction Option** The #0126 CEC EIA Reduction Option ships the Model 595, 870 or Model 890 system unit tower in two pieces from IBM to be fully assembled at the client's location. The tallest part of the system unit tower is reduced 14 inches (35cm) from 80 inches (2 m) to 66 inches (1.65m). The shipping pallet and packing materials add to the dimensions to allow for clearance. Supported on Models (including "+ models") 595, 870 and 890. The #0126 is not a Customer Install Feature.
#0133	**#0133 Plant Install in Rack** The #0133 Plant Install in Rack feature is used to mount a Model 800 or 810 system unit (sidecar feature must be present) in a #0551 System i 36U 1.8m Rack either in the plant or in the field. The #0133 can be ordered on initial orders, MES orders or on model upgrades into the Model 810. The system is mounted in the #0551 at the plant if the system order received at the plant contains a system unit, #7116 System Unit Expansion, #0551 System i 36U 1.8m Rack, and #0133 Plant Install in Rack. If any of these four components are missing from the order, the system is not mounted in the #0551 at the plant. If the system is not installed in a #0551 System i 36U 1.8m Rack in the plant, the #0133 feature provides the following hardware components: a set of slides, cable management arm, a heavy duty tray, a Model 800 or 810 adapter plate and a pair of Model 800 or 810 lift covers. A line cord for both the system unit and the system unit expansion is required. For system units being mounted in the upper portions of a rack and *not* using the #1422 PDU Line Cord, be sure that the line cord (and SPCN cable, if present) is of sufficient length. A #7116 System Unit Expansion must be present or ordered for Models 800 and 810. An #0551 System i 36U 1.8m Rack is required for mounting a Model 800 or 810, but the #0551 is not required on the order, or on the inventory records for the system for which the #0133 Plant Install in Rack is ordered. Supported on Models 800 and 810. The #0133 is a Customer Install Feature if installed in the field. The #0133 was withdrawn from marketing as of 01 June 2006.

#0134	**#0134 Field Install in Rack (HD)** The #0134 Field Install in Rack (HD) is used to mount a Model 825 system unit in an #0551 System i 36U 1.8m Rack. The #0134 provides a set of slides, a cable management arm, a heavy duty tray, a Model 825 adapter plate, and a pair of Model 825 lift covers. Two line cords are required for the system unit. Be sure that the line cord (and SPCN cable, if present) is of sufficient length for system units mounted in the upper portions of a rack and not using the #1422 PDU Line Cord. An #0551 System i 36U 1.8m Rack is required for mounting the Model 825, but the #0551 is not required on the order or on the inventory records for the system for which the #0134 Field Install in Rack (HD) is ordered. The #0134 can be specified on an initial, model upgrade, or MES order. Supported on Model 825. The #0134 is a Customer Install Feature. The #0134 was withdrawn from marketing as of 21 November 2003.
#0135	**#0135 Rear Cover** The #0135 provides a single-wide rear cover for a Model 800 or 810 system unit without a #7116 System Unit Expansion installed. Supported on Models 800, 810 single wide The #0135 is a Customer Install Feature. The #0135 was withdrawn from marketing as of 01 June 2006.
#0136	**#0136 Rear Cover** The #0136 provides a double-wide rear cover for a Model 800 or 810 system unit with a #7116 System Unit Expansion installed. Supported on Models 800, 810 double wide The #0136 is a Customer Install Feature. The #0136 was withdrawn from marketing as of 01 June 2006.
#0137	**#0137 Field Install in Rack** The #0137 Field Install in Rack feature is used to mount a Model 800 or 810 system unit #7116 System Unit Expansion must be present) in a #0551 System i 36U 1.8m Rack in the field. This feature provides a set of slides, cable management arm, a heavy duty ray, an 800 or 810 adapter plate and a pair of 800 or 810 lift covers. Requires a line cord for both the system unit and the system unit expansion. For system units being mounted in the upper portions of a rack and *not* using the #1422 PDU Line Cord, be sure that the line cord (and SPCN cable, if present) is of sufficient length. A #0551 System i 36U 1.8m Rack is required for mounting the Model 800 and 810, but the #0551 feature is not required on the order or on the inventory records for the system that is ordering a #0137. The #0137 can be specified on any type of order (initial, model upgrades into a Model 810 or simple MES). Supported on Models 800 and 810. The #0137 is an IBM Customer Service Representative setup feature. The #0137 was withdrawn from marketing as of 01 June 2006.
#0138	**#0138 Field Install in Rack** The #0138 Field Install in Rack feature is used to mount a Model 825 system unit in a #0551 System i 36U 1.8m Rack. This feature provides a set of slides, cable management arm, a tray, a Model 825 adapter plate and a pair of Model 825 lift covers. The #0138 can be specified on any type of order (initial, model upgrade or simple MES). For system units being mounted in the upper portions of a rack and *not* using the #1422 PDU Line Cord, be sure that the line cord (and SPCN cable, if present) is of sufficient length. A #0551 System i 36U 1.8m Rack is required for mounting the Model 825. The #0551 feature is not required on the order or on the inventory records for the system that is ordering a #0138. Supported on Model 825. The #0138 is an IBM Customer Service Representative setup feature. The #0138 was withdrawn from marketing as of 01 June 2006.
#0140	**#0140 Logical Partitioning Specify** The #0140 is used to specify that this system is to be logically partitioned. The #0140 is only valid on n-way processors with OS/400 V4R5 or later. The #0140 is valid on select OS/400 V5R1 supported uni-processors (IStar and SStar processors only). The IBM marketing configurator adds a quantity of one #0140 to the order for each logical partition (LPAR) required. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models. The #0140 is a Customer Install Feature.

#0141	**#0141 HSL OptiConnect Specify** The #0141 is used to specify that this system is to be part of a cluster using HSL OptiConnect. This feature is used to allow the ordering of additional HSL cables to connect the systems that have OptiConnect. Requires an HSL OptiConnect capable system. Maximum: One Minimum operating system level: OS/400 V5R1 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models. The #0141 is a Customer Install Feature.

#0142	**#0142 Linux Partition Specify** The #0142 is used to specify that this system is to be logically partitioned with a Linux partition. Specify one #0142 for each Linux partition required. There are no minimum number of Linux direct attached features required per Linux partition. A Linux partition can exist without any Linux direct attached features in it (in this case, virtual storage, virtual LAN and virtual console is virtualized through the iSeries server). The following Linux direct attach features can be directly attached to a Linux partition. Linux direct attached features cannot be accessed by OS/400 and i5/OS partitions: ► #0601 - Direct Attach #2743 PCI 1 Gbps Ethernet IOA ► #0602 - Direct Attach #2760 PCI 1 Gbps Ethernet UTP IOA ► #0603 - Direct Attach #2744 PCI 100 Mbps Token-Ring IOA (withdrawn from marketing as of 01 June 2006) ► #0604 - Direct Attach #2763 PCI RAID Disk Unit Controller ► #0605 - Direct Attach #4748 PCI RAID Disk Unit Controller ► #0606 - Direct Attach #4778 PCI RAID Disk Unit Controller ► #0607 - Direct Attach #4838 PCI 100/10 Mbps Ethernet IOA ► #0608 - Direct Attach #4745 PCI WAN IOA (withdrawn from marketing as of 01 June 2006) ► #0609 - Direct Attach #2772 PCI Dual WAN/Modem IOA (withdrawn from marketing as of 01 June 2006) ► #0610 - Direct Attach #2773 PCI Dual WAN/ModemIOA (AP only) ► #0611 - Direct Attach #2765 PCI Fibre Channel Tape Controller (withdrawn from marketing for new orders only on 01 April 2005) ► #0612 - Direct Attach #2766 PCI Fibre Channel Disk Controller (withdrawn from marketing for new orders only on 01 April 2005) ► #0613 - Direct Attach #2742 PCI 2-Line WAN IOA ► #0614 - Direct Attach #2793 PCI 2-Line WAN w/Modem ► #0615 - Direct Attach #2794 PCI 2-Line WAN w/Modem (AP only) ► #0616 - Direct Attach #2805 PCI Quad Modem IOA ► #0617 - Direct Attach #2806 PCI Quad Modem (CIM) (AP only) ► #0618 - Direct Attach #2757 PCI-X Ultra RAID Disk Controller (withdrawn from marketing as of 01 June 2006. ► #0619 - Direct Attach #2782 PCI-X RAID Disk Unit Controller ► #0620 - Direct Attach #5700 PCI 1 Gbps Ethernet IOA ► #0621 - Direct Attach #5701 PCI 1 Gbps Ethernet UTP IOA ► #0623 - Direct Attach #2849 PCI 100/10 Mbps Ethernet IOA (withdrawn from marketing as of 01 June 2006. #0620 - Direct Attach #5700 PCI 1 Gbps Ethernet IOA is the recommended replacement) ► #0624 - Direct Attach #5702 PCI-X Ultra Tape Controller (withdrawn from marketing as of 1 June 2006. #0645 - Direct Attach #5712 PCI-X Tape/DASD Controller is the recommended replacement.) ► #0625 - Direct Attach #5704 PCI-X Fibre Channel Tape Controller ► #0626 - Direct Attach #2787 PCI-X Fibre Channel Disk Controller ► #0627 - Direct Attach #2780 PCI-X Ultra4 RAID Disk Controller ► #0628 - Direct Attach #5703 PCI-X RAID Disk Unit Controller ► #0630 - Direct Attach #5713 PCI-X 1Gbps iSCSI TOE-Copper ► #0631 - Direct Attach #5714 PCI-X 1Gbps iSCSI TOE-Optic ► #0632 - PCI USB 2.0 Adapter ► #0633 - Graphics Adapter ► #0634 - 128-port Asynchronous Adapter ► #0635 - SDLC/X.25 - 2-port Adapter ► #0637 - 100/10Mbps 4-port Ethernet Adapter ► #0642 - PCI Ultra3 RAID Adapter ► #0643 - Direct Attach #5706 PCI-X Gbps Ethernet-TX IOA ► #0644 - Direct Attach #5707 PCI-X 1 Gbps Ethernet-SX IOA ► #0645 - Direct Attach #5712 PCI-X Tape/DASD Controller ► #0646 - Direct Attach #5716 2 Gb Fibre Channel PCI-X Adapter ► #0647 PCI-X Disk/Tape Controller without IOP ► #0648 PCI-X Disk Controller 90MB without IOP ► #0649 Direct Attach #5583 Controller with 1.5GB Auxiliary Write Cache See the descriptions of the individual feature to understand the capabilities and PCI slot limitations of the features directly attached to Linux partitions. Linux direct attach features do not use or require PCI IOPs. They are only supported in a secondary LPAR partition and require a minimum operating system level of OS/400 V5R1 running in the primary partition. Corequisite: #0140 Logical Partition Specify. Maximum: Up to one less than the total number of partitions allowed on system/processor. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #0142 is a Customer Install Feature. Minimum operating system level: OS/400 V5R1. See the note under #0145 for restrictions on POWER6 systems direct attach of disk controllers with cache.

#0145	**#0145 AIX Partition Specify** The #0145 is used to specify that this system is to be logically partitioned with an AIX partition. A quantity of one #0145 is required on the order/inventory records for each AIX partition required. AIX features are only allowed within AIX partitions. AIX features are not allowed in i5/OS partitions. There is no minimum number of AIX direct-attached features required per AIX partition. See the list of direct attached feature codes listed in the description for #0142 Linux Partition Specify. Corequisite: #0140 Logical Partition Specify. Minimum operating system level: i5/OS V5R3 Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models. The #0145 is a Customer Install Feature. **Note**: On POWER6 technology systems starting in October 2007, the disk controllers with cache are not supported for direct attach to a Linux or AIX partition. This is consistent with IBM System p POWER6 models AIX support. A controller with cache supported by AIX or Linux is planned for a future release. The Linux and AIX partitions can use the controllers with cache, but only when using an i5/OS partition for virtual I/O.
#0205	**#0205 RISC-to-RISC Data Migration** The #0205 RISC-to-RISC Data Migration specify code is used when a client orders a new (RISC) iSeries server to replace an existing AS/400e RISC-based system. The #0205 is ordered on the initial order of a Models (including "+ models") 515, 520, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, or 890. Manufacturing loads only the System Licensed Internal Code (SLIC) up through QSYS of OS/400 when the #0205 is ordered. Because of this limited loading of OS/400 by manufacturing, #5000 Software Preload Required is not allowed with the #0205. The #0205 RISC-to-RISC Data Migration and #5000 Software Preload Required are mutually exclusive. The #0205 was withdrawn from marketing as of 01 April 2005 for 9405 Model 520.
#0272	**#0272 Renovated by IBM** The #0272 Renovated by IBM feature is a specify code used to indicate that the system is to be built from new or refurbished parts. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models.
#0299	**#0299 MES Conversion Analysis for #5580/5581 MES July 2005** The #0299 provides additional ordering/scheduling steps for clients adding Auxiliary Write Cache IOA to existing large cache disk controllers (converting #2757, #2780, to #5580, #5581). The IBM Marketing Configurator adds no-charge #0299 feature to the order to "flag" a conversion. The automated tool analyzes current MRPD configuration to determine if simple MES or potentially more complex MES. The order is scheduled if simple MES or upon confirmation the sales team has done planning for complex MES. For more details regarding Auxiliary Write Cache, refer to the IBM Redpaper publication *Planning for IBM eServer i5 Data Protection with Auxiliary Write Cache Solutions*, REDP-4003. Minimum operating system level: OS/400 V5R2 with Cumulative PTF package C5102530 and prerequisite PTFs or i5/OS V5R3 with Cumulative PTF package C5102530 and prerequisite PTFs. Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100.
#0454	**#0454 - LPAR Partition Init** The #0454 configures a partition and assigns the correct resources as specified by the customer. Supported on Models (including "+ models") 520 (9406 only), 525, 570, 570 (POWER6), and 595. The #0454 is not a Customer Install Feature.
0455	**#0455 - LPAR OS Preload** The #0455 loads the operating system (i5/OS or AIX 5L) specified by the client for a partition configured via #0454 LPAR Partition Initialization. Supported on Models (including "+ models") 520 (9406 only), 525, 570, 570 (POWER6), and 595. The #0455 is not a Customer Install Feature.
#0496	**#0496 - Force i5/OS Preload** The #0496 preloads i5/OS on a new server. The #0496 forces a preload of i5/OS on a single partition when Linux or AIX 5L partitions with virtual storage are on the order. i5/OS is preloaded on all the disk drives in the configuration. Do not use this feature if the Linux or AIX 5L partition has dedicated disk controllers and drives in the on order configuration. The #0496 is mutually exclusive with a #0006. Supported on Models (including "+ models") 515, 520, 525, 550, 570, and 595. The #0496 is not a Customer Install Feature.

#0551	**#0551 System i 36U 1.8m Rack** The #0551 System i 36U 1.8m Rack provides an empty 1.8 m rack, which contains 36 EIA units of space. The following features specify the means of populating the #0551: ► #0121 Lower Unit in Rack Specify ► #0122 Upper Unit in Rack Specify ► #0123 - #5074 Lower Unit in Rack ► #0125 - #9079 Lower Unit in Rack ► #0127 - 270 Field Install in Rack ► #0133 Plant Install in Rack ► #0134 Field Install in Rack (HD) ► #0137 Field Install in Rack ► #0138 Field Install in Rack ► #0578 PCI Expansion Unit in Rack ► #0588 PCI-X Expansion Unit in Rack ► #0595 PCI-X Expansion Unit in Rack ► #5786 TotalStorage Expansion 24 Disk Drawer ► #5790 PCI Expansion Drawer in a #7307 Dual I/O Unit Enclosure/#7314 Dual 5796 I/O Unit Enclosure 19-inch Rack Mounting Hardware ► #7182 515, 520, 525 Rack Mount ► #7884 520 Rack Mount ► #7786 550 Rack Mount The #0578/#0588 can be installed in the same rack as a Model 270 but cannot be connected to the Model 270. The #0595 can be attached to a Model 270. Optional features for the #0551 System i 36U 1.8m Rack are: ► #6068 Optional Front Door (black/flat) ► #6580 Optional Rack Security Kit ► #7840 Side-by-Side for 1.8m Racks ► #7841 Ruggedize Rack Kit The IBM marketing configurator does not manage rack space in the #0551 System i 36U 1.8m Rack. See 7.2, “Required EIA units” on page 356, to determine the number of EIA units required in the #0551 for each Hardware Management Console (HMC), System i system unit or expansion tower. One to four PDUs can be ordered with the #0551 System i 36U 1.8m Rack. The PDUs can be on initial orders, model upgrades, or on MES orders. Each PDU has six power sockets that can be used to provide power for devices rack mounted in the #0551 System i 36U 1.8m Rack using the #1422 PDU Line Cord. The following PDUs are supported: ► #5160 Power Distribution Unit 1 Phase NEMA (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) The following line cords are supported on the #5160 for connection to utility power: – #1424 - 200V 6-ft Locking Line Cord – #1425 - 200V 6-ft Watertight Line Cord – #1426 - 200V 14-ft Locking Line Cord – #1427 - 200V 14-ft Watertight Line Cord – #1446 - 4.3m 200V/30A Power Cord Korea – #1447 - 4.3m 200V/30A Power Cord AU – #1448 - 4.3m 200V/30A Power Cord NZ ► #5161 Power Distribution Unit - 1 Phase IEC (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) – #1477 - 4.3m 200V/ 16A IEC309/46 Power Cord – #1449 - 4.3m 200V/ 32A Power Cord EU 1-Phase for connection to utility power. ► #5162 Power Distribution Unit - 2 of 3 Phase – #1450 - 4.3m 200V/ 16A Power Cord EU 2-Phase for connection to utility power. ► #5163 Power Distribution Unit - 3 Phase (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) – #1477 - 4.3m 200V/ 16A IEC309/46 Power Cord

#0551 (contd.)	**#0551 System i 36U 1.8m Rack** ► #7188 Power Distribution Unit 1 Phase NEMA The #7188 PDU is the replacement for the #5160, #5161, #5162 and #5163. The following line cords are supported on the #7188 to connect to utility power: – #6489 - 14-ft 3PH/24A Power Cord – #6491 - 14-ft 1PH/63A Power Cord – #6492 - 14-ft 1PH/48-60A Power Cord – #6653 - 14-ft 3PH/16A Power Cord – #6654 - 14-ft 1PH/24-30A Power Cord – #6655 - 14-ft 1PH/24-30A Watertight Power Cord – #6656 - 14-ft 1PH/24A Power Cord – #6657 - 14-ft 3PH/24A Power Cord – #6658 - 14-ft 3PH/16A Power Cord Korea Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #0551 is a Customer Install Feature.
#0553	**#0553 System i 42U 2.0m Rack** The #0553 System i 42U 2.0m Rack provides a 2 m rack, which contains 42 EIA units of space. The following features specify the means of populating the #0553: ► #0133 Plant Install in Rack ► #0137 Field Install in Rack ► #0138 Field Install in Rack ► #0578 PCI Expansion Unit in Rack ► #0588 PCI-X Expansion Unit in Rack ► #0595 PCI-X Expansion Unit in Rack ► #5786 TotalStorage Expansion 24 Disk Drawer ► #5790 PCI Expansion Drawer in a #7307 Dual I/O Unit Enclosure/#7314 Dual 5796 I/O Unit Enclosure 19-inch Rack Mounting Hardware ► #7798 Model 550 non-IBM Rack Mount ► #7880 Side Attach Kit for Rack ► #7883 Model 520 non-IBM Rack Mount ► #7182 515, 520, 525 Rack Mount ► #7884 520, 525 Rack Mount ► #7886 550 Rack Mount One of the following features is required on the #0553: ► #6069 Optional Front Door for 2.0m Rack ► #6247 2.0m Rack Trim Kit ► #6249 - 2.0m Rack Acoustic Doors Optional features for the #0553 rack: ► #6580 Optional Rack Security Kit ► #7780 2.0m Rack Side Attach Kit ► #7841 Ruggedize Rack Kit The #0553 can support up to nine PDUs, four mounted vertically and five mounted horizontally. Horizontally mounted PDUs occupy one EIA of rack space. The IBM marketing configurator does not manage rack space in the #0553 System i 42U 2.0m Rack. See 7.2, "Required EIA units" on page 356, to determine the number of EIA units required in the #0553 for each HMC, System i system unit or expansion tower. The PDUs can be ordered on initial orders, model upgrades, or on MES orders. Each #5160, #5161, #5162 and #5163 PDU has six power sockets and the #7188 Power Distribution Unit has 12 power sockets that can be used to provide power for rack mounted devices in the #0553 iSeries rack using the #1422 or #6458 14-Ft Int 250V/10A Pwr Cd. Only #7188 PDUs can be mixed with other PDU features. Otherwise, no mixing of PDU types or features within a #0553 or on a system is allowed.

#0553 (contd.)	**#0553 System i 42U 2.0m Rack** The following PDUs are supported: ► #5160 Power Distribution Unit 1 Phase NEMA (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) The following line cords are supported on the #5160 for connection to utility power: – #1424 - 200V 6-ft Locking Line Cord – #1425 - 200V 6-ft Watertight Line Cord – #1426 - 200V 14-ft Locking Line Cord – #1427 - 200V 14-ft Watertight Line Cord – #1446 - 4.3m 200V/30A Power Cord Korea – #1447 - 4.3m 200V/30A Power Cord AU – #1448 - 4.3m 200V/30A Power Cord NZ ► #5161 Power Distribution Unit - 1 Phase IEC (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) – #1449 - 4.3m 200V/32A Power Cord EU 1-Phase for connection to utility power ► #5162 Power Distribution Unit – #1450- 4.3m 200V/16A Power Cord EU 2-Phase for connection to utility power ► #5163 Power Distribution Unit - 3 Phase (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) – #1477 - 200V 16A 14-ft IEC 309/46 Line Cord ► #7188 Power Distribution Unit 1 Phase NEMA The #7188 PDU is the replacement for the #5160, #5161, #5162 and #5163. The following line cords are supported on the #7188 to connect to utility power: – #6489 - 14-ft 3PH/24A Power Cord – #6491 - 14-ft 1PH/63A Power Cord – #6492 - 14-ft 1PH/48-60A Power Cord – #6653 - 14-ft 3PH/16A Power Cord – #6654 - 14-ft 1PH/24-30A Power Cord – #6655 - 14-ft 1PH/24-30A Watertight Power Cord – #6656 - 14-ft 1PH/24A Power Cord – #6657 - 14-ft 3PH/24A Power Cord – #6658 - 14-ft 3PH/16A Power Cord Korea All rack-mounted units plugging into a PDU require either a #1422 or #6458 PDU Power Cord. Mixing of different system models within a single #0553 2.0m rack is not allowed on initial order systems. PDU features can be ordered without a #0553 rack being ordered or present on the system. Supported on all POWER5 and POWER6 models and Models 800, 810, 825, 870, and 890. The #0553 is a Customer Install Feature.
#0554	**#0554 System i 11U .6m Rack** The #0554 System i 11U .6m Rack provides a 19-inch, 0.6m (24-inch) high rack with 11 EIA units of total space for installing rack mounted system units and/or expansion units. The #0554 includes a lockable front door. Filler panels and a perforated front door are included to help provide proper airflow and cooling. A rear door is not offered. The following feature is orderable on the #0554: ► #0599 - Rack Filler Panel Kit (if extra filler panels are required) The following PDUs are supported: ► #5160 Power Distribution Unit 1 Phase NEMA (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) The following line cords are supported on the #5160 for connection to utility power: – #1424 - 200V 6-ft Locking Line Cord – #1425 - 200V 6-ft Watertight Line Cord – #1426 - 200V 14-ft Locking Line Cord – #1427 - 200V 14-ft Watertight Line Cord – #1446 - 4.3m 200V/30A Power Cord Korea – #1447 - 4.3m 200V/30A Power Cord AU – #1448 - 4.3m 200V/30A Power Cord NZ

#0554 (contd.)	**#0554 System i 11U .6m Rack** ► #5161 Power Distribution Unit - 1 Phase IEC (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) The following line cord is supported on the #5161 for connection to utility power: – #1449 - 4.3m 200V/32A Power Cord EU 1-Phase ► #5162 Power Distribution Unit 2 of 3 Phase (6 sockets) (supported, not orderable) The following line cord is supported on the #5162 for connection to utility power: – #1450- 4.3m 200V/16A Power Cord EU 2-Phase ► #5163 Power Distribution Unit - 3 Phase (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) #7188 Power Distribution Unit 1 Phase NEMA (12 sockets) (orderable) The #7188 PDU is the replacement for the #5160, #5161, #5162 and #5163. The following line cords are supported on the #7188 to connect to utility power: – #6489 - 14-ft 3PH/24A Power Cord – #6491 - 14-ft 1PH/63A Power Cord – #6492 - 14-ft 1PH/48-60A Power Cord – #6653 - 14-ft 3PH/16A Power Cord – #6654 - 14-ft 1PH/24-30A Power Cord – #6655 - 14-ft 1PH/24-30A Watertight Power Cord – #6656 - 14-ft 1PH/32A Power Cord – #6657 - 14-ft 3PH/24A Power Cord – #6658 - 14-ft 3PH/16A Power Cord Korea The IBM marketing configurator does not manage rack space in the #0554 iSeries Rack. See 7.2, “Required EIA units” on page 356, to determine the number of EIA units required in the #0554 for each HMC, System i system unit or expansion tower. Mixing of different system models within a single #0554 is not allowed on initial order systems. The #0554 supports up to six Power Distribution Units (PDU) that are mounted horizontally. Each PDU takes up one EIA of rack space. All rack-mounted units plugging into a PDU require a PDU line cord with a C14 plug, #1422 or #6458 PDU Power Cord. Mixing of different system models within a single #0553 2.0m rack is not allowed on initial order systems. For system units mounted in the upper portions of a rack and not using the #1422 or #6458 PDU Power Cord, be sure the line cord (and SPCN cable, if present) is of sufficient length. PDU features can be ordered without a #0554 rack being ordered or present on the system. Supported on all POWER5 and POWER6 models. The #0554 is a Customer Install Feature. The #0554 was withdrawn from marketing on 9 October 2007.
#0555	**#0555 System i 25U 1.3m Rack** The #0555 provides a 19-inch, 1.3m (49-inch) high rack with 25 EIA units of total space for installing rack-mounted system units and/or expansion units. The #0555 includes lockable front and rear doors. Filler panels and perforated doors are included to help provide proper airflow and cooling. The following feature is orderable on the #0555: ► #0599 - Rack Filler Panel Kit (if extra filler panels are required) The IBM marketing configurator does not manage rack space in the #0555 iSeries Rack. See 7.2, “Required EIA units” on page 356, to determine the number of EIA units required in the #0555 for each HMC, System i system unit or expansion tower. Mixing of different system models within a single #0554 is not allowed on initial order systems. The #0555 supports up to six Power Distribution Units (PDU) that are mounted horizontally. Each PDU takes up one EIA of rack space. The following PDUs are supported: ► #5160 Power Distribution Unit 1 Phase NEMA (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) The following line cords are supported on the #5160 for connection to utility power: – #1424 - 200V 6-ft Locking Line Cord – #1425 - 200V 6-ft Watertight Line Cord – #1426 - 200V 14-ft Locking Line Cord

#0555 (contd.)	**#0555 System i 25U 1.3m Rack** – #1427 - 200V 14-ft Watertight Line Cord – #1446 - 4.3m 200V/30A Power Cord Korea – #1447 - 4.3m 200V/30A Power Cord AU – #1448 - 4.3m 200V/30A Power Cord NZ ► #5161 Power Distribution Unit - 1 Phase IEC (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) The following line cord is supported on the #5161 for connection to utility power: – #1449 - 4.3m 200V/32A Power Cord EU 1-Phase ► #5162 Power Distribution Unit 2 of 3 Phase (6 sockets) (supported, not orderable) The following line cord is supported on the #5162 for connection to utility power: – #1450- 4.3m 200V/16A Power Cord EU 2-Phase ► #5163 Power Distribution Unit - 3 Phase (6 sockets) (withdrawn from marketing as of 12 April 2005. A #7188 Power Distribution Unit Side Mount is the recommended replacement.) #7188 Power Distribution Unit 1 Phase NEMA (12 sockets) (orderable) The #7188 PDU is the replacement for the #5160, #5161, #5162 and #5163. The following line cords are supported on the #7188 to connect to utility power: – #6489 - 14-ft 3PH/24A Power Cord – #6491 - 14-ft 1PH/63A Power Cord – #6492 - 14-ft 1PH/48-60A Power Cord – #6653 - 14-ft 3PH/16A Power Cord – #6654 - 14-ft 1PH/24-30A Power Cord – #6655 - 14-ft 1PH/24-30A Watertight Power Cord – #6656 - 14-ft 1PH/32A Power Cord – #6657 - 14-ft 3PH/24A Power Cord – #6658 - 14-ft 3PH/16A Power Cord Korea All rack-mounted units plugging into a PDU require a PDU line cord with a C14 plug, #1422 or #6458 PDU Power Cord. Mixing of different system models within a single #0555 iSeries Rack is not allowed on initial order systems. PDU features can be ordered without a #0555 rack being ordered or present on the system. For system units mounted in the upper portions of a rack and not using the #1422 or #6458 PDU cord, be sure the line cord (and SPCN cable, if present) is of sufficient length. Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models. The #0555 is a Customer Install Feature.
#0574	**#0574 - #5074 Equivalent** The #0574 indicates a #5074 installed in a #5079 rack. The #0574 PCI Expansion Unit in Rack is the equivalent of a #5074 PCI Expansion Tower, but the #0574 is installed in an #5079 1.8 m I/O Tower. For each #5079 ordered, a default quantity of two #0574 specify codes appear on the order (one #0574 can be removed from the #5079 order). The #0574s can be RPQ added/removed to/from system inventory records, but at least one #0574 must exist for each #5079 on the inventory records. If an existing #5079 is to be shared between two systems, one #0574 must be RPQ removed from that system the #5079 was ordered against and one #0574 must be RPQ added to the other sharing system. Requires a #5079. Supported on Models (including “+ models”) 520 (9406 only), 525, 550, 570, and 595, as well as Models 810, 820, 825, 830, 840, 870, and 890. Also supported under 9411-100. CSU does not apply as the #0574 is rack mounted.

#0578	**#0578 PCI Expansion Unit in Rack** The #0578 PCI Expansion Unit in Rack is the equivalent of a #5078 PCI Expansion Unit, but the #0578 is mounted in an #0550, #0551, #0553, #0554, or #0555 iSeries Rack. An #0578 is eight EIA units high. Conversions between an #0578 and a #5078 are not allowed. Up to five #0578s are mounted in a #0551, #0553, #0554, or #0555 iSeries Rack depending on the amount of existing empty space in the #0551, #0553, #0554, and #0555. One #0578 can be mounted in an #0550 System i Rack. The #0578 can be ordered on initial, upgrade, and MES orders. The #0578 comes with two PDU-compatible power cords. A minimum of one PDU is required if one, two, or three #0578s are ordered to be installed in the same #0551, #0553, #0554, and #0555. A minimum of two PDUs are required if four #0578s are ordered for the same #0551 System i 36U 1.8m Rack. One PDU is required for an #0578 in an #0550. Each PDU has six power sockets for connecting rack mounted devices via #1422 PDU Line Cord. Each #0578 comes with two integrated PDU compatible line cords. The #1422 PDU Line Cords are *not* usable with this expansion unit. See the #0551, #0553, #0554, and #0555 feature descriptions for a list of available PDUs. See “#5078 PCI Expansion Unit” on page 154 for a description of #0578 and #5078 common features. Supported on Models 810, 820, 825, 830, 840, 870, and 890. The #0578 is not a Customer Install Feature. The #0578 was withdrawn from marketing as of 01 October 2004. A #0588 is the recommended replacement.
#0588	**#0588 PCI-X Expansion Unit in Rack** The #0588 PCI-X Expansion Unit in Rack is the equivalent of a #5088 PCI-X Expansion Unit, but the #0588 is mounted in an #0550, #0551, #0553, #0554, or #0555 iSeries Rack. An #0588 is 8 EIA units high. Conversions between an #0588 and a #5088 are not allowed. The #0588 PCI-X Expansion Unit in Rack has two redundant 575W power supplies and two integrated PDU compatible line cords. The line cords can be connected to the same PDU or separate PDUs in the #0550, #0551, #0553, #0554, and #0555 iSeries Racks. If the line cords are connected to separate PDUs, and these PDUs are connected to two different power sources, then the #0588 has dual line cord capability. A minimum of one PDU is required if one, two or three #0588s are ordered to be installed in the same #0551, #0553, #0554, or #0555. A minimum of two PDUs are required if four #0588s are ordered for the same #0551, #0553, #0554, or #0555. One PDU is required for an #0588 in an #0550. The #1422 PDU Line Cords are not usable with the #0588. See the #0551, #0553, #0554, and #0555 descriptions for a list of available PDUs. Up to five #0588s can be mounted in a #0551, #0553, #0554, or #0550 System i Racks (depending on the amount of existing empty space in the iSeries rack) and one #0588 can be mounted in a #0550 System i Rack. The #0588 can be ordered on initial, model upgrade, or MES orders. A #9943/#9844 Base PCI IOP can be used in a #0588 PCI-X Expansion Unit in Rack, but cannot be ordered with or for the #0588. See “#5088 PCI-X Expansion Unit” on page 156 for a description of #0588 and #5088 PCI-X Expansion Unit common features. The #0588 is also supported in Linux partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #0588 is a Customer Install Feature. The #0588 was withdrawn from marketing as of 01 June 2006.

#0595	**#0595 PCI-X Expansion Unit in Rack** The #0595 PCI-X Expansion Unit in Rack is a five EIA high rack-mounted version of the #0595 PCI-X Expansion Unit in Rack, which provides I/O capability for iSeries servers. The #0595 has identical functional capabilities to the #5095. A #9844 Base PCI IOP is included as base for the #0595 PCI-X Expansion Unit in Rack. A #9517 Base HSL-2/RIO-G Bus Adapter is shipped for Models 520, 550, 570, and 595. A #9877 Base HSL-2 Bus Adapter is shipped with new orders of a #5094 for Models 800, 810, 820, 825, 830, 840, 870, and 890. The #0595 PCI-X Expansion Unit in Rack has redundant power when #5138 Redundant Power and Cooling is specified. The #5138 includes a second 435W power supply. A second line cord must be ordered and installed. With the #5138 and second line cord installed, the #0595 has dual line cord capability. If the #0595 is to be connected to a PDU, then one or two #1422 line cords must be ordered. Up to eight #0595s can be installed in a #0551/#0553/#0554/#0555 System i 25U 1.3m Rack, depending on the amount of existing empty space in the #0551/#0553/#0554/#0555. See “#5095 PCI-X Expansion Tower” on page 158 for a description of #0595 and #5095 common features. The #0595 is also supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3; and AIX 5L for POWER V5.2. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #0595 is a Customer Install Feature. The tower and drawer configurations no longer include a #9844 Base PCI IOP as of 31 January 2006 with the announcement of IOP-less support in IBM System i5 and eServer i5 models.
#0599	**#0599 Rack Filler Kit** The #0599 Rack Filler Kit provides four spare filler Panels 3x 1U and 1x 3U height. They should be used if equipment is removed from racks to improve the appearance of the rack and to ensure and maintain proper air flow. Supported in IBM 19” racks such as #0551, #0553, #0554, and #0555. Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models and 9411-100. The #0599 is a Customer Install Feature.
#0694	**#0694 - #5094 Equivalent** The #0694 - #5094 Equivalent is used by the IBM marketing configurator to keep track of the number of #5094 PCI-X Expansion Tower rack-mounted units actually connected or cabled to the system. For each #5294 1.8m I/O Tower ordered, the IBM marketing configurator defaults a quantity of two #0694 specify codes to the order. One #0694 can be removed from the #5294 order. Process a Record Purposes Only (RPO) to add or remove the #0694s to or from system inventory records, but at least one #0694 must exist for each #5294 on the inventory records. If an existing #5294 is to be shared between two systems, process an RPO to remove one #0694 from the system that the #5294 was ordered against and to add one #0694 to the other sharing system. For each #8094 Optional 1.8 M I/O Rack ordered, the IBM marketing configurator defaults a quantity of one #0694 specify code on the order. The #0694 can be removed from the #8094 Optional 1.8 M I/O Rack via MES after the initial order if the rack-mounted #5094 PCI-X Expansion Tower does not attach to the same system as the #9094 Base PCI I/O Enclosure lower unit. In this case, record-purposes-only add the #0694 to the sharing system, which attaches the #5094 tower. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #0694 is a Customer Install Feature. The tower and drawer configurations no longer include a #9844 Base PCI IOP as of 31 January 2006 with the announcement of dual mode IOAs in the IBM System i5 and eServer i5 servers.
#0836	**#0836 - #4328 Load Source Specify** The #0836 indicates that a #4328 Disk Unit is used as the load source. A load source specify code is required on each new or upgrade order into Models 520, 550, 570, 570 (POWER6), or 595. These specify codes can be changed at any time. Supported on all Models (including “+ models”) 520, 525, 550, 570, 570 (POWER6), and 595. The #0836 is a Customer Install Feature.

#1800	**#1800 HSL-2 Ports - 2 Copper** The #1800 HSL-2 Ports - 2 Copper is a two port copper HSL-2/RIO-G bus expansion card for the Model 570, 570+ and 570 (POWER6). The #1800 adds capacity for an additional HSL-2/RIO-G loop on to the system. Hot plug capability is supported. Requires a #7875 CPU Power Regulator. Slot 6 is unavailable when #1800 is installed. Minimum operating system level: i5/OS V5R3 The #1800 is a Customer Install Feature. **Note**: When viewed from the HMC, this feature can be generically identified only with the characters *GX Adapter Card,* rather than the feature number.
#1801	**#1801 Optical Bus Expansion Card - 2 port** The #1801 Optical Bus Expansion Card - 2 port is a two port optical RIO-G bus expansion card for the Model 570, 570+. The #1801 adds two optical ports, enabling capacity for an optical loop for the Model 570, 570+. The ability to concurrently add or remove an I/O tower or drawer is not supported. When installed, slot 6 is unavailable. Optical SPCN cables cannot be directly attached to the Model 570 system unit, but can be attached to an intermediate I/O tower/drawer on the same SPCN loop. Corequisite: #7875 CPU Power Regulator Supported on Model 570, 570+. Minimum operating system level: i5/OS V5R3 The #1801 is a Customer Install Feature. **Note**: When viewed from the HMC, this feature can be generically identified only with the characters *GX Adapter Card,* rather than the feature number.
#1802	**#1802 12X Channel CEC GX Adapter** The #1802 12X Channel CEC GX Adapter provides a 12X adapter that is installed in the system unit (CEC). It provides two ports for attaching one 12X loop for external connectivity of 12X I/O expansion drawers. The #1802 is inserted in a GX slot. In the 570 (POWER6) processor enclosure the first GX slot does not take a PCI slot, but the second GX adapter takes the space of a PCIe slot. Supported on Model 570 (POWER6). Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5 or later The #1802 is a Customer Install Feature.
#1806	**#1806 HSL-2/RIO-G Ports - 2 Copper** The #1806 is a 2-port copper HSL-2/RIO-G Bus expansion card for Model 550, 550+. The #1806 adds two HSL-2/RIO-G ports, enabling capacity for an additional HSL-2/RIO-G loop on the system. See the #1807 for additional information.
#1807	**#1807 RIO-G Ports - 2 optical** The #1807 RIO-G Ports - 2 optical is a 2-port optical RIO-G bus expansion card for the Model 550, 550+. The #1807 adds two optical ports, enabling capacity for an optical loop. The ability to concurrently add or remove an I/O tower or drawer is not supported. Optical SPCN cables cannot be directly attached to the Model 550 system unit, but can be attached to an intermediate I/O tower or drawer on the same SPCN loop. Plugs into the optional HSL connector in the system unit and makes system unit slot C05 unusable for PCI card placement. Minimum operating system level: i5/OS V5R3, AIX 5L for Power V5.2, Red Hat Enterprise Linux AS for POWER Version 3, or SUSE Linux Enterprise Server 9 for POWER. Supported on Model 550, 550+. The #1807 is a Customer Install Feature. **Note**: When viewed from the HMC, this feature can be generically identified only with the characters *GX Adapter Card,* rather than the feature number.
#2739	**#2739 Optical Bus Adapter** The #2739 Optical Bus Adapter is used in the #5074 PCI Expansion Tower, #5079 1.8 m I/O Tower, and the #5078/#0578 PCI Expansion Unit in Rack to connect via optical HSL. The #2739 supports clustering (HSL OptiConnect). Minimum operating system level: OS/400 V5R1 Supported on all Models (including "+ models") 550, 570, and 595, as well as Models 825, 830, 840, 870, and 890. The #2739 is a Customer Install Feature.

#2776	**#2776 HSL-2 Ports - 8 Copper** The #2776 HSL-2 Ports - 8 Copper is an 8-port copper HSL-2 bus adapter, which supports up to four HSL-2 loops. Minimum operating system level: OS/400 V5R2 Supported on Models 870 and 890. The #2766 is a Customer Install Feature. The #2776 was withdrawn from marketing as of 01 June 2006.
#2785	**#2785 HSL-2 Ports - 2 Copper** The #2785 HSL-2 Ports - 2 Copper is a 2-port copper HSL-2 adapter for the Model 825. The #2785 can be installed in either of the two HSL adapter slots (C08 or C09) on the Model 825 backplane. Minimum operating system level: OS/400 V5R2 Supported on Model 825. The #2785 is a Customer Install Feature. The #2785 was withdrawn from marketing as of 01 June 2006.
#2786	**#2786 HSL Ports - 2 Optical** The #2786 HSL Ports - 2 Optical is a 2-port optical HSL adapter for the Model 825. The #2786 can be installed in either of the two HSL adapter slots (C08 or C09) on the Model 825 backplane. Minimum operating system level: OS/400 V5R2 Supported on Model 825. The #2786 is a Customer Install Feature. The #2786 was withdrawn from marketing as of 01 June 2006.
#2788	**#2788 HSL Ports - 8 Optical** The #2788 HSL Ports - 8 Optical is an 8-port optical HSL-2 bus adapter, which supports up to four optical HSL-2 loops in Models 870 and 890. Minimum operating system level: OS/400 V5R2 Supported on Models 870 and 890. The #2788 is not a Customer Install Feature. The #2788 was withdrawn from marketing as of 01 June 2006.
#2887	**#2887 HSL Two Bus Adapter** This is an optional feature for HSL-2/RIO-G connectivity for PCI-X expansion towers and units. The #2887 provides two copper HSL-2 ports. This features is used when converting bus adapters on installed towers/units. Minimum operating system level: OS/400 V5R2 Supported on Models (including "+ models") 520 (9406 only), 525, 550, 570, 570 (POWER6), and 595, as well as Models 825, 830, 840, 870, 890, and 9411-100. The #2887 is a Customer Install Feature.
#2888	**#2888 RIO-G Ports - 2 Copper** the #2888 is an HSL-2/RIO-2 adapter that is installed in the system unit. It provides two ports for attaching one HSL-2 loop for external connectivity of I/O expansion drawers and towers. The #2888 is inserted in the GX slot and does not take a PCI slot. Minimum operating system level: OS/400 V5R3 with V5R3M5 Licensed Internal Code Supported on Models 520+ and 525 **Note**: When viewed from the HMC, the HSL/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#3757	**#3757 Processor Book Service Shelf** A #3757 Processor Book Service Shelf kit is required by IBM service personnel to add and to remove a Model 595 processor book. A minimum of one #3757 is required at each site with a Model 595 installed. Minimum operating system level: i5/OS V5R3 Supported on Model 595.
#4643	**#4643 7040-61D I/O Drawer Attached** A #4643 7040-61D I/O Drawer Attached indicates that a 7040-61D I/O Drawer is installed in the 24-inch primary rack of a Model 595. One to four #4643s can be installed. Only AIX and Linux adapters and disk units can be installed in the 7040-61D. Minimum operating system level: i5/OS V5R3 Supported on Model 595. The #4643 is a Customer Install Feature.

#5074	**#5074 PCI Expansion Tower** The #5074 PCI Expansion Tower is attached to Models 820, 830, and 840 for adding up to 45 disk units (15 are “base”, 30 additional with #5101 or #5111), up to 11 PCI IOAs and up to two removable media units. The #5074 includes #9691 or #2739/#9739 bus adapter to provide the HSL interface to the system, a #9943 Base PCI IOP, space for two removable media devices, one battery backup, and redundant or hot swap power supplies. The #5074 is capable of controlling Ultra2 Small Computer System Interface (SCSI) disk units. Select two (any combination) of the following HSL cables for the first tower on an HSL loop. For additional towers on an HSL loop, select one HSL cable per tower: ► #1460 - 3m Copper HSL Cable ► #1461 - 6m Copper HSL Cable ► #1462 - 15m Copper HSL Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable ► #1472 - 100m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable For the Model 810, if the #5074 attaches to HSL ports A0 or A1, the HSL cable cannot exceed 6 m. For the Model 820, if the #5074 attaches to HSL port A1 of the system unit, the HSL connection to port A1 cannot exceed 6 m. When a #5074 is present, one #1460 or #1461 must be selected. Select one of the following SPCN cables per tower: ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable One #14xx power cord must be specified (geography dependent). See 13.2, “SPCN (power) cables” on page 545, for power cord options. Maximum: Six on the Model 520, 12 on the Model 550, 30 on the Model 570, 48 on the Model 595, five on the Model 820, 13 on Model 830, 23 on Model 840,and 47 on Model 890. The #5074 is also supported in Linux partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3. Supported on Models (including “+ models”) 520 (9406 only), 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, and 890 and 9411-100. The #5074 is a Customer Install Feature. The #5074 was withdrawn from marketing as of 01 October 2005. A #5094 PCI-X Expansion Tower is the recommended replacement.
#5075	**#5075 PCI Expansion Tower** The #5075 PCI Expansion Tower is attached to a Model 820 for adding up to six disk units and up to seven PCI IOAs. The #5075 includes a 32 MB PCI IOP (CCIN 284B) embedded on its backplane. In a Model 820, the seven PCI IOAs are supported (driven) by the embedded 32 MB PCI IOP and by #2843 PCI IOPs, #2790 PCI Integrated Netfinity® #2790 PCI Integrated Netfinity Server, or #2791/#2792/#2799 PCI Integrated xSeries Servers. The #5075 is capable of controlling Ultra2 SCSI disk units. A #5156 Redundant Power and Cooling feature can be added to provide a redundant power supply and a cooling fan. Select two (any combination) of the following HSL cables for the first tower on the Model 820. For additional towers, select one HSL cable per tower: ► #1460 - 3m Copper HSL Cable ► #1461 - 6m Copper HSL Cable ► #1462 - 15m Copper HSL Cable The #1462 is not allowed to attach the #5075 PCI Expansion Tower directly to system port A1 on the Model 270, 800, 810, or 820. When a #5075 is present, one #1460 or #1461 must be selected. For the Model 800, 810, or 820, if the #5075 attaches to HSL ports A0 or A1, the HSL cable cannot exceed 6 m. If the #5075 PCI Expansion Tower is in a clustered loop with a Model 825, 870, or 890, select one #1460 or #1461, and two of the following HSL cables: ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable

#5075 (contd.)	**#5075 PCI Expansion Tower** Select one of the following SPCN cables per tower: ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable One #14xx power cord must be specified (geography dependent). See 13.2, “SPCN (power) cables” on page 545, for power cord options. Maximum: Five Supported on Models 820, 810, and 825. The #5075 is a Customer Install Feature. The #5075 was withdrawn from marketing as of 21 November 2003.
#5078	**#5078 PCI Expansion Unit** The #5078 PCI Expansion Unit is a “top hat” that installs on top of the #9079 Base I/O Tower and on top of the #5074 PCI Expansion Tower. The #5078 has 14 PCI slots, which allows up to 11 PCI IOAs to be added. The PCI IOAs are supported (driven) by #2843 PCI IOPs, #2790 PCI Integrated Netfinity Server, and #2791/#2792/#2799 PCI Integrated xSeries Servers. Disk units and removable media devices are not supported and cannot be installed in the #5078 PCI Expansion Unit. The #5078 includes a bus adapter to provide the HSL interface to the system. The IBM marketing configurator adds to the order and defaults to copper HSL: ► #9691 Base Bus Adapter (copper HSL) ► #9739 Base Optical Bus Adapter (HSL) The two electrical cables of the #5078 connect to the power source in the #5074/#9079. The #5078 can be ordered with a #5074/#9079 on initial orders and the #5074/#9079 ships with the #5078 installed. The #5078 can also be ordered as an MES install on an existing #5074/#9079. The #5078 can be on the same HSL loop as the #5074/#9079, or it can be on a separate HSL loop from the #5074/#9079. If the #5078 and the #5074/#9079 are on the same HSL loop, then a #1460 - 3m Copper HSL Cable should be included in the order (for both initial orders and for MES orders) to connect the #5078 and the #5074/#9079. If the #5074/#9079 and the #5078 are on separate HSL loops, then one or two of the following HSL cables must be on the order. Select two HSL cables if the #5078 is the first or only expansion tower/unit on an HSL loop. Select one HSL cable if the #5078 coexists with other expansion towers or units on an HSL loop: ► #1460 - 3m Copper HSL Cable ► #1461 - 6m Copper HSL Cable ► #1462 - 15m Copper HSL Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable ► #1472 - 100m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable Select one of the following SPCN cables per expansion unit: ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable The #1462 cannot be used to connect to HSL port A1 on the Model 820. Requires a #5074 PCI Expansion Tower (1.8 m) or #9079 Base I/O Tower. The #5078 is supported for migration on a #5094 PCI-X Expansion Tower. Supported on Models 810, 820, 825, 830, 840, 870, and 890. Not supported on the #5079 1.8 m I/O Tower. Maximum: One per #5074 PCI Expansion Tower one per #9079 Base I/O Tower The #5078 is not a Customer Install Feature. The #5078 was withdrawn from marketing as of 01 October 2004. A #5088 is the recommended replacement.

#5079	**#5079 1.8 m I/O Tower (PCI I/O Expansion Tower)** The #5079 1.8 m I/O Tower is attached to Models 820, 830, and 840 for adding up to 90 disk units, up to 22 PCI IOAs, and up to four removable media units. The #5079 includes two (in any combination) #9691 or #9739 optical HSL bus adapters to provide the HSL interface to the system. The #5079 is essentially two #5074 PCI Expansion Tower, stacked in a single 1.8 m tower. Each ordered #5079 counts as two #5074s toward the system model maximums. For each #5079 ordered, a quantity of two #0574 - #5074 Equivalent specify codes are added to the order. The #5079 is capable of controlling Ultra2 SCSI disk units. Select two, three, or four (any combination) of the following HSL cables for each tower: ► #1460 - 3m Copper HSL Cable ► #1461 - 6m Copper HSL Cable ► #1462 - 15m Copper HSL Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable ► #1472 - 100m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable For the Model 810 and 820, if the #5079 attaches to HSL ports A0 or A1, the HSL cable cannot exceed 6 m. When a #5079 is present, one #1460 or #1461 must be selected. Select two of the following SPCN cables per tower: ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable Two #14xx power cords must be specified (geography dependent). See 13.2, “SPCN (power) cables” on page 545, for power cord options. Maximum: Two on the Model 810 and 820, nine on the Model 825, six on the Model 830, 11 on the Model 840, and 29 on the Model 870 and 890. The #5079 is also supported in Linux partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3. Supported on Models (including “+ models”) 520 (9406 only), 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, 890 and 9411-100. The #5079 is a Customer Install Feature. The #5079 was withdrawn from marketing as of 01 October 2005. A #5294 PCI-X Expansion Tower is the recommended replacement.
#5088	**#5088 PCI-X Expansion Unit** The #5088 PCI-X Expansion Unit is an 8 EIA high “top hat”, which can be installed on top of a #5074/#5094 PCI-X Expansion Tower or on top of a #9079/#9094 Base PCI I/O Enclosure. The #5088 has 14 PCI-X slots for installation of PCI IOPs and IOAs. Disk units and removable media are not supported by the #5088 and cannot be installed. The #5088 PCI-X Expansion Unit has two redundant 575W power supplies and two power connector cables that attach internally to the ac box of the tower on which it resides. The #5088 has dual line cord capability, but to achieve it, the tower on which it resides must have dual line cord capability. The #5088 PCI-X Expansion Unit includes a bus adapter to provide the HSL interface to the system. The IBM marketing configurator adds one of the following to the order: ► #9876 Base Optical Bus Adapter ► #9877 - Base HSL-2 Bus Adapter ► #9886 Base Optical Bus Adapter Specify when attaching to optical HSL-2 ports. ► #9887 Base HSL-2 Bus Adapter (default) Specify when attaching to copper HSL ports. For Models 810 and 820, if the #5088 attaches to HSl ports A0 or A1, the HSL cable cannot exceed 6 m. Select an appropriate number of the following HSL/HSL-2 cables: ► #1307 -1.75m Copper HSL-2 Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable

#5088 (contd.)	**#5088 PCI-X Expansion Unit** ► #1472 - 100m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable ► #1485 - 15m HSL-2 Cable Select one of the following SPCN cables per expansion unit: ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable ► #6001 Power Control Cable - 2M ► #6006 Power Control Cable - 3M ► #6007 Power Control Cable - 15M ► #6008 Power Control Cable - 6M ► #6029 Power Control Cable - 30M The #5088 PCI-X Expansion Unit can be ordered with a #5074 PCI Expansion Tower, #5094 PCI-X Expansion Tower, #9079 Base I/O Tower, and #9094 Base PCI I/O Enclosure on initial orders. The #5074, #5094, #9079, and #9094 ship with the #5088 installed. The #5088 can also be ordered as an MES install on an existing #5074, #5094, #9079, and #9094. A #5088 cannot be installed on a #5294 1.8m I/O Tower or an #8094 Optional 1.8 m I/O Rack. Maximum: One per #5074, #5094, #9079, and #9094 Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; as well as Models 810, 820, 825, 830, 840, 870, and 890 and 9411-100. The #5088 is also supported in Linux partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3. Minimum operating system level: OS/400 V5R2 The #5088 is not a Customer Install Feature. The #5088 was withdrawn from marketing as of 01 June 2006.
#5094	**#5094 PCI-X Expansion Tower** The #5094 PCI-X Expansion Tower is a PCI expansion tower that provides I/O capability for iSeries servers. The #5094 has 15 disk unit slots, with an additional 30 slots available with the #5108 30 Disk Expansion Feature. The #5094 has two removable media slots and 14 PCI-X IOP or IOA card slots. A #9844 Base PCI IOP is included as base and needs to be listed on an initial order for a #5094 PCI-X Expansion Tower. The #5094 PCI-X Expansion Tower includes a bus adapter to provide the HSL interface to the system. The IBM marketing configurator adds one of the following to the order: ► #6417 HSL-2/RIO-G Bus Adapter ► #9517 Base HSL-2/RIO-G Bus Adapter A #9517 Base HSL-2/RIO-G Bus Adapter is shipped for Models 520, 550, 570, and 595. ► #9876 Base Optical Bus Adapter ► #9877 Base HSL-2 Bus Adapter A #9877 Base HSL-2 Bus Adapter is shipped with new orders of a #5094 for Models 800, 810, 820, 825, 830, 840, 870, and 890. ► #9886 Base Optical Bus Adapter Specify when attaching to optical HSL-2 ports. ► #9887 Base HSL-2 Bus Adapter (default) Specify when attaching to copper HSL ports. For Models 810 and 820, if the #5094 attaches to HSL ports A0 or A1, the HSL cannot exceed 6 m. Select an appropriate number of the following HSL/HSL-2 cables: ► #1307 -1.75m Copper HSL-2 Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable ► #1472 - 100m Optical HSL Cable

#5094 (contd.)	**#5094 PCI-X Expansion Tower** ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable ► #1485 - 15m HSL-2 Cable Select one of the following SPCN cables per expansion unit: ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable ► #6001 Power Control Cable - 2M ► #6006 Power Control Cable - 3M ► #6007 Power Control Cable - 15M ► #6008 Power Control Cable - 6M ► #6029 Power Control Cable - 30M Order #5115 Dual Line Cords Tower on each #5094 PCI-X Expansion Tower required to have dual line cord support. When a #5094 is ordered *without* #5115, select *one line cord* from the following list. When a #5094 is ordered *with* the #5115, select *two line cords* from the following list: ► #1408 - 4.3m 200V/16A Power Cord Italy ► #1409 - 4.3m 200V/16A Power Cord Australia/New Zealand ► #1418 - 4.3m 200V/16A Power Cord South Africa ► #1419 - 4.3m 200V/16A Power Cord Israel ► #1420 - 4.3m 200V/16A Power Cord EU/Asia ► #1421 - 4.3m 200V/16A Power Cord CH/DK ► #1451 - 200V 6-ft Line Cord ► #1452 - 200V 14-ft Line Cord ► #1453 - 200V 6-ft Locking Line Cord ► #1454 - 200V 12A 14-ft TL Line Cord (U.S. default) ► #1455 - 200V 6-ft Watertight Line Cord ► #1456 - 200V 14-ft Watertight Line Cord ► #1476 - 4.3m 200V/12A Power Cord UK PCI IOAs are supported (driven) by the #9844/#9943 Base PCI IOP, #2843/#2844/#2847 PCI IOPs, #2790 PCI Integrated Netfinity Server, #2791/#2792/#2799 PCI Integrated xSeries Servers or #4710/#9710 Integrated xSeries Servers. The 45 disk unit positions are in groups of 15. Each group of 15 disk units is further divided into three groups of five disk units. Each group of five disk units is supported on a separate SCSI (low voltage differential (LVD)-SCSI) bus from a PCI/PCI-X Disk Controller. Each group of 15 disk units requires one PCI/PCI-X Disk Controller. The mounting for the first 15 disk units is included in the #5094 (part of the base tower). The mounting for the next 30 disk units is optional by ordering feature code #5108 30-Disk Expansion Feature. The #5094 and #9094 expansion towers offer additional LPAR configuration flexibility. Instead of the previous maximum number of three disk controllers supported in a #5094/#9094, now up to nine total disk controllers are supported. These can be either OS/400 controlled (maximum of six OS/400 partitions) or Linux controlled. The #5294 and #8094 are similarly enhanced and now support a maximum of 18 disk controllers. Each tower must have at least one PCI/PCI-X Disk Controller for each group of 15 disk units in the tower. Only the #5703/#0628 can be ordered as an extra controller (up to two #5703/#0628s per group of 15 disk units in the same tower) if #0143 Disk Controller Placement Exception is also ordered. A maximum of six #5703/#0628s per #5094/#9094 tower is supported. The number of disk units per PCI/PCI-X Disk Controller varies by configuration. Refer to Disk Controller Feature Code Section for controller description for limitations. The #5094 PCI-X Expansion Tower supports up to two removable media devices (internal tape or internal CD-ROM or DVD). These removable media devices are supported by the same PCI/PCI-X Disk Controller, which supports the 15 base disk units.

#5094 (contd.)	**#5094 PCI-X Expansion Tower** Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #5094 is also supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. Minimum operating system level: OS/400 V5R2 The #5094 is a Customer Install Feature. The tower and drawer configurations no longer include a #9844 Base PCI IOP as of 31 January 2006 with the announcement of IOP-less support in IBM System i5 and eServer i5 servers. Refer to "#9844 Inclusion Rules" on page 211.
#5095	**#5095 PCI-X Expansion Tower** The #5095 PCI-X Expansion Tower provides I/O capability for iSeries systems. The #5095 has seven PCI-X IOP or IOA slots. The #5095 also supports up to 12 disk units. A #9844 Base PCI IOP is included as base and should be on an initial order for the #5095 PCI-X Expansion Tower. The #5095 includes a bus adapter to provide the HSL-2 interface to the system. The IBM marketing configurator adds one of the following to the order: ► #6417 HSL-2/RIO-G Bus Adapter ► #9517 Base HSL-2/RIO-G Bus Adapter A #9517 Base HSL-2/RIO-G Bus Adapter is shipped for Models 520, 550, 570, 570 (POWER6), and 595. ► #9876 Base Optical Bus Adapter ► #9877 Base HSL-2 Bus Adapter A #9877 Base HSL-2 Bus Adapter is shipped with new orders of a #5094 for Models 800, 810, 820, 825, 830, 840, 870, and 890. ► #9886 Base Optical Bus Adapter (optical HSL-2) Specify when attaching to optical HSL-2 ports. ► #9887 Base HSL-2 Bus Adapter (default) Specify when attaching to copper HSL ports. For the Model 800 or 810, if the #5095 attaches to HSL ports A0 or A1, the HSL Cable cannot exceed 6 m. Select an appropriate number of the following HSL/HSL-2 cables: ► #1307 -1.75m Copper HSL-2 Cable ► #1470 - 6m Optical HSL Cable ► #1472 - 100m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable ► #1485 - 15m HSL-2 Cable Select one of the following line cords (select two if #5138 Redundant Power and Cooling is selected): ► #1410 - 200V 6-ft Line Cord ► #1411 - 200V 14-ft Line Cord ► #1412 - 125V 6-ft Line Cord (US default) ► #1414 - 200V 6-ft Locking Line Cord ► #1415 - 200V 6-ft Watertight Line Cord ► #1438 - 4.3m 200V/10A Power Cord Australia/New Zealand ► #1439 - 4.3m 200V/10A Power Cord EU/Asia ► #1440 - 4.3m 200V/10A Power Cord Denmark ► #1441 - 4.3m 200V/10A Power Cord South Africa ► #1442 - 4.3m 200V/10A Power Cord Swiss ► #1443 - 4.3m 200V/10A Power Cord UK ► #1444 - 4.3m 200V/10A Power Cord Italy Select one of the following SPCN cables: ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable ► #6001 Power Control Cable - 2M ► #6006 Power Control Cable - 3M ► #6007 Power Control Cable - 15M

#5095 (contd.)	**#5095 PCI-X Expansion Tower** ► #6008 Power Control Cable - 6M ► #6029 Power Control Cable - 30M The #5095 PCI-X Expansion Tower supports seven PCI-X IOA/IOP card slots. One Integrated xSeries Server is supported in slots C1 and C2. The #5095 PCI-X Expansion Tower has redundant power when #5138 Redundant Power and Cooling is present or ordered. The #5138 includes a second 435W power supply. A second line cord is required with #5138 to provide redundant power support in this tower and also enables dual line cord capability. If an Integrated xSeries Server is ordered as part of an MES, the #9844 Base PCI IOP (in slot C1) and any associated IOAs must be repositioned within the system. The #5095 is also supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. Minimum operating system level: OS/400 V5R2 Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #5095 is a Customer Install Feature. The tower and drawer configurations longer include a #9844 Base PCI IOP as of 31 January 2006 with the announcement of IOP-less support in IBM System i5 and eServer i5 servers. Refer to "#9844 Inclusion Rules" on page 211.
#5096	**#5096 PCI-X Expansion Tower (no disk)** The #5096 PCI-X Expansion Tower (no disk) #5096 is an I/O expansion tower that has 14 PCI slots. It does not support disk units and does not support any internal removable media devices. A #5088 cannot be mounted on a #5096. One bus adapter to provide the HSL interface to the system is required with each #5096. Select one of the following: ► #9517 - Base HSL-2 Bus Adapter (to specify two copper HSL-2 ports) ► #9876 - Base Optical Bus Adapter (to specify two optical HSL ports) One or two cables must be ordered to attach to the HSL or HSL-2 ports. When ordering cables to connect to the HSL interface, optical HSL, copper HSL, copper HSL-2, or copper HSL to HSL-2 cables are required. An HSL loop uses all optical or all copper ports and cables. A copper loop can intermix I/O towers and units with copper HSL and copper HSL-2 ports. Select the appropriate cable based on the type of HSL ports to which it is being attached, and the cable length required. The following HSL cables can be used with a #5096: ► #1307 - 1.75m HSL-2 Cable ► #1308 - 2.5m HSL-2 Cable ► #1460 3m HSL Cable ► #1461 6m HSL Cable ► #1462 15m HSL Cable ► #1470 6m HSL Optical Cable (model specific usage) ► #1471 30m HSL Optical Cable (model specific usage) ► #1472 100m HSL Optical Cable (model specific usage) ► #1473 250m HSL Optical Cable (model specific usage) ► #1464 6m HSL to HSL-2 Cable ► #1475 10m HSL to HSL-2 Cable ► #1481 1m HSL-2 Cable ► #1482 4m HSL-2 Cable ► #1483 10m HSL-2 Cable One of the following SPCN cables is required for each #5096: ► #1463 2m SPCN Cable ► #1464 6m SPCN Cable ► #1465 15m SPCN Cable ► #1466 30m SPCN Cable ► #0369 100m Optical SPCN Cable (model specific usage) ► #1468 250m Optical SPCN Cable (model specific usage) ► #6001 2m SPCN Cable ► #6006 3m SPCN Cable ► #6007 15m SPCN Cable

#5096 (contd.)	**#5096 PCI-X Expansion Tower (no disk)** ► #6008 6m SPCN Cable ► #6029 30m SPCN Cable No base IOP is included with the #5096. Each #5096 comes with redundant, hot-swap, power supplies. To enable further #5096 redundancy, dual line cord capability for the #5096 is provided by feature #5115. An additional #5096 line cord must be ordered when installing a #5115. Plugging in the second line cord, even if to the same outlet, enables the ac power modules to be redundant. The following line cords are supported on a #5096: #1399 - 4.3m 300V/16A #1406 - 200V 16A 14-Ft TL Line Cord #1408 - 4.3m 200V/16A Power Cord Italy #1409 - 4.3m 200V/16A Power Cord Australia/New Zealand #1418 - 4.3m 200V/16A Power Cord S Afric #1419 - 4.3m 200V/16A Power Cord Israel #1420 - 4.3m 200V/16A Power Cord EU/Asia #1421 - 4.3m 200V/16A Power Cord CH/DK #1451 - 200V 6-Ft Line Cord #1452 - 200V 14-Ft Line Cord #1453 - 200V 6-Ft Locking Line Cord #1454 - 200V 12A 14-Ft TL Line Cord (U.S. default) #1455 - 200V 6-Ft Wtrtght Line Cord #1456 - 200V 14-Ft Wtrtght Line Cord #1476 - 4.3m 200V/12A Power Cord UK Refer to PCI Card Placement Rules for Placement of IOPs and IOAs. Supported on all POWER5 and POWER6 models; Models 810, 825, 870, and 890, as well as 9411-100. Minimum operating system level: i5/OS V5R3 or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, SUSE Linux Enterprise Server 9 for POWER or later, AIX 5L for POWER V5.2 for IBM eServer or later The #5096 is a Customer Install Feature. Refer to “#9844 Inclusion Rules” on page 211. The 5096 can be converted to a 5094.
#5097	**#5097 1.8m I/O Tower** The #5097 1.8m I/O Tower is an I/O expansion tower that can contain up to 90 disk units. It has 28 PCI slots and four removable media bays. The #5097 is the result of a conversion from an #8093 Optional 1.8 m I/O Rack. Each #5097 is essentially a #5094 PCI-X Expansion Tower (bottom enclosure) and a #5074 PCI Expansion Tower (top enclosure) with side covers and casters removed, placed in a 1.8 M rack. Each #5097 counts as one #5094 and one #5074 towards the system model maximums. Two bus adapters are included with each #5097 to provide the HSL interfaces to the system. Top enclosure (#5074) ► #9691 Base Bus Adapter for copper HSL interfaces ► #9739 Base Optical Bus Adapter for optical HSL interfaces Bottom enclosure (#5094) ► #9877 - Base HSL-2 Bus Adapter for copper HSL-2 interfaces The upper (#5074) and lower (#5094) enclosures in a #5097 are not connected internally by an HSL cable. If the #5097 is to be placed in an HSL loop (both upper and lower enclosure on same HSL loop), an HSL cable is required to connect the upper and lower enclosures. An HSL loop uses all optical or all copper ports/cables. A copper loop can intermix I/O towers or units with copper HSL and copper HSL-2 ports. Select the appropriate cable based on the type of HSL ports to which it is being attached, and the cable length required. Select three or four (any combination) of the following HSL cables, on the first #5097 on system, initial order. For additional #5097s or on an MES, select two, three or four (any combination) HSL cables per tower: ► #1307 1.75m Copper HSL-2 Cable ► #1308 -2.5m Copper HSL-2 Cable ► #1460 - 3m Copper HSL Cable

#5097 (contd.)	**#5097 1.8m I/O Tower** ► #1461 - 6m Copper HSL Cable ► #1462 - 15m Copper HSL Cable ► #1464 - 6m SPCN Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable ► #1472 - 100m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1475 - 10m HSL to HSL-2 Cable ► #1481 - 1m HSL-2 Cable ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable Select two of the following SPCN cables for each #5097: ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable ► #6001 Power Control Cable - 2M ► #6006 Power Control Cable - 3M ► #6007 Power Control Cable - 15M ► #6008 Power Control Cable - 6M ► #6029 Power Control Cable - 30M Each #5097 includes two PCI IOPs. Process a Record Purposes Only (RPO) for each #5097 to add a quantity of one #0694 - #5094 Equivalent and one #0574 - #5074 Equivalent to the attaching system. Each of the two tower units within a #5097 fully supports 45 disk units. A #5101 or #5108 is not required. Dual line cord capability is available for the #5079 with #5105 Dual Line Cords I/O Tower (top enclosure) and #5114 Dual Line Cords Tower (bottom enclosure). With #5105 and #5114 installed, both tower units of a #5097 have dual line cord capability. Order two additional line cords (for a total of four) when a #5105 and #5114 is installed. The following line cords are supported on a #5097 (two line cord features required): ► #1396 - 4.3m 200V/16A Power Cord China ► #1399 - 4.3m 300V/16A ► #1406 - 200V 16A 14-ft TL Line Cord ► #1408 - 4.3m 200V/16A Power Cord Italy ► #1409 - 4.3m 200V/16A Power Cord Australia/New Zealand ► #1418 - 4.3m 200V/16A Power Cord South Africa ► #1419 - 4.3m 200V/16A Power Cord Israel ► #1420 - 4.3m 200V/16A Power Cord EU/Asia ► #1421 - 4.3m 200V/16A Power Cord CH/DK ► #1451 - 200V 6-ft Line Cord ► #1452 - 200V 14-ft Line Cord ► #1453 - 200V 6-ft Locking Line Cord ► #1454 - 200V 12A 14-ft TL Line Cord ► #1455 - 200V 6-ft Watertight Line Cord ► #1456 - 200V 14-ft Watertight Line Cord ► #1457 - 200V 6-ft Upper Line Cord ► #1458 - 200V 6-ft Upper Locking Cord ► #1459 - 200V 6-ft Upper Watertight Cord ► #1476 - 4.3m 200V/12A Power Cord UK The 45 disk unit positions in each unit of a #5097 are in groups of 15. Each group of 15 disk units is further divided into three groups of five disk units. Each group of five disk units is supported on a separate SCSI bus from a PCI Disk Unit Controller. The #5715 and #5703 controllers are not supported in the upper unit of a #5097. The two removable media bays of each unit within a #5097 are supported by the same PCI Disk Unit Controller, which supports disk unit positions D31 through D35 of each internal tower unit. HSL connections, two to four wall electrical outlets, one #0574 and one #0694 are required. The #5097 is only available as a MES to the #8093 during an upgrade to an eServer i5 server.

#5097 (contd.)	**#5097 1.8m I/O Tower** Minimum operating system level: i5/OS V5R3 Supported on Models 570, 570+, 595 and 9411-100. The #5097 is not a Customer Install Feature. The #5097 was withdrawn from marketing for new orders only on 01 October 2005.
#5101	**#5101 30 Disk Unit Expansion** The #5101 30 Disk Unit Expansion is a disk unit expansion enclosure feature for the #5074 PCI Expansion Tower, the #9074 Base I/O Tower, and the #9074/#9079 Base I/O Tower. The #5101 includes two 15-disk unit enclosures, one 765-watt power supply, backplanes, and cables. One Disk Unit Controller is required to support one 15-disk unit enclosure. Supported on Models (including "+ models") 520 (9406 only), 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #5101 is not a Customer Install Feature.
#5107	**#5107 30 Disk Expansion** The #5107 30 Disk Expansion is a disk unit expansion enclosure feature for the #9094 Base PCI I/O Enclosure. In the #8093 Optional 1.8 m I/O Rack/#8094 Optional 1.8 m I/O Rack, 30 disk expansions are installed in the bottom and upper units with no feature code required. The #5107 includes two 15-disk unit enclosures, one 765-watt power supply, backplanes, and cables. One Disk Unit Controller is required to support the 15 disk units in each of the two disk unit enclosures included with #5107. Minimum operating system level: OS/400 V5R2 Supported on Models 870, and 890. The #5107 is not a Customer Install Feature. The #5107 was withdrawn from marketing as of 01 June 2006.
#5108	**#5108 30 Disk Expansion Feature** The #5108 30 Disk Expansion Feature is a disk unit expansion enclosure feature for a #5094 PCI-X Expansion Tower. The #5108 includes two 15-disk unit enclosures, one power supply, backplanes and cables. One Disk Unit Controller is required to support each 15-disk unit enclosure. Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100 Minimum operating system level: OS/400 V5R2 The #5108 is not a Customer Install Feature.
#5111	**#5111 30 Disk Expansion with Dual Line Cords** The #5111 30 Disk Expansion with Dual Line Cords is a disk unit expansion enclosure feature for systems and towers that are dual line cord enabled. (Model 830 system units have a #5103, and Model 840 system units have a #5104 and #5074 PCI Expansion Tower, which have #5105.) The #5111 includes two 15-disk unit enclosures, backplanes and cables. One #4748/#4778 PCI RAID Disk Unit Controller is required to support one 15-disk unit enclosure. A #5103 is required when ordered for a Model 830 system unit, a #5104 is required when ordered for an 840 system unit, and a #5105 when ordered for a stand-alone #5074 PCI Expansion Tower or top unit in an #8079 Optional Base 1.8 m I/O Rack. Supported on Models (including "+ models") 520 (9406 only), 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #5111 is not a Customer Install Feature.
#5114	**#5114 Dual Line Cords Tower** The #5114 Dual Line Cords Tower provides dual line cord capability for the #9094 Base PCI I/O Enclosure and the lower unit in an #8093 Optional 1.8 m I/O Rack/#8094 Optional 1.8 m I/O Rack. Two #14xx line cords must be ordered on an initial order or a model upgrade into an 890 from a non-890 model. When ordering a #5114 as an MES, one 840W power supply is shipped and one additional #14xx line cord is required to be ordered. See 13.3, "Dual line cords" on page 547, for power cord options. The #5114 has country-specific or region-specific usage. Minimum operating system level: OS/400 V5R2 Supported on Models 870, and 890. The #5114 is not a Customer Install Feature. The #5114 was withdrawn from marketing as of 01 June 2006.

#5117	**#5117 30 Disk Expansion with Dual Line Cords** The #5117 30 Disk Expansion with Dual Line Cords is a disk unit expansion enclosure feature for a dual line cord enabled #9094 Base PCI I/O Enclosure. The #5117 includes two 15 disk unit enclosures, back planes and cables. One #2757 PCI-X Ultra RAID Disk Controller, #2780 PCI-X Ultra4 RAID Disk Controller, #4748 PCI RAID Disk Unit Controller, or #4778 PCI RAID Disk Unit Controller is required to support the 15 disk units in each of the two disk unit enclosures included with the #5117. Minimum operating system level: OS/400 V5R2 Supported on Models 870, and 890. The #5117 is not a Customer Install Feature. Supported on Models 870 and 890.
#5138	**#5138 Redundant Power and Cooling** The #5138 Redundant Power and Cooling provides redundant power for the #0595/#5095 PCI-X Expansion Tower. A #5138 consists of a 435W power supply and additional cooling fans. A second line cord is required on each #0595/#5095 with a #5138 installed. The #5138, together with the second line cord, enables dual line cord capability for an #0595/#5095. Maximum: One per #0595/#5095 PCI-X Expansion Tower Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. Minimum operating system level: OS/400 V5R2 The #5138 is a Customer Install Feature.
#5156	**#5156 Redundant Power and Cooling** The #5156 Redundant Power and Cooling adds an additional 575-watt power supply for redundancy and additional cooling fan to the #5075 PCI Expansion Tower. Marketing configurator defaults to a #5156 on a Model 820 for any added #5075 when the system unit contains a #5155 575-watt power supply. If a #5155 is ordered as an MES to an existing Model 820, default one #5156 for each #5075 present or ordered. The #5156s are not mandatory and can be removed from an order. Supported on Models 810, 820, and 825 The #5156 is a Customer Install Feature. The #5156 was withdrawn from marketing as of 01 June 2006.
#5158	**#5158 850W AC Power Supply** The #5158 is an optional 850W power supply, which provides redundant power for the Model 520 system unit. A second line cord is required. Supported on Models 520, 520+, 525. The #5158 is a Customer Install Feature.
#5159	**#5159 850 Watt Power Supply** The #5159 provides an optional 850W power supply, which installs in a 520 system unit with processor #8325, #8327 or #8330 and provides redundant power. The #5159 requires an additional system unit line cord feature to be ordered. Minimum operating system level: i5/OS V5R3 with V5R3M5 LIC, AIX 5L for POWER V5.2 for IBM eServer, Red Hat Enterprise Linux AS for POWER Version 3, SUSE Linux Enterprise Server 9 for POWER Supported on Model 515, 520+ and 525. The #5159 is a Customer Install Feature.
#5168	**#5168 30 Disk Expansion for #9194 Tower** The #5168 30 Disk Expansion for #9194 Tower is a unit expansion enclosure feature for the #9194 Base PCI-X Expansion Tower. The #5168 includes two 15-disk-unit enclosures, one power supply, back-planes and cables. A minimum of one disk unit controller is required to support each of the two 15-disk-unit enclosures included with #5168. Minimum operating system level: i5/OS V5R3 Supported on Model 595 #9194 towers. The #5168 is an IBM Customer Service Representative setup feature.
#5294	**#5294 1.8m I/O Tower** The #5294 1.8m I/O Tower has space for 90 disk units, has 28 PCI-X IOP or IOA slots, and has four removable media bays. The #5294 is equivalent to two #5094 PCI-X Expansion Towers, with covers and casters removed and positioned in a 1.8m rack. It includes two bus adapters to provide the HSL interface to the system. The IBM marketing configurator adds two, in any combination, of the following to the order: ► #6417 HSL-2/RIO-G Bus Adapter ► #9517 Base HSL-2/RIO-G Bus Adapter A #9517 Base HSL-2/RIO-G Bus Adapter is shipped for Models (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 and 9411-100. ► #9876 Base Optical Bus Adapter ► #9877 Base HSL-2 Bus Adapter A #9877 Base HSL-2 Bus Adapter is shipped with new orders of a #5294 for Models 800, 810, 820, 825, 830, 840, 870, and 890.

#5294 (contd.)	**#5294 1.8m I/O Tower** ► #9886 Base Optical Bus Adapter (optical HSL-2) Specify when attaching to optical HSL-2 ports. ► #9887 Base HSL-2 Bus Adapter (default) Specify when attaching to copper HSL ports. The #5094 PCI-X Expansion Tower is the default when a PCI IOP or IOA is ordered that requires a PCI expansion unit. The #5294 can be specified on the IBM marketing configurator's extra controllers screen. For each #5294 ordered, two #0694 - #5094 Equivalent specify codes are added to the order. If a #5294 is to be shared between two systems, process an RPO to remove one #0694 from the original ordering system and add it to the sharing system. The upper and lower enclosures (#5094 PCI-X Expansion Tower) in the #5294 are not connected internally by an HSL cable. Two to four of the following HSL/HSL-2 cables are required: ► #1307 -1.75m Copper HSL-2 Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable ► #1472 - 100m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable ► #1485 - 15m HSL-2 Cable For the Model 810, if the #5294 attaches to HSL ports A0 or A1, the HSL cable cannot exceed 6 m. For the Model 820, the HSL cable connection to port A1 cannot exceed 6 m. Two #9844 Base PCI IOPs are included with each #5294 1.8m I/O Tower. The IBM marketing configurator allows a #5294 to exist in the field without any #9844s present, but all ordered #5294s ship with two #9844s. The #5294 1.8m I/O Tower is capable of controlling Ultra4 (u320) SCSI disk units. If no #5116 Dual Line Cords - #5294 is installed, select two line cords from the following list. If one #5116 Dual Line Cords - #5294 is installed, select three line cords from the following list. If two #5116 Dual Line Cords - #5294 are installed, select four line cords from the following list. ► #1451 - 200V 6-ft Line Cord ► #1452 - 200V 14-ft Line Cord ► #1453 - 200V 6-ft Locking Line Cord ► #1454 - 200V 12A 14-ft TL Line Cord (default) ► #1455 - 200V 6-ft Watertight Line Cord ► #1456 - 200V 14-ft Watertight Line Cord ► #1457 - 200V 6-ft Upper Line Cord ► #1458 - 200V 6-ft Upper Locking Cord ► #1459 - 200V 6-ft Upper Watertight Cord Select two of the following SPCN cables per tower: ► #0369 - 100m Optical SPCN Cable (825, 830, 840, 870, 890) ► #1463 - 2m SPCN Cable (270, 800, 810, 820, 825, 830, 840, 870, 890) ► #1464 - 6m SPCN Cable (270, 800, 810, 820, 825, 830, 840, 870, 890) ► #1465 - 15m SPCN Cable (270, 800, 810, 820, 825, 830, 840, 870, 890) ► #1466 - 30m SPCN Cable (270, 800, 810, 820, 825, 830, 840, 870, 890) ► #1468 - 250m Optical SPCN Cable (825, 830, 840, 870, 890) ► #6001 Power Control Cable - 2M ► #6006 Power Control Cable - 3M ► #6007 Power Control Cable - 15M ► #6008 Power Control Cable - 6M ► #6029 Power Control Cable - 30M The 90 disk unit positions are in groups of 15. Each group of 15 disk units is further divided into three groups of five disk units. Each group of five disk units is supported on a separate SCSI bus from a PCI/PCI-X Disk Controller. Each group of 15 disk units requires one PCI/PCI-X Disk Controller. Each group of 15 disk units requires one #PCI/PCI-X Disk Controller. The #5294 1.8m I/O Tower supports up to four removable media devices (internal tape or CD-ROM or DVD). These removable media devices are supported by the two PCI/PCI-X Disk Controllers, which support the first two groups of 15 disk units.

#5294 (contd.)	**#5294 1.8m I/O Tower** The #5294 and #8094 expansion towers offer additional LPAR configuration flexibility. Instead of the previous maximum number of six disk controllers supported in a #5294/#8094, now up to eighteen total disk controllers are supported. These can be either OS/400 controlled (maximum of six OS/400 partitions) or Linux controlled. The #5703/#0628 disk controller can be used to go beyond the maximum of three, already supported PCI/PCI-X Disk Controller per top or bottom unit of the #5294/#8094. Each tower must have at least one PCI/PCI-X Disk Controller for each group of 15 disk units in the tower. Only the #5703/#0628 can be ordered as an extra controller (up to two #5703/#0628s per group of 15 disk units in the same tower) if #0143 Disk Controller Placement Exception is also ordered. The number of disk units per PCI/PCI-X Disk Controller varies by configuration. Refer to Disk Controller Feature Code Section for controller description for limitations. The #5294 1.8m I/O Tower reports to the system as two CCIN 5094. Each ordered #5294 counts as two #5094s toward the system model maximums. Minimum operating system level: OS/400 V5R2 Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. Supported on all POWER5 and POWER6 models; 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #5294 is a Customer Install Feature. The tower and drawer configurations longer include a #9844 Base PCI IOP as of 31 January 2006 with the announcement of IOP-less support in System i5 and eServer i5 servers. Refer to “#9844 Inclusion Rules” on page 211.
#5296	**#5296 1.8m I/O Tower (no disk)** The #5296 1.8m I/O Tower (no disk) is a I/O expansion tower that has 28 PCI slots, no disk unit bays, and no removable media bays. Each #5296 is essentially two #5096 PCI-X Expansion Towers, with side covers and casters removed, placed in a 1.8M rack. Each #5296 counts as two #5096s towards the system model maximums. Two bus adapters, to provide the HSL interfaces to the system, are required with each #5296. Select two of the following: ► #9517 - Base HSL-2 Bus Adapter (for copper HSL-2 interfaces) ► #9876 - Base Optical Bus Adapter (for optical HSL interfaces) The upper and lower enclosures (#5096s) in a #5296 are not connected internally by an HSL cable. If the #5296 is to be placed in an HSL loop (both upper and lower enclosure on same HSL loop), an HSL-2 cable is required to connect the upper and lower enclosures. An HSL loop uses all optical or all copper ports/cables. A copper loop can intermix I/O towers/units with copper HSL and copper HSL-2 ports. Select the appropriate cable based on the type of HSL ports to which it is being attached, and the cable length required. Select three or four of the following HSL cables, on initial orders, for the first #5296 on the system. For additional #5296s, or on an MES order, select two, three, or four of the following HSL cables per tower: ► #1307 - 1.75m HSL-2 Cable ► #1308 - 2.5m HSL-2 Cable ► #1460 3m HSL Cable ► #1461 6m HSL Cable ► #1462 15m HSL Cable ► #1470 6m HSL Optical Cable (model specific usage) ► #1471 30m HSL Optical Cable (model specific usage) ► #1472 100m HSL Optical Cable (model specific usage) ► #1473 250m HSL Optical Cable (model specific usage) ► #1464 6m HSL to HSL-2 Cable ► #1475 10m HSL to HSL-2 Cable ► #1481 1m HSL-2 Cable ► #1482 4m HSL-2 Cable ► #1483 10m HSL-2 Cable Select two of the following SPCN cables for each #5296: ► #1463 2m SPCN Cable ► #1464 6m SPCN Cable ► #1465 15m SPCN Cable ► #1466 30m SPCN Cable ► #0369 100m Optical SPCN Cable (model specific usage) ► #1468 250m Optical SPCN Cable (model specific usage)

#5296 (contd.)	**#5296 1.8m I/O Tower (no disk)** ► #6001 2m SPCN Cable ► #6006 3m SPCN Cable ► #6007 15m SPCN Cable ► #6008 6m SPCN Cable ► #6029 30m SPCN Cable No base IOPs are included with a #5296. For each #5296 ordered, a quantity of two #0694, #5096 Equivalent, specify codes will be added to the order. If a #5296 is to be shared between two systems, one #0694 must be removed from the original ordering system and added to the sharing system, using a Record Purpose Only (RPO) change. Dual line cord capability is available for the #5296 with feature #5116. With a #5116 installed, both tower units of a #5296 will have dual line cord capability. Two additional line cords (for a total of four), must be ordered when a #5116 is installed. Plugging in the second line cord from the upper and lower units, even if to the same outlet, enables each unit's ac power modules to be redundant. For the best power protection, the first and second line cords should be attached to different power sources. Two of the following line cords are required on a #5296: ► #1399 - 4.3m 300V/16A ► #1406 - 200V 16A 14-Ft TL Line Cord ► #1408 - 4.3m 200V/16A Power Cord Italy ► #1409 - 4.3m 200V/16A Power Cord Australia/New Zealand ► #1418 - 4.3m 200V/16A Power Cord South Africa ► #1419 - 4.3m 200V/16A Power Cord Israel ► #1420 - 4.3m 200V/16A Power Cord EU/Asia ► #1421 - 4.3m 200V/16A Power Cord CH/DK ► #1451 - 200V 6-Ft Line Cord ► #1452 - 200V 14-Ft Line Cord ► #1453 - 200V 6-Ft Locking Line Cord ► #1454 - 200V 12A 14-Ft TL Line Cord ► #1455 - 200V 6-Ft Watertight Line Cord ► #1456 - 200V 14-Ft Watertight Line Cord ► #1476 - 4.3m 200V/12A Power Cord UK Supported on all POWER5 and POWER6 models; Models 810, 825, 870, and 890, and 9411-100. Minimum operating system level: i5/OS V5R3 or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, SUSE Linux Enterprise Server 9 for POWER or later, AIX 5L for POWER V5.2 for IBM eServer or later The #5296 is a Customer Install Feature. The #5296 can be converted to a #5294.
#5554	**#5554 Mirror 35 GB Disk/Controller Package** The #5554 provides a disk unit controller (#2780 PCI-X Ultra4 RAID Disk Controller equivalent) and twelve 15k rpm 35 GB disk units (#4326 35.16 GB 15k RPM Disk Unit equivalent) for servers doing mirroring. Either #0042 Mirrored System IOP Level or #0043 Mirrored System Bus Level is required. Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER V5.2 Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #5554 is a Customer Install Feature. The #5554 was withdrawn from marketing as of 25 October 2005. The #5555 Mirror 70 GB Disk/Controller Package or #2780 PCI-X Ultra4 RAID Disk Controller plus a quantity of 12 of #4326 35.16 GB 15k RPM Disk Unit are the recommended replacements.
#5555	**#5555 Mirror 70 GB Disk/Controller Package** The #5555 provides a disk unit controller (#2780 PCI-X Ultra4 RAID Disk Controller equivalent) and twelve 15k rpm 70 GB disk units (#4327 70.56 GB 15k RPM Disk Unit equivalent) for servers doing mirroring. Either #0042 Mirrored System IOP Level or #0043 Mirrored System Bus Level is required. Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER, V5.2 for iSeries Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #5555 is a Customer Install Feature.

#5556	**#5556 - Mirror 141.12 GB Disk/Controller Package** The #5556 provides a disk unit controller (#2780 PCI-X Ultra4 RAID Disk Controllerequivalent) and twelve 15k rpm 141.12 GB disk units (#4328 141.12 GB 15k RPM Disk Unit equivalent) for servers doing mirroring. Either #0042 Mirrored System IOP Level or #0043 Mirrored System Bus Level is required. Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER, V5.2 for iSeries Supported on all POWER5 and POWER6 models and 9411-100. The #5556 is a Customer Install Feature.
#5560	**#5560 - Mirror 35 GB Drawer Package** The #5560 package feature includes one #0595 rack mount I/O expansion unit, one #9844 IOP, twelve #4326 35.16 GB 15k rpm disk units and two high-function, large write cache disk controllers (#2757 or newer) for servers doing mirroring. The I/O drawer requires five EIA of rack space and has a total of seven PCI-X IOP or IOA slots and 12 disk unit slots. Three PCI-X slots and 12 disk unit slots are filled with the package contents, but four PCI-X slots can be used by other PCI-X IOPs or IOAs. On IBM ordering, shipping, and inventory documentation, the component features specifically for the #0595 I/O drawer, the disk units, and the disk controllers are not shown. The chargeable #5560 feature number is shown and carries the price and warranty for this package. Use the specific component features such as #0595 for all planning and implementation documentation. See the #0595 description for HSL cable, linecord and SPCN cable selections. Requires the #0040 Mirrored System Disk Level. Supported on all POWER5 and POWER6 models and 9411-100. The #5560 is a Customer Install Feature.
#5561	**#5561 - Mirror 70 GB Drawer Package** The #5561 package feature includes one #0595 rack mount I/O expansion unit, one #9844 IOP, twelve #4327 70.56 GB 15k rpm disk units and two high-function, large write cache disk controllers (#2757 or newer) for servers doing mirroring. The I/O drawer requires five EIA of rack space and has a total of seven PCI-X IOP or IOA slots and 12 disk unit slots. Three PCI-X slots and 12 disk unit slots are filled with the package contents, but four PCI-X slots can be used by other PCI-X IOPs/IOAs. On IBM ordering, shipping, and inventory documentation, the component features specifically for the #0595 I/O drawer, the disk units, and the disk controllers are not shown. The chargeable #5561 feature number is shown and carries the price and warranty for this package. Use the specific component features such as #0595 for all planning and implementation documentation. See the #0595 description for HSL cable, linecord, and SPCN cable selections. The #0040 Mirrored System Disk Level is required. Supported on all POWER5 and POWER6 models and 9411-100. The #5561 is a Customer Install Feature.
#5562	**#5562 - Mirror 35 GB Tower Package** The #5562 package feature includes one #5095 tower, one #9844 IOP, twelve #4326 35.16 GB 15k rpm disk units and two high-function, large write cache disk controllers (#2757 or newer) for servers doing mirroring. The #5095 has a total of seven PCI-X IOP or IOA slots and 12 disk unit slots. Three PCI-X slots and 12 disk unit slots are filled with the package contents, but four PCI-X slots can be used by other PCI-X IOPs/IOAs. On IBM ordering, shipping, and inventory documentation, the component features specifically for the #5095 tower, the disk units, and the disk controllers is not shown. The chargeable feature #5562 is shown and carries the price and warranty for this package. Use the specific component features such as #5095 for all planning and implementation documentation. See the #5095 description for HSL cable, linecord and SPCN cable selections. The #0040 Mirrored System Disk Level is required. Supported on all POWER5 and POWER6 models and 9411-100. The #5562 is a Customer Install Feature.

#5563	**#5563 - Mirror 70 GB Tower Package** The #5563 package feature includes one #0595 rack mount I/O expansion unit, one #9844 IOP, twelve #4327 70.56 GB 15k rpm disk units and two high-function, large write cache disk controllers (#2757 or newer) for servers doing mirroring. The I/O drawer requires five EIA of rack space and has a total of seven PCI-X IOP or IOA slots and 12 disk unit slots. Three PCI-X slots and 12 disk unit slots are filled with the package contents, but four PCI-X slots can be used by other PCI-X IOPs/IOAs. On IBM ordering, shipping, and inventory documentation, component features specified for the #0595 I/O drawer, disk units, and disk controllers are not shown. The chargeable #5563 feature number is shown and carries the price and warranty for this package. Use specific component features, such as #0595, for all planning and implementation documentation. See the #5095 description for HSL cable, linecord and SPCN cable selections. The #0040 Mirrored System Disk Level is required. Supported on all POWER5 and POWER6 models and 9411-100. The #5563 is a Customer Install Feature.
#5567	**#5567 Tower Disk Pkg - 8 70GB Disk with Controller** This package feature provides an expansion tower (#9372 equivalent) and eight 15k rpm 70GB disk units (#9370 equivalent), a disk controller (#9397), and an HSL-2 port (#9371) and one power supply. Features #9372, #9370 (8), #9397, and #9371 are all no-charge features and available only on the initial order of the following Model 525 Solution Editions: ► #6913 Model 525 Oracle JD Edwards Solution Edition ► #6914 Model 525 SAP Solution Edition The #9372 expansion tower is a #5095 with seven PCI-X slots and twelve SCSI disk slots. The #9337 is a #5583 high performance disk controller with large auxiliary write cache. The #9371 is #2888 HSL-2 bus adapter for the processor enclosure. Each of the eight 70GB #9370 disk units is a #4327 disk unit. The 93nn features are shown on orders but on the system the CCIN for the actual hardware listed above is shown. A PCI slot for the disk controller, and 12 disk unit slots are required. For disk packages #5567 and #5568, HSL/SPCN cables must be ordered separately. i5/OS V5R3 with LIC V5R3M5 or later is required. A maximum of two disk packages is allowed per Model 525 Solution Edition order. The ones you select do not need to be the same. A maximum of one HSL-2 adapter is included when two disk packages are ordered.
#5568	**#5568 Rack Disk Pkg - 8 70GB Disk with Controller** This package feature provides an expansion drawer (#9369 equivalent) and eight 15k rpm 70GB disk units (#9370 equivalent), a disk controller (#9397), and an HSL-2 port (#9371) and one power supply. Features #9370 (8), #9369, #9397, and #9371 are all no-charge features and available only on the initial order of the following Model 525 Solution Editions: ► #6913 Model 525 Oracle JD Edwards Solution Edition ► #6914 Model 525 SAP Solution Edition The #9369 expansion drawer is a #0595 with seven PCI-X slots and twelve SCSI disk slots. The #9337 is a #5583 high performance disk controller with large auxiliary write cache, The #9371 is #2888 HSL-2 bus adapter for the processor enclosure. Each of the eight 70GB #9370 disk units is a #4327 disk unit. The 93nn features are shown on orders but on the system the CCIN for the actual hardware listed above is shown. A PCI slot for disk controller, and 12 disk unit slots are required. Five EIA units of rack (19-inch) space are required. For disk packages #5567 and #5568, HSL/SPCN cables must be ordered separately. If needed, you can order a rack and power distribution unit (PDU) separately. i5/OS V5R3 with LIC V5R3M5 or later is required. A maximum of two disk packages is allowed per Model 525 Solution Edition order. The ones you select do not need to be the same. A maximum of one HSL-2 adapter is included when two disk packages are ordered.

#5569	**#5569 EXP24 Disk Pkg - 8 70GB Disk with Controller** This package feature provides an EXP24 disk drawer (#9378) with two repeaters (#9374 and #9375), a high performance large cache disk unit controller (see below), and eight 15k rpm 70GB disk units (#9370 equivalent). One disk unit controller must be specified. Features #9370 (8), #9378, #9376/#9377/#9379 disk controller, #9374 and #9375 disk slot enablers are all no-charge features and available only on the initial order of the following Model 525 Solution Editions: ► #6913 Model 525 Oracle Solution Edition ► #6914 Model 525 SAP Solution Edition The controller you need depends on the physical enclosure that will house the controller. The disk unit controller features required are listed below, depending on the enclosure they are place in: ► The 525 processor enclosure (system unit) requires disk unit controller #9379. The #9379 is a #5800 high performance disk controller with large auxiliary write cache. ► PCI expansion drawers #5790 and #5796 require disk unit controller #9377. The #9377 is a #5782 high performance disk controller with large auxiliary write cache. ► PCI-X expansion towers/units: #5094, #5294, #5096, #5296, #0588, #5088, #0595, #5095 require disk unit controller #9376. The #9376 is a #5778 high performance disk controller with large auxiliary write cache. The #9378 expansion drawer is a #5786 EXP24 disk drawer. The #9374 6 disk slot enabler is a #5741 6 slot repeater for the EXP24. The #9375 6/12 disk slot enabler is a #5742 6 /12 slot repeater for the EXP24. The 93nn features are shown on orders, but on the system, the CCIN for the actual hardware listed above is shown. For disk package #5569, SCSI cables must be ordered separately. If needed, you can order a rack and power distribution unit (PDU) separately. Note that adequate PCI slots for all PCI cards are required for a valid configuration: two PCI-X slots for disk controller, two SCSI cables (for connecting to #9374 and #9375), and four EIA units of rack (19-in) space. i5/OS V5R3 with LIC V5R3M5 or later is required. A maximum of two disk packages is allowed per Model 525 Solution Edition order. The ones you select do not need to be the same. A maximum of one HSL-2 adapter is included when two disk packages are ordered.
#5570	**#5570 5727 Cache + 2 70GB Disk Package** This package provides one #5727 Integrated Cache - 40 MB and two #4327 15k rpm 70.56 GB Disk Units. The #5727 provides 40 MB write cache for the embedded disk controller in the Models 515, 520 and 525 and also enables RAID-5 capability. The 5727 is installed in its own specific internal slot of the system unit and does not require a PCI slot. On IBM ordering, shipping, and inventory documentation, the component features specifically for the #5727 and #4327 disk units will not be shown. The chargeable #5570 feature number will be shown and carry the price and warranty for this package. Supported on Models 515, 520, 520+, and 525. The #5570 is a Customer Install Feature.
#5571	**#5571 5727 Cache + 6 70GB Disk Package** This package provides one #5727 Integrated Cache - 40 MB and six #4327 15k rpm 70.56 GB Disk Units. The #5727 provides 40MB write cache for the embedded disk controller in the 515, 520, 525 and also enables RAID-5 capability. The 5727 is installed in its own specific internal slot of the system unit and does not require a PCI slot. On IBM ordering, shipping, and inventory documentation, the component features specifically for the #5727 and #4327 disk units will not be shown. The chargeable #5571 feature number will be shown and will carry the price and warranty for this package. Supported on Models 515, 520, 520+, and 525. The Model 515 requires #5592/#5593 as a prerequisite. The #5571 is a Customer Install Feature

#5592	**#5592 4 Disk Slot Exp + Controller** The #5592 feature provides a disk backplane, which enables the second set of four disk slots in a Model 515 and provides a disk controller to run these four disk slots. The disk controller is plugged into either the C4 or the C6 PCI slot of the 515 system unit. The disk controller has 90 MB write cache and can provide RAID protection for the disk drives. Mirroring protection is provided via i5/OS. A minimum of three disk drives are required for RAID-5, providing protection against a single drive failure in an array. A minimum of four disk drives are required for RAID-6, providing protection against up to two drives failing in an array. The #5592 can be used to expand the number of disk slots of the primary i5/OS partition to eight disk slots or it can provide four disk slots capacity to a second i5/OS partition. The #5592 and #5593 are physically identical, but have different feature numbers to indicate to IBM configurator tools that either i5/OS or AIX 5L or Linux will be driving the disk slots. The disk controller used is physically equivalent to the #5776 disk controller. Supported in Model 515 only. The #5592 is a Customer Install Feature.
#5593	**#5593 4 Disk Slot Exp + Controller** The #5593 feature provides a disk backplane, which enables the second set of four disk slots in a Model 515 and provides a disk controller to run these four disk slots. The disk controller is plugged into either the C4 or the C6 PCI slot of the Model 515 system unit. The disk controller has 90MB write cache and can provide RAID protection for the disk drives. Mirroring protection is provided via the operating system. The #5593 can be used to provide four disk slots capacity to a AIX 5L or Linux partition. The #5592 and #5593 are physically identical, but have different feature numbers to indicate to IBM configurator tools that either i5/OS will be driving the disk slots or that AIX 5L or Linux will be driving the disk slots. The disk controller used is physically equivalent to the #0648 disk controller. Supported in Model 515 only. The #5593 is a Customer Install Feature.
#5636	**#5636 IVE - 2x1Gb Ethernet** The #5636 is an Integrated Virtual Ethernet (IVE) adapter. This is also referred to as a Host Ethernet Adapter (HEA). It provides two 10/100/1000 Mbps Ethernet ports and two serial ports. The IVE adapter does not require a PCI slot. One IVE adapter must be included with each 570 (POWER6) processor enclosure. Requirements: ► Minimum operating system level: i5/OS V5R4 and Licensed Internal Code V5R4M5 and later releases. ► One Host Ethernet Adapter slot.
#5639	**#5639 IVE - 4x1Gb Ethernet** The #5639 is an Integrated Virtual Ethernet (IVE) adapter. This is also referred to as an HEA. It provides four 10/100/1000 Mbps Ethernet ports and one serial port. The IVE adapter does not require a PCI slot. One IVE adapter must be included with each 570 (POWER6) processor enclosure. Requirements: ► Minimum operating system level: i5/OS V5R4 and Licensed Internal Code V5R4M5 and later releases. ► One Host Ethernet Adapter slot.
#5786	**#5786 TotalStorage Expansion 24 Disk Drawer** The #5786 TotalStorage Expansion 24 Disk Drawer provides disk slots for up to 24 disk units in a 19-inch, 4 EIA high rack drawer. The #5786 provides redundant power, redundant cooling, and Ultra 320 SCSI connections for 24 Ultra 320 SCSI disk units, which are organized in four independent groups of six disk units. The #5786 can be packaged within an HSL or a 12X I/O enclosure. The #5741 and/or #5742 EXP24 Disk Slot Enablers (SCSI repeaters) enable these groups of six disk unit slots. The enabled disk slots are driven by SCSI disk controllers located outside the #5786 and connected by a SCSI cable. One to four Disk Slot Enablers are required, depending on the number of disk unit groups populated with disk units. One external port on a disk controller such as a #5736/#5737/#5739/#5775/#5776/#5778/#5781/#5782/#5799/#5800 is required for each #5741 installed. Likewise, one external disk controller port is required for each #5742 installed and cabled to run one group of six disk slots. Alternately, two #5742s can be cabled so that a single disk controller can run two groups of six disk slots. Or, one #5741 plus one #5742 can also be cabled so that a single disk controller can run two groups of six disk slots.

#5786 (contd.)	**#5786 TotalStorage Expansion 24 Disk Drawer** The #5786/#5787 are not connected via HSL cables and do not have SPCN connections. The IBM Marketing Configurator defaults to two country specfic line cords. The IBM Marketing Configurator defaults to a quantity of the following items that need to be verified: ► #5741 Expansion 24 6 Disk Slot Enabler or #5742 Expansion 24 6/12 Disk Slot Enabler ► #2124 1m SCSC Cable ► #2125 3m SCSC Cable ► #2126 5m SCSC Cable ► #2127 10m SCSC Cable ► #2128 20m SCSC Cable ► #2138 0.55m SCSC Cable Supported on all POWER5 and POWER6 models; Models 800, 810, 825, 870, and 890 as well as 9411-100. Minimum operating system level: i5/OS V5R3 or later, AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS 3 Update3 or later, SUSE Linux Enterprise Server 9 for POWER or later. The #5786 is a Customer Install Feature.
#5787	**#5787 TotalStorage Expansion 24 Disk Tower** The #5787 TotalStorage Expansion 24 Disk Tower provides disk slots for up to 24 disk units in a stand-alone disk tower. The #5787 provides redundant power, redundant cooling, and Ultra 320 SCSI connections for 24 Ultra 320 SCSI disk units, which are organized in four independent groups of six disk units. The #5741 and/or #5742 EXP24 Disk Slot Enablers (SCSI repeaters) enable these groups of six disk unit slots. The enabled disk slots are driven by SCSI disk controllers located outside the #5786 and connected by a SCSI cable. One to four Disk Slot Enablers are required, depending on the number of disk unit groups populated with disk units. One external port on a disk controller, such as a #5736, #5737, #5739, #5775, #5776, #5778, #5781, #5782, #5799, or #5800, is required for each #5741 installed. Likewise, one external disk controller port is required for each #5742 installed and cabled to run one group of six disk slots. Alternately, two #5742s can be cabled so that a single disk controller can run two groups of six disk slots. Or, one #5741 plus one #5742 can also be cabled so that a single disk controller can run two groups of six disk slots. The #5786/#5787 are not connected via HSL cables and do not have SPCN connections. The IBM Marketing Configurator defaults to two country specfic line cords. The IBM Marketing Configurator defaults to a quantity of the following items that need to be verified: ► #5741 Expansion 24 6 Disk Slot Enabler or ► #5742 Expansion 24 6/12 Disk Slot Enabler ► #2124 1m SCSC Cable ► #2125 3m SCSC Cable ► #2126 5m SCSC Cable ► #2127 10m SCSC Cable ► #2128 20m SCSC Cable ► #2138 0.55m SCSC Cable Supported on all POWER5 and POWER6 models; Models 800, 810, 825, 870, and 890, as well as 9411-100. Minimum operating system level: i5/OS V5R3 or later, AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS 3 Update3 or later, SUSE Linux Enterprise Server 9 for POWER or later. The #5787 is a Customer Install Feature.

#5790	**#5790 PCI Expansion Drawer** The #5790 mounts in a 19-inch rack using a ##7307 Dual I/O Unit Enclosure or a #7311 Dual I/O Unit Enclosure. Two #5790 drawers can be mounted side by side in a single #7307 or #7311 and are not required to be attached to the same system. The #5790 is a four EIA unit I/O expansion drawer that can accommodate six full-length 64bit PCI-X-blind swap I/O adapters and is attached to the system using a RIO/HSL bus. The #5790 comes standard with two redundant power supplies, and dual power cords, thus providing for redundant concurrently maintainable power and cooling and the blind swap PCI mechanism allows for PCI card servicing without removing the I/O expansion drawer. A PDU in the rack is optional. The #5790 includes a #9531 Base HSL-2 Bus Adapter to provide the HSL-2 interface to the system. The IBM marketing configurator adds #9531 Base HSL-2 Bus Adapter to the order. Configurator will default to two country specfic line cords. Select an appropriate number of the following HSL/HSL-2 cables: ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable ► #1307 - 1.75m HSL-2 Cable (not supported in rack-mounted Model 520, 525, or 550 system unit) ► #1308 - 2.5m HSL-2 Cable ► #1481 - 1.2m HSL-2 Cable (not supported in rack-mounted Model 520, 525, or 550 system unit) ► #1481 - 1m HSL-2 Cable ► #1482 - 4m HSL-2 Cable ► #1483 - 10m HSL-2 Cable ► #6662 - 14-ft 240V/15A Power Cord ► #6663 - 14-ft 240V/15A Power Cord ► #6669 - 14-ft 240V/15A Power Cord ► #6670 - 6-ft125V/15A Power Cord ► #6680 - 9-ft 250V/10A Power Cord ► #6681 14-ft 200-240V/10A Right Angle Power Cord ► #6690 14-ft 200-240V/15A Power Cord ► #6691 14-ft 200-240V/12A Power Cord ► #6692 14-ft 200-240V/10A Power Cord ► #6029 - 30m SPCN Cable Select an appropriate number of the following SPCN cables for use with a #5790: ► #0369 - 100m Optical SPCN Cable (not supported on Model 520 or 525) ► #1468 - 250m Optical SPCN Cable (not supported on Model 520 or 525) ► #6001 - 2m SPCN Cable (not supported in rack-mounted Model 520, 525, or 550 system unit) ► #6006 - 3m SPCN Cable ► #6008 - 6m SPCN Cable ► #6007 - 15m SPCN Cable ► #6029 - 30m SPCN Cable Minimum operating system level: i5/OS V5R3 Supported on all POWER5 and POWER6 models and 9411-100. The #5790 is a Customer Install Feature. **Note**: When viewed from the HMC, the HSL/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number. The #5790 with a fibre channel adapter cabled to an external disk configuration, such as an IBM System Storage™ DS8000™ configuration, can be switched to another supporting System i model at the drawer level. This assumes appropriate configuration as a switchable independent auxiliary storage pool (IASP).

#5796	**#5796 PCI-DDR 12X Expansion Drawer** The #5796 PCI-DDR 12X Expansion Drawer is a 4 EIA unit I/O expansion drawer providing six full length, 266MHz PCI-X DDR slots. These PCI-X DDR slots support only dual mode (smart) IOAs and do not support an IOP or an IOA that requires an IOP. Blind swap cassettes are used to insert or remove the PCI-X cards. The #5796 is attached to a system using a 12X loop. Either a 12X Short Run or 12X Long Run Attachment must be selected on each #5796. Up to four #5796 can be attached on the same 12X loop using a mixture of Short Run and Long Run Attachments. The #5796 includes redundant hot-swap power and cooling with dual power cords. The blind swap PCI mechanism allows for PCI card concurrent maintenance without removing the I/O expansion drawer. The #5796 mounts in a 19-inch rack using a #7314 Dual 5796 I/O Unit Enclosure 19-inch Rack Mounting Hardware. Two #5796 drawers can be mounted side by side in a single #7314 using a total of 4 EIA. The #5796 are not required to be attached to the same system. The #5796 are not connected via HSL/HSL-2 cables. The #5796 do not have disk slots. Either #6446 12X Short Run 5796 Attach or #6457 12X Long Run 5796 Attach must be selected for connecting #5796 to 12X loop. There is a connecting rule for 12X cables and 12X adapters. For more information about this rule, see 4.13.1, “System i POWER6 model 570 I/O enhancements” on page 311. Up to 4 #5796 can be included in a 12X loop. Select an appropriate number of the following 12X cables: ► #1829 0.6 Meter 12X Cable ► #1830 1.5 Meter 12X Cable ► #1840 3.0 Meter 12X Cable ► #1834 8.0 Meter 12X Cable Select an appropriate number of the following SPCN cables: ► #0369 100m Optical SPCN Cable ► #1463 2m SPCN Cable ► #1464 6m SPCN Cable ► #1465 15m SPCN Cable ► #1466 30m SPCN Cable ► #1468 250m Optical SPCN Cable ► #1827 Serial-UPS Conversion Cable ► #6001 Power Control Cable - 2M ► #6006 SPCN Power Cable 3m ► #6007 Power Control Cable - 15M ► #6008 Power Control Cable - 6M ► #6029 Power Control Cable - 30M Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5 or later, AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, SUSE Linux Enterprise Server 9 for POWER or later. Maximum Allowed: 32 (Initial Order Allowed: 32) Supported on Model 570 (POWER6). The #5796 is Customer Install Feature.
#5801	**#5801 1/4-way Processor Enclosure** The #5801 1/4-way Processor Enclosure feature adds: one 570 (POWER6) expansion drawer including redundant power and cooling, 6 Serially Attached SCSI (SAS) disk slots, 4 PCIe slots, 2 PCI-X DDR slots, two 0/2-way processors (#7380), two GX slots for HSL or 12X loops adapters, IVE slot, and a DVD enclosure slot. The #5801 is ordered as an MES after the initial 9406-MMA installation and does not impact the existing server or edition features. With the #5801 order, a minimum of one processor activation (#5403), plus an Integrated Virtual Ethernet (IVE) adapter, plus two memory features are required. Appropriate processor fabric cables and the appropriate service interface cable are also required. Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5.

#6068	**#6068 Optional Front Door for 1.8m Rack** The #6068 provides an attractive black full height rack door on the #0551 iSeries 1.8m Rack. The door is steel, with a perforated flat front surface. The perforation pattern extends from the bottom to the top of the door to enhance ventilation and provide some visibility into the rack. Optional feature is a #6580 Optional Rack Security Kit. Requires an #0551 1.8m Rack. Initial order or MES. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models The #6068 is a Customer Install Feature.
#6069	**#6069 Optional Front Door for 2.0m Rack** The #6069 provides an black full height rack door on the #0553 iSeries 2.0m Rack. The door is steel with a perforated flat front surface. Optional feature is a #6580 Optional Rack Security Kit. Requires an #0553 2.0m Rack. Initial order or MES Supported on all POWER5 and POWER6 models; Models 800, 810, 825, 870, and 890, as well as 9411-100. The #6069 is also supported on Model 570 (POWER6). The #6069 is a Customer Install Feature.
#6122	**#6122 UPIC Cable Primary Rack EIA 05** The #6122 feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 5U location of the 24-inch primary system rack. Supported on Model 595. The #6122 is an IBM Customer Service Representative setup feature.
#6186	**#6186 Bulk Power Regulator** The #6186 Bulk Power Regulator provides increments of power for use by the systems components such as fans, system unit components, and I/O drawers. Initial order or MES Supported on Model 595. The #6186 is an IBM Customer Service Representative setup feature.
#6246	**#6246 1.8m Rack Trim Kit** The #6246 provides a trim kit for the front of a #0551 1.8m Rack. Initial order or MES Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #6246 is a Customer Install Feature.
#6247	**#6247 2.0m Rack Trim Kit** The #6247 provides a trim kit for the front of a #0553 2.0m Rack. Initial order or MES Supported on all POWER5 and POWER6 models; Models 800, 810, 825, 870, and 890, as well as 9411-100. The #6247 is a Customer Install Feature.
#6248	**#6248 1.8m Rack Acoustic Doors** The #6248 provides front and rear doors for use with the #0551 System i 36U 1.8m Rack. This door kit provides additional acoustic dampening for use where a quieter environment is desired. The #6248 results in a larger footprint and requires additional space. Initial order or MES Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #6248 is a Customer Install Feature.
#6249	**#6249 2.0m Rack Acoustic Doors** The #6249 provides front and rear doors for use with the #0553 iSeries 2.0m Rack. This door kit provides additional acoustic dampening for use where a quieter environment is desired. The #6249 results in a larger footprint and requires additional space. Initial order or MES Supported on all POWER5 and POWER6 models; Models 800, 810, 825, 870, and 890, as well as 9411-100. The #6249 is a Customer Install Feature.

#6251	**#6251 Slimline Doors - Primary Rack** The #6251 provides front and rear doors for use with the Model 595 24-inch primary rack. This slimline door kit provides a minimized footprint for use where conservation of space is desired. Initial order or MES Supported on Model 595. The #6251 is an IBM Customer Service Representative setup feature.
#6252	**#6252 Acoustic Doors - Primary Rack** The #6252 provides front and rear doors for use with the Model 595 24-inch primary rack. This door kit provides additional acoustic dampening for use where a quieter environment is desired. The #6252 results in a larger footprint and requires additional space. Initial order or MES Supported on Model 595. The #6252 is an IBM Customer Service Representative setup feature.
#6417	**#6417 HSL-2/RIO-G Bus Adapter** The #6417 HSL-2/RIO-G Bus Adapter allows existing optical HSL/RIO connected towers the option of switching to copper HSL-2/RIO-G connectivity. The #6417 provides copper HSL-2/RIO-G connectivity for the #5094, #5095/#0595, #5295, #8094 PCI-X Expansion Towers and units. Minimum operating system level: i5/OS V5R3 Supported on all POWER5 and POWER6 models The #6417 is a Customer Install Feature. **Note**: When viewed from the HMC, the HSL-2/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#6446	**#6446 12X Short Run 5796 Attach** The #6446 adapter provides the interface for attachment of the #5796 I/ O Drawer to a 12X Channel loop.The adapter includes two 12X Channel connectors and is inserted into the #5796. This adapter does not include the repeater function and is intended to support configurations where the host system and the #5796 I/O drawers in the loop are located in the same rack. The 12X cables attached to this adapter have the following restrictions. Cables between this adapter and a host system cannot exceed 3.0 meters in length. Cables between two I/O drawers cannot exceed 1.5 meters if both I/O drawers include this Short Run adapter feature #6446. Cables between two I/O drawers cannot exceed 3.0 meters if either of the I/O drawers includes this Short Run adapter feature #6446. The required 12X cables are ordered under a separate feature number. For longer cables, see the long run adapter #6457. There is a connecting rule for 12X cables and 12X adapters. For more information about this rule, see 4.13.1, “System i POWER6 model 570 I/O enhancements” on page 311. Supported on Model 570 (POWER6). The #6446 can be attached only #5796 I/O drawer. The #6446 is a Customer Install Feature.
#6457	**#6457 12X Long Run 5796 Attach** The #6457 adapter provides the interface for attachment of the #5796 I/ O drawer to a 12X channel loop. The adapter includes two 12X channel connectors and is inserted in the #5796. This adapter includes the repeater function and can support longer cable loops allowing drawers to be located in adjacent racks. The 12X cables up to 8 meters in length can be attached to this adapter. The required 12X cables are ordered under a separate feature number. There is a connecting rule for 12X cables and 12X adapters. For more information about this rule, see 4.13.1, “System i POWER6 model 570 I/O enhancements” on page 311. Supported on Model 570 (POWER6). The #6457 can be attached only #5796 I/O drawer. The #6457 is a Customer Install Feature.
#6460	**#6460 - 14-ft 125V/15A Power Cord** The #6460 is a 14-foot 125V/15A power cord that distributes power from a wall outlet to a system unit. The #6460 has a type 4 plug and an IEC320 C13 connector. Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; Models 800, 810, 825, 870, and 890, as well as 9411-100. The #6460 is a Customer Install Feature.

#6574	**#6574 - 4-Disk Slot Expansion Base Controller** The #6574 - 4-Disk Slot Expansion Base Controller is a feature disk cage that can contain up to four disks (10k and 15k rpm only). The #6574 enables the second set of four disk unit slots in the system unit to be used. The disks in the #6574 are driven by the integrated base SCSI disk controller with or without a #5709 or #5727 write cache. Disk unit hot-plugging is allowed. Minimum operating system level: i5/OS V5R3 Supported on Model 520, 520+, and 525. The #6574 is a Customer Install Feature.
#6580	**#6580 Optional Rack Security Kit** The #6580 Optional Rack Security Kit provides hardware that can be added to a rack to prevent unauthorized access. It includes keyed front and rear locks for the standard door latches. It also includes two sliding bars that mount inside the left and right rack side panels. The sliding bars are accessible when the rack rear door is open. They can be moved to a position that disables the external latches on the rack side panels, and prevents removal of the side panels. Requires a #0551 System i 36U 1.8m Rack or #0553 2.0m Rack. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #6580 is a Customer Install Feature.
#6584	**#6584 4 Disk Slot Exp - PCI-X Controller** The #6584 - 4-Disk Slot Expansion is a disk backplane feature for the system unit, which enables the second four disk slots for use by a separate disk controller plugged into a system unit PCI slot. Disk units plugged into the #6584 are controlled by either a #5703 PCI-X RAID Disk Unit Controller or #5715 PCI-X /DASD Controller. A #6584 can be used for obtaining disk mirroring protection with other drives in the system or for enabling these drives in another system partition. The #6584 is not usable by either the embedded system unit disk controller or by a #5709 RAID Enabler Card. Supported on Models 520 (9406 only), 525. The #6584 is a Customer Install Feature. The #6584 was withdrawn from marketing as of 19 November 2004.
#6585	**#6585 - DASD Locking Kit** The #6585 provides a locking mechanism that secures up to four disk units in the Model 520. Two #6585 kits are required to secure all eight available disk units in the Model 520. When the #6585 is installed and secured with a user-provided padlock, the disk units cannot be removed easily. Supported only on Model 515, 520, 520+ and 525. The #6585 is a Customer Install Feature.
#6586	**#6586 Modem Tray for 19-Inch Rack** The #6586 Modem Tray for 19-Inch Rack provides hardware for installing one or two modems in a 19-inch rack. The modem tray occupies 1U of rack space when it is mounted in the front of the rack. It provides a secure location in the rack for external modems such as the ones attached to the Hardware Management Console. It is not a shelf. Required: 19-inch rack with 1U rack space available Supported in #0551, #0553, #0554, #0555 Racks, and on all Models (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), and 595, as well as 9411-100 The #6586 is a Customer Install Feature.
#6587	**#6587 Model 520 Rear Cover** The #6587 is a decorative rear cover that has sound deadening capability. The #6587 cover is for Model 520 desk-side servers that do not have external I/O attached to an HSL loop. The cover cannot be used if HSL cables are attached to the Model 520 server. Minimum operating system level: i5/OS V5R3 Supported on Model 515, 520, 520+ and 525 configurations with #7885 520 Deskside specify code. The #6587 is a Customer Install Feature.
#6592	**#6592 - 4 - Disk Slot Expansion - Base Controller** The #6592 is a disk backplane feature that enables the second set of four disk unit slots in the system to be used. Disk units plugged into the #6592 are controlled by the integrated base controller with or without a #5709 or #5727 write cache. Supported on Models 550, 550+. The #6592 is a Customer Install Feature.

#6593	**#6593 - 4 - Disk Slot Expansion. - PCI -X Controller** The #6593 - 4-Disk Slot Expansion PCI-X Controller is a disk backplane feature for the Model 550 system unit, which enables the second four disk slots for use by a separate disk controller plugged into a system unit PCI slot. Disk units plugged into the #6593 are controlled by another disk controller such as a #5703, #5715, #5736, #5737, #5775, #5776, #0647, or #0648. The #6593 is not usable by the integrated system unit disk controller with or without its #5709/#5727 write cache. A #6593 can be used for obtaining disk mirroring protection with other drives in the system or for enabling these drives in another system partition. Installation of a #6593 can enable a second RAID enabled partition with the system unit itself. Supported on Models 550, 550+. The #6593 is a Customer Install Feature. The #0647/#0648 was withdrawn from marketing on POWER6 models in October 2007.
#6594	**#6594 - 4-Disk Slot Expansion PCI-X Controller** The #6594- 4-Disk Slot Expansion PCI-X Controller is a disk backplane feature for a system unit, which enables the second four disk slots for use by a separate disk controller plugged into a system unit PCI slot. Installation of a #6594 allows a #5703 to be plugged in card slot 4 of the 520 system unit, enabling a second RAID enabled partition within the system unit itself. Disk units plugged into the #6594 are controlled by another disk controller such as a #5715, #5736, #5737, #5775, #5776, #0647, or #0648. The #6594 is not usable by the embedded system unit disk controller with or without its #5709 or #5727 write cache. A #6594 can be used for obtaining disk mirroring protection with other drives in the system or for enabling these drives in another system partition. Installation of a #6594 can also enable a second RAID enabled partition within the system unit itself. The #5703 disk controller can control the #6594 disk units with the 1.5 and 1.65 GHz Model 520. Minimum operating system level: i5/OS V5R3 Supported on Models 520, 520+ and 525. The #6594 is a Customer Install Feature.
#6598	**#6598 Disk Slot Filler** The #6598 Disk Slot Filler provides disk slot covers to install in disk slots that are emptied after the system unit is shipped from IBM. Four disk slot filler covers are shipped with each #6598. All disk bays should be filled with either disk drives or slot fillers when the system unit ships from IBM. If a disk is removed, IBM recommends DASD bay slots are refilled with another disk drive or a disk slot filler. A populated DASD bay maintains EMI compliance standards and helps ensure optimal thermal performance. Supported on all POWER5 and POWER6 models and 9411-100. The #6598 is a Customer Install Feature.
#6863	**#6863 System i5 Slim-Line Doors** The #6863 - System i5 Slim-Line Doors provides front and rear doors for use with the Model 595 24-inch primary rack. This slimline door kit provides a minimized footprint for use where conservation of space is desired. The #6863 is functionally equivalent to #6251, but has the System i5 name and accent color. Supported on Model 595. The #6863 is a Customer Install Feature.
#6864	**#6864 System i5 Acoustic Doors** The #6864 - System i5 Acoustic Doors provides front and rear doors for use with the Model 595 24-inch primary rack. This door kit provides additional acoustic dampening for use where a quieter environment is desired. The #6864 results in a larger footprint and requires additional floor space. The #6864 is functionally equivalent to a #6252, but has the System i5 name and accent color. Supported on Model 595. The #6864 is a Customer Install Feature.
#7002	**#7002 HSL Enabler** The #7002 HSL Enabler is a required feature on Model 800 processors when attaching an expansion tower or unit, or the external Integrated xSeries Servers. Supported on Model 800. The #7002 is a Customer Install Feature. The #7002 was withdrawn from marketing as of 01 June 2006.

#7116	**#7116 System Unit Expansion** The #7116 System Unit Expansion allows up to an additional 12 disk units to be added to the Models 800 and 810. The #7116 has no PCI card slots and no removable media slots. The #7116 comes standard with support for six disk units, and requires a #7136 DASD Expansion Unit - 6 slot when installing more than six disk units. The #7116 disk units are driven by disk unit controllers located in the system unit. One of the following line cords must be ordered with the #7116 System Unit Expansion: ► #1410 - 200V 6-ft Line Cord ► #1411 - 200V 14-ft Line Cord ► #1412 - 125V 6-ft Line Cord (U.S. default) ► #1414 - 200V 6-ft Locking Line Cord ► #1415 - 200V 6-ft Watertight Line Cord ► #1422 - 3m IEC 320 C13/C14 PDU Cord ► #1438 - 4.3m 200V/10A Power Cord Australia/New Zealand ► #1439 - 4.3m 200V/10A Power Cord EU/Asia ► #1440 - 4.3m 200V/10A Power Cord Denmark ► #1441 - 4.3m 200V/10A Power Cord South Africa ► #1442 - 4.3m 200V/10A Power Cord Swiss ► #1443 - 4.3m 200V/10A Power Cord UK ► #1444 - 4.3m 200V/10A Power Cord Italy ► #1445 - 4.3m 200V/10A Power Cord Israel The #7116 System Unit Expansion does not attach to the HSL interface. Requires a#7137 DASD Concurrent Maintenance Cage for the #2463 Model 800 processor. Supported on Models 800 and 810. The #7116 is a Customer Install Feature. The #7116 was withdrawn from marketing as of 01 June 2006.
#7124	**#7124 DASD Expansion Unit - 5 slot** The #7124 DASD Expansion Unit - 5 slot is a 5-pack DASD cage for the Model 825 system unit. The #7124 Includes the DASD cage, DASD backplane and associated SCSI cables. Maximum: Two Supported on Model 825. The #7124 is a Customer Install Feature. The #7124 was withdrawn from marketing as of 01 June 2006.
#7136	**#7136 DASD Expansion Unit - 6 slot** The #7136 DASD Expansion Unit - 6 slot is a concurrent maintenance DASD expansion feature that is ordered to support the second set of six disk units in a #7116 System Unit Expansion on the Models 800 and 810. Supported on Models 800 and 810. The #7136 is a Customer Install Feature. The #7136 was withdrawn from marketing as of 01 June 2006.
#7137	**#7137 DASD Concurrent Maintenance Cage** The #7137 DASD Concurrent Maintenance Cage is a six unit DASD expansion feature for the #2463 Model 800 processor. It replaces the base six unit DASD cage, and enables disk unit concurrent maintenance. The #7137 provides a higher speed interface for disk devices, more than double the bandwidth of the base DASD cage. The #7137 is recommended for 15k rpm disk drives. The #7137 is required if a #2757 PCI-X Ultra RAID Disk Controller or an #2780 PCI-X Ultra4 RAID Disk Controller is used or a #7116 System Unit Expansion is installed. When upgrading a #2463 Model 800 processor, process an RPO to remove the #7137 on the installed system. The #2464 Model 800 includes a concurrent maintenance disk unit cage as part of the base system offering. Supported on Model 800. The #7137 is not a Customer Install Feature. The #7137 was withdrawn from marketing as of 01 June 2006.
#7180	**#7180 Acoustic Front Door** The #7180 provides a front door that has acoustic dampening capabilities for the Model 520 desk-side system. The #7180 is functionally equivalent to #7753 Acoustic Front Door, but has the System i5 name and accent color. Supported on desk-side Models 520+ and 525. The #7180 is a Customer Install Feature.

#7181	**#7181 Easy-Access Front Cover** The #7181 provides a front cover that has an easy access bezel for the desk-side Model 520. The #7180 is functionally equivalent to #7750 Easy-Access Front Cover, but has the System i5 name. Supported on desk-side Models 515, 520+, and 525. The #7181 is a Customer Install Feature.
#7182	**#7182 515, 520, 525 Rack Mount** The #7182 indicates this is a rack-mounted system unit. The system ships with IBM mounting rails for installation in an IBM standard 19-inch rack. Rails are fixed at a 28 inch depth. A front bezel is included. The #7182 is functionally equivalent to a #7884 520 Rack Mount, but the bezel has the System i5 name. Add #7198 Adjustable Depth Rack Rails to the #7182 if adjustable length rails are needed. Supported on rack mounted Models 515, 520+, and 525. The #7182 is a Customer Install Feature.
#7183	**#7183 550 Rack Mount** The #7183 indicates this is a rack-mounted system unit. The system ships with IBM mounting rails for installation in an IBM standard 19-inch rack. Rails are adjustable up to a 29.25 inch depth. A front bezel is included. The #7183 is functionally equivalent to a #7886 550 Rack Mount, but the bezel has the System i5 name. Supported on rack mounted 550+ models. The #7183 is a Customer Install Feature.
#7194	**#7194 Easy-Access Front Cover** The #7194 provides a front cover for the desk-side Model 550 that has an easy access bezel. The #7194 is functionally equivalent to a #7751 Easy-Access Front Cover, but has the System i5 name. Supported on desk-side 550+ models. The #7194 is a Customer Install Feature.
#7197	**#7197 570 Front Bezel** The #7197 provides a front bezel for the Model 570. The #7197 is functionally equivalent to the bezel previously provided without a feature code on the Model 570, but has the System i5 name. Supported on Model 570+. The #7197 is a Customer Install Feature.
#7198	**#7198 Adjustable Depth Rack Rails** The #7198 provides rails that are adjustable to a depth of 29.5 inches for mounting a Model 520 system unit in a non-IBM rack. The fixed depth rail provided in the required #7884 520 Rack Mount specify code are replaced by the adjustable rails. The adjustable rails are installed by the client. The combination of #7884 and #7198 is equivalent to a #7883 specify feature. Supported on Models 515, 520, and 525. The #7198 is a Customer Install Feature.
#7199	**#7199 Acoustic Front Door** The #7199 provides a front door that has acoustic dampening capabilities for the desk-side Model 550 system. The #7199 is functionally equivalent to a #7754 Acoustic Front Door, but has the System i5 name and accent color. Supported on desk Model 550+. The #7199 is a Customer Install Feature.
#7307	**#7307 Dual I/O Unit Enclosure** The #7307 Dual I/O Unit Enclosure provides the mounting hardware, with adjustable rails, required to install a #5790 I/O drawer in a #0551, #0553, #0554, or #0555 rack. The enclosure can accommodate two #5790 drawers, side by side, but it can also be used with only one #5790 drawer installed. The #7307 and #7311 are functionally equivalent except the #7307 can be used in the #0554 and #0555 racks and has rails adjustable to 29.25 inches depth. Four EIA units of rack space are required in a #0551, #0553, #0554 or #0555 rack. Supported on all POWER5 and POWER6 models and 9411-100. The #7307 is a Customer Install Feature.

#7311	**#7311 Dual I/O Unit Enclosure** The #7311 Dual I/O Unit Enclosure provides the mounting hardware required to install a #5790 PCI Expansion Drawer in a #0551, #0553, #0554, #0555 iSeries Rack. The enclosure can accommodate two #5790 drawers, side by side, but it can also be used with only one #5790 unit installed. Four EIA units of rack space are required in a #0551 or #0553 rack. Supported on all POWER5 and POWER6 models and 9411-100. The #7311 is a Customer Install Feature.
#7314	**#7314 Dual 5796 I/O Unit Enclosure 19-inch Rack Mounting Hardware** The #7314 provides the mounting hardware required to install a #5796 PCI-DDR 12X Expansion Drawer in a #0551, #0553, #0554 or #0555 19-inch rack. The enclosure can accommodate two #5796 drawers, side by side, but it can also be used with only one #5796 drawer installed. 4 EIA units of rack space are required in a #0551, #0553, #0554 or #0555 rack. The #7314 has rails adjustable to 29.25 inches depth. Supported on Model 570 (POWER6). The #7314 is a Customer Install Feature.
#7750	**#7750 - Easy access Front Cover** The #7750 provides an easy access front cover for the desk-side Model 520. Supported on desk-side Model 520. The #7750 is a Customer Install Feature.
#7751	**#7751 - Easy Access Front Cover** The #7751 provides an easy access front cover for the desk-side Model 550. Supported on desk-side Model 550. The #7751 is a Customer Install Feature.
#7753	**#7753 - Acoustic Front Door** The #7753 provides an acoustic front door fro the desk-side Model 520. Supported on desk-side Model 520. The #7753 is a Customer Install Feature.
#7754	**#7754 - Acoustic Front Door** The #7754 provides an acoustic front door fro the desk-side Model 550. Supported on desk-side Model 550. The #7754 is a Customer Install Feature.
#7768	**#7768 CPU Power Regulator** The #7768 provides a redundant processor power regulator for the Model 570 single enclosure system. One #7768 can be ordered to provide hot-plug redundant power regulation. Minimum operating system level: i5/OS V5R3 Supported single enclosure Model 570+ system only. The #7768 is a Customer Install Feature.
#7780	**#7780 2.0m Rack Side Attach Kit** The #7780 allows a row of racks without side panels to be bolted together in a continuous suite, using the provided side-to-side rack connecting hardware. When multiple racks are joined in this way, cables can be easily run between racks without exiting the continuous rack enclosure. A small gap is maintained between the two adjacent racks that is filled by three matching steel trim pieces that snap into place on the front, top, and rear, between each rack. Side panels are needed only for the two end racks of the suite. Supported on #0553 System i 42U 2.0m Rack. Initial order or MES. Supported on all POWER5 and POWER6 models; Models 800, 810, 825, 870, and 890, as well as 9411-100. The #7780 is a Customer Install Feature.
#7798	**#7798 Model 550 Non-IBM Rack Mount** The #7798 provides the necessary hardware to mount a Model 550 system unit in an non-IBM rack. The #7798 fits deeper racks than the standard IBM 28-inch rack depth. Model 550 system orders containing the #7798 are integrated into a non-IBM rack at the customer location. The #7798 is a Customer Install Feature.

#7818	**#7818 HSL-2/RIO-G 2-Ports Copper** The #7818 is a 2 port (copper) HSL-2/RIO-G bus adapter that provides connections for one HSL-2/RIO-G loop. The #7818 is installed into an empty slot on one processor book. Initial order or MES Minimum operating system level: i5/OS V5R3, AIX 5L for POWER V5.2, AIX 5L for POWER V5.2 The #7818 is an IBM Customer Service Representative setup feature. **Note**: When viewed from the HMC, the HSL-2/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#7819	**#7819 HSL/RIO 2-Ports Optical** The #7819 is a 2 port optical HSL/RIO bus adapter that provides connections for one optical HSL/RIO loop. It is installed into an empty slot on one processor book. Initial order or MES Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER V5.2 The #7819 is an IBM Customer Service Representative setup feature. The #7819 was withdrawn from marketing as of 30 August 2005.
#7837	**#7837 Bulk Power Distribution** The #7837 is a power distribution assembly that provides connector locations for cable attachment of I/O drawers and system unit DC power converters on a Model 595. It provides 10 power connectors. Initial order or MES. The #7837 is an IBM Customer Service Representative setup feature.
#7840	**#7840 Side-by-Side for 1.8m Racks** The #7840 allows a row of racks without side panels to be bolted together in a continuous suite, using the provided side-to-side rack connecting hardware. When multiple racks are joined in this way, cables can be easily run between racks without having to exit the continuous rack enclosure. A small gap is maintained between the two adjacent racks that is filled by three matching steel trim pieces that snap into place on the front, top, and rear, between each rack. The trim pieces cover the space between each rack for an enhanced appearance and for additional protection of the equipment inside the racks. Side panels are needed only for the two end racks of the suite. Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #7840 is a Customer Install Feature.
#7841	**#7841 Rugged Rack Kit** The #7841 Rugged Rack Kit provides additional hardware that reinforces the rack and anchors it to the floor. The #7841 kit is designed to provide enhanced rigidity and stability for racks primarily installed in locations where earthquakes are a concern. The feature includes a large steel brace or truss that bolts into the rear of the rack. It is hinged on the left side so it can swing out of the way for easy access to the rack drawers when necessary. The #7841 also includes hardware for bolting the rack to a concrete floor or a similar surface, and bolt-in steel filler panels for any unoccupied spaces in the rack. Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #7841 is a Customer Install Feature.
#7861	**#7861 Blind Swap Cassette (Short)** The #7861 provides a short, type 3, blind swap cassette for use in the Model 570 system unit. Supported on Models 570, and 9411-100. The #7861 is a Customer Install Feature.
#7862	**#7862 Blind Swap Cassette (Long)** The #7862 provides a standard length, type 3, blind swap cassette for use in the Model 570 system unit and #5790. Supported on all POWER5 and POWER6 models and 9411-100. The #7862 is a Customer Install Feature.
#7863	**#7863 Blind Swap Cassette (Double)** The #7863 provides a double wide standard length, type 3, blind swap cassette for the Integrated xseries Server used in the Model 570 system unit or #5790. Supported on all POWER5 and POWER6 models and 9411-100. The #7863 is a Customer Install Feature.
#7875	**#7875 CPU Power Regulator** The #7875 is a processor power regulator for the Model 570. One #7875 is required per processor card. A single redundant The #7875 can be ordered to provide redundant power regulation for the Model 570. Supported on Model 570. The #7875 is a Customer Install Feature.

#7881	**#7881 Service Processor** The #7881 is the Model 570 Service Processor. The #7881 contains the system Rack Indicator Port, two SPCN (RS485) ports for control of attached I/O subsystems, and two Service Processor Ethernet /HMC ports. Supported on Model 570. The #7881 is a Customer Install Feature. The #7881 was withdrawn from marketing as of 01 April 2005.
#7882	**#7882 SCSI to IDE Converter Card** The #7882 is a SCSI to integrated development environment (IDE) converter card used on the Model 570 to convert the removable media bays from IDE format to SCSI. Although #7882 converts one IDE media bay to SCSI, it geographically requires both slots. Supported on Model 570. The #7882 is a Customer Install Feature.
#7883	**#7883 Model 520 Non-IBM Rack Mount** The #7883 provides the necessary hardware to mount a Model 520 system unit in an non-IBM rack. The #7883 fits deeper racks than the standard IBM 28-inch rack depth. Model 520 system orders that contain the #7883 are integrated into a non-IBM rack at the customer location. The #7883 is a Customer Install Feature.
#7884	**#7884 520 Rack Mount** The #7884 indicates that this order is for a rack-mount Model 520 system. The system ships with fixed length IBM mounting rails for installation in an IBM rack. Conversion from #7884 520 Rack Mount to #7885 Deskside remains available. The #7884 is a Customer Install Feature.
#7885	**#7885 515, 520, 525 Deskside** The #7885 indicates that this order is for a desk-side Model 515, 520, or 525 system. Conversion from #7885 Deskside with a 520 to #7182 Rack Mount is available. The #7885 is a Customer Install Feature.
#7886	**#7886 550 Rack Mount** The #7886 indicates that this order is for a rack-mount Model 550 system. The system ships with fixed length IBM mounting rails for installation in an IBM rack. The #7886 is a Customer Install Feature.
#7887	**#7887 550 Deskside** The #7887 indicates that this order is for a desk-side Model 550 system. The #7887 is a Customer Install Feature.
#7889	**Redundant Power Supply** The #7889 is an optional 1475W power supply, which provides redundant power for the Model 550 system unit. A second line cord is required. Supported on Model 550. The #7889 is a Customer Install Feature.
#7937	**#7937 - 595 Bolt-Down (Lo Raised Fl)** The #7937 provides Rack ruggedizing and bolt-down hardware for securing a 24-inch rack to a concrete floor beneath a 9.25-inch to a 11.75-inch (235 mm to 298 mm) raised floor. Installation of this feature helps to secure and protect the rack and its contents from damage when exposed to vibrations and shocks, such as those in a seismic event Supported on Model 595. The #7937 is not a Customer Install Feature.
#7938	**#7938 - 595 Bolt-Down (Hi Raised Fl)** The #7938 provides Rack ruggedizing and bolt-down hardware for securing a 24-inch rack to a concrete floor beneath a 11.75-inch to 16.0-inch (298 mm to 405 mm) raised floor. Installation of this feature helps to secure and protect the rack and its contents from damage when exposed to vibrations and shocks, such as those in a seismic event. Supported on Model 595. The #7938 is not a Customer Install Feature.
#7939	**#7939 - 595 Bolt-Down (Non-Raised Fl)** The #7939 provides Rack ruggedizing and bolt-down hardware for securing a 24-inch rack to a concrete floor. Installation of this feature helps to secure and protect the rack and its contents from damage when exposed to vibrations and shocks, such as those in a seismic event. Supported on Model 595. The #7939 is not a Customer Install Feature.

#7940 #7941 #7942 #7992	**#7940, #7941, #7942, #7992 - Advanced Power Virtualization** The #7940, #7941, #7942, and #7992 provide both Virtual I/O Server and Partition Load Manager capability. The Virtual I/O Server is a special-purpose partition that provides virtual I/O resources to AIX 5L and Linux client partitions. The Virtual I/O Server owns the resources that are shared with clients. A physical adapter assigned to a partition can be shared by one or more other partitions, enabling administrators to minimize the number of physical adapters they require for individual clients. The Virtual I/O Server helps reduce costs by eliminating the need for dedicated network adapters, disk adapters, and disk drives. The Partition Load Manager provides automated processor and memory distribution between dynamic LPARs and Micro-Partition-capable LPARs running the AIX 5L operating system. The Partition Load Manager application is based on a client/server model for the sharing of system information, such as processor or memory events, across concurrent present LPARs. Each feature ordered provides one processor authorization. One processor authorization is required for each processor's worth of workload used across all partitions utilizing Advanced POWER Virtualization. Supported on #7940 Model 520 and 525, #7941 Model 550, #7942 Model 570, 570 (POWER6), #7992 Model 595. The #7940, #7941, #7942, #7992 are Customer Install Features. There are several pSeries®-based Redbooks publications on APV.
#7966	**#7966 Advanced Power Virtualization** The #7966 provides partitioning, Micro-Partitioning and Virtual I/O Server capability on the Model 515. Partitioning provides the ability to have more than one partition on the system. Micro-partitioning provides processor partition granularity to tenths of a processor. The Virtual I/O Server is a special-purpose partition that provides virtual I/O resources to AIX 5L and Linux client partitions. The Virtual I/O Server partition owns the resources that are shared with clients. On the Model 515, Advanced Power Virtualization must be purchased for either none of the processors or all of the processors of the system. Therefore, if a 1-way #8327: Qty = 0 or 1. If a 2-way #8330: Qty = 0 or 2. There are several pSeries-based Redbooks publications on APV.
#7997	**#7997 - Service Processor** The #7997 provides optional redundant service processor function for the Model 570. One service processor is included in each Model 570. Initial iSeries Model 570 shipments did not use a feature code to designate the presence of the first service processor. Later Model 570 shipments use feature #8420 to designate the first service processor. The #7997 contains the system Rack Indicator Port, two SPCN (RS485) ports for control of attached I/O subsystems, and two Service Processor Ethernet or HMC ports. Because a second Model 570 processor enclosure is required for the #7997, it cannot be installed in 1/2-way and 2/4-way servers. Supported on Model 570. The #7997 is a Customer Install Feature.
#8093	**#8093 Optional 1.8 M I/O Rack** The #8093 Optional 1.8 M I/O Rack is an optional base I/O rack shipped on the Model 890 instead of a #9094 Base PCI I/O Enclosure. The #8093 supports up to 90 disk units with a #5101/#5111 installed in the top unit and a #5107/#5117 installed in the lower unit, up to 28 PCI IOA slots, and up to four removable media units. A #9691/#9739 HSL bus adapter is required for the upper unit. The #8093 has two battery back up units and redundant or hot swap power supplies. The PCI IOAs are supported (driven) by two #9943 Base PCI IOPs and #2843/#2844/#2847 PCI IOPs, or the #2792/#2799 PCI Integrated xSeries Server. An #8093 is a #9094 Base PCI I/O Enclosure with a #5074 (#0574 specify code) tower packaged in a rack. The #8093 is capable of controlling Ultra2 SCSI disk units. It also supports up to three additional removable media devices (internal tape or CD-ROM or DVD-ROM/RAM). The following removable media devices are supported by a PCI/PCI-X Disk Controller. If the top enclosure is to be attached to a different system than ordered, process an RPO to remove the #0574 specify code from the initially ordered machine and add it to the target machine. The #8093 can be converted to a #5097. Select three or four of the following HSL cables depending on the requirements of optical and copper HSL: ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m Optical HSL-2 Cable ► #1485 - 15m HSL-2 Cable And select two (any combination) of the following HSL to HSL-2 cables: ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable

#8093 (contd.)	**#8093 Optional 1.8 M I/O Rack** Select two of the following SPCN cables per tower: ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable Specify two line cords for the #8093 Optional 1.8 M I/O Rack. Some countries or regions offer fewer choices of line cords and some countries or regions are shipped a default line cord type. Supported for conversion only on the Model 570 and 595; cannot be ordered. The #8093 is a Customer Install Feature.
#8094	**#8094 Optional 1.8 M I/O Rack** The #8094 Optional 1.8 M I/O Rack is a racking option for the Model 890. It supports up to 90 disk units, has 28 PCI-X IOP or IOA slots, and has four removable media bays. The #8094 consists of a 1.8 m rack with two enclosures. The bottom enclosure is essentially a #9094 Base PCI I/O Enclosure with side covers and casters removed and with the #5107 30 Disk Expansion included as base (no feature code required). The bottom unit includes a #9587. The top enclosure is essentially a #5094 PCI-X Expansion Tower with side covers and casters removed, and with the #5108 30-Disk Expansion Feature included as base (no feature code required). The top unit includes a #9886 or #9887, #9876 or #9877 or #9715. Included with the bottom enclosure are one JTAG cable and one V/S Communications (VPD and SPCN) cable to attach the bottom enclosure to the Model 890 system unit. Also included are a #9887 Base HSL-2 Bus Adapter and #9844 Base PCI IOP. A #2757 PCI-X Ultra RAID Disk Controller or #4748/#4778 PCI RAID Disk Unit Controller is required with this unit. Included with the top enclosure is a #9887 Base HSL-2 Bus Adapter or a #9886 Base Optical Bus Adapter to provide the HSL interface to the system (specify one, one feature code required), #0694 - #5094 Equivalent (feature code required), and #9844 Base PCI IOP (feature code required). Each enclosure supports 45 disk unit positions for a total of 90 disk units. The 45 disk unit positions are in groups of 15. Each group of 15 disk units is further divided into three groups of five disk units. Each group of five disk units is supported on a separate Ultra4 SCSI (LVD-SCSI) bus from a PCI/PCI-X Disk Controller. See the PCI Expansion Tower layout and disk unit plugging sequence diagrams in 7.1, “System i towers, racks, and expansion unit schematics” on page 341. Each group of 15 disk units requires support by one PCI/PCI-X Disk Controller. The #5294 and #8094 expansion towers offer additional LPAR configuration flexibility. Instead of the previous maximum number of six disk controllers supported in a #5294/#8094, now up to eighteen total disk controllers are supported. These can be either OS/400 controlled (maximum of six OS/400 partitions) or Linux controlled. The #5703/#0628 disk controller can be used to go beyond the maximum of three PCI/PCI-X Disk Controller top or bottom unit of the #5294/#8094. Each tower must have at least one PCI/PCI-X Disk Controller for each group of 15 disk units in the tower. Only the #5703/#0628 can be ordered as an extra controller (up to two #5703/#0628s per group of 15 disk units in the same tower) #0143 Disk Controller Placement Exception is also ordered. The #8094 Optional 1.8 M I/O Rack supports up to four removable media devices (internal tape, CD-ROM, and DVD). The following removable media devices are supported by the two #PCI/PCI-X Disk Controllers that support the first group of 15 disk units in each enclosure. The two enclosures in the #8094 Optional 1.8 M I/O Rack are separately attached to the system unit via HSL cables as though they were a stand-alone #9094 Base PCI I/O Enclosure and #5094 PCI-X Expansion Tower. They are treated as separate units for HSL loop plugging and configuration rules and recommendations. The bottom enclosure must be attached to the system unit’s first HSL loop. Both enclosures can be connected to the first HSL loop. The top enclosure of the #8094 can be used on a different system than the bottom enclosure, but cannot be ordered this way. To use the top enclosure on another system, after the system is received, process an RPO to remove the #0694 or #5094 Equivalent from the records of the original ordered system and add it to the records of the other system. For the Model 800 and 810, if the #8094 attaches to HSL ports A0 or A1, the HSL cable cannot exceed 6 m. For the Model 820, if the #8094 attaches to the HSL port A1 of the system unit, the HSL cable connection to port A1 cannot exceed 6 m. Select an appropriate number of the following HSL/HSL-2 cables: ► #1307 -1.75m Copper HSL-2 Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable

#8094 (contd.)	**#8094 Optional 1.8 M I/O Rack** ► #1475 - 10m HSL to HSL-2 Cable ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable ► #1485 - 15m HSL-2 Cable Select two line cords from the following list for the lower enclosure (#9094 Base PCI I/O Enclosure): ► #1451 - 200V 6-ft Line Cord ► #1452 - 200V 14-ft Line Cord ► #1453 - 200V 6-ft Locking Line Cord ► #1454 - 200V 12A 14-ft TL Line Cord (Default-US) ► #1455 - 200V 6-ft Watertight Line Cord ► #1456 - 200V 14-ft Watertight Line Cord ► #1406 - 200V 16A 14-ft TL Line Cord ► #1408 - 4.3m 200V/16A Power Cord Italy ► #1409 - 4.3m 200V/16A Power Cord Australia/New Zealand ► #1418 - 4.3m 200V/16A Power Cord South Africa ► #1419 - 4.3m 200V/16A Power Cord Israel ► #1420 - 4.3m 200V/16A Power Cord CH/DK ► #1421 - 4.3m 200V/16A Power Cord EU/Asia ► #1476 - 4.3m 200V 12A Power Cord UK If a #5115 Dual Line Cords Tower is not present, select one line cord from the following list for the upper enclosure (#5094). If a #5115 Dual Line Cords Tower is present, select two line cords from the following list for the upper enclosure (#5094): ► #1406 - 200V 16A 14-ft TL Line Cord ► #1408 - 4.3m 200V/16A Power Cord Italy ► #1409 - 4.3m 200V/16A Power Cord Australia/New Zealand ► #1418 - 4.3m 200V/16A Power Cord South Africa ► #1419 - 4.3m 200V/16A Power Cord Israel ► #1420 - 4.3m 200V/16A Power Cord CH/DK ► #1421 - 4.3m 200V/16A Power Cord EU/Asia ► #1451 - 200V 6-ft Line Cord ► #1452 - 200V 14-ft Line Cord ► #1453 - 200V 6-ft Locking Line Cord ► #1454 - 200V 12A 14-ft TL Line Cord (default-U.S.) ► #1455 - 200V 6-ft Watertight Line Cord ► #1456 - 200V 14-ft Watertight Line Cord ► #1457 - 200V 6-ft Upper Line Cord ► #1458 - 200V 6-ft Upper Locking Cord ► #1459 - 200V 6-ft Upper Watertight Cord ► #1476 - 4.3m 200V 12A Power Cord UK ► Select one of the following SPCN cables (for the upper unit): ► #0369 100m Optical SPCN Cable ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #1468 - 250m Optical SPCN Cable ► #6001 Power Control Cable - 2M ► #6006 Power Control Cable - 3M ► #6007 Power Control Cable - 15M ► #6008 Power Control Cable - 6M ► #6029 Power Control Cable - 30M ► The #8094 Optional 1.8 M I/O Rack reports to the system as CCIN 8094-001 for the bottom enclosure and 8094-002 for the top enclosure. Minimum operating system level: OS/400 V5R2 The #8094 is not a Customer Install Feature. The #8094 was withdrawn from marketing as of 01 October 2005.

#8294	**#8294 Optional Base 1.8m Rack** The #8294 is a racking option for a Model 595. It supports up to 90 disk units, has 28 PCI-X slots and has four removable media slots. The #8294 consists of a 1.8m rack with two enclosures; a bottom enclosure and a top enclosure. The bottom enclosure is essentially a #9194 Base PCI-X Expansion Tower with side covers and casters removed and with a 30-disk expansion feature included as base (no feature code required). The top enclosure is essentially a #5094 PCI-X Expansion Tower with side covers and casters removed and a 30-disk expansion feature included as base (no feature code required). Included with the bottom enclosure is a #9517 Base HSL-2/RIO-G Bus Adapter and a #9844 Base PCI IOP. Also, a PCI/PCI-X Disk Controller is required to drive the load source DASD and the removable media devices. Included with the top enclosure is a #9517 Base HSL-2/RIO-G Bus Adapter or a #9876 Base Optical Bus Adapter (select one), a #9844 Base PCI IOP and a #0694 - #5094 Equivalent. Each enclosure supports 45 disk units for a total of 90 disk units. The 45 disk unit positions are partitioned into groups of 15, and each group of 15 requires support by one PCI/PCI-X Disk Controller. Each group of 15 is further divided into groups of 5 disk units, each group of 5 disk units supported on a separate Ultra4 SCSI bus from the PCI/PCI-X Disk Controller. The tower and drawer configurations longer include a #9844 Base PCI IOP as of 31 January 2006 with the announcement of IOP-less support in IBM System i5 and eServer i5 servers. Refer to “#9844 Inclusion Rules” on page 211. The #8294 also supports up to four removable media devices. These removable media devices are supported by the two PCI/PCI-X Disk Controllers that support the first group of 15 disk units in each enclosure. The two enclosures in the #8294 are separately attached to the system unit via HSL cables as though they are stand-alone #9194 and #5094. The bottom enclosure must be on the first HSL loop attached via two HSL-2/RIO-G cables to the system unit and the top enclosure can be on this same HSL loop or a separate HSL loop. The top enclosure can be attached via HSL to a different system than the bottom enclosure, but cannot be ordered this way. When the system is received, process an RPO to remove the #0694 from the records of the original ordered system and add it to the records of the other system. An HSL loop uses all optical or all copper ports/cables. A copper loop can intermix I/O towers/units with copper HSL and copper HSL-2 ports. Select the appropriate cable based on the type of HSL ports to which it is being attached, and the cable length required. The following HSL cables can be used with an #8294: ► #1307 -1.75m Copper HSL-2 Cable ► #1308 -2.5m Copper HSL-2 Cable ► #1460 - 3m Copper HSL Cable ► #1461 - 6m Copper HSL Cable ► #1462 - 15m Copper HSL Cable ► #1470 - 6m Optical HSL Cable ► #1471 - 30m Optical HSL Cable ► #1472 - 100m Optical HSL Cable ► #1473 - 250m Optical HSL Cable ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable ► #1481 - 1m HSL-2 Cable ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable Both the top and bottom enclosures in the #8294 must be connected via SPCN cables. They must be in an SPCN cable loop. Three SPCN cables are required to connect both enclosures of the #8294 to the ports of the system unit. If the top enclosure of the #8294 is attached to a different system unit, then the top enclosure is connected to the SPCN cable loop of that system and one or two SPCN cables are required. The #8294 is a Customer Install Feature. **Note**: When viewed from the HMC, the HSL-2/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number. Select three or four of the following SPCN cables for each #8294: ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable ► #0369 100m Optical SPCN Cable ► #1468 - 250m Optical SPCN Cable

#8294 (contd.)	**#8294 Optional Base 1.8m Rack** ► #6001 Power Control Cable - 2M ► #6006 Power Control Cable - 3M ► #6007 Power Control Cable - 15M ► #6008 Power Control Cable - 6M ► #6029 Power Control Cable - 30M Dual line cord capability is required with the bottom enclosure of the #8294, #5164 Dual Power Cord is required on the order. Dual line cord capability is also required on the top enclosure of the #8294, with a #5165 Dual Power Cord, if the top enclosure is attached to the same system unit as the bottom enclosure. If the top enclosure is attached to a different system unit, then #5165 is optional. An additional line cord (for a total of four) must be ordered when a #5165 is installed. Plugging in the second line cord, even if to the same outlet, enables the ac power modules to be redundant. The following line cords are supported on an #8294 (three or four line cord features required): ► #1399 - 4.3m 300V/16A ► #1406 - 200V 16A 14-ft TL Line Cord ► #1408 - 4.3m 200V/16A Power Cord Italy ► #1409 - 4.3m 200V/16A Per Cord Australia/New Zealand ► #1418 - 4.3m 200V/16A Per Cord South Africa ► #1419 - 4.3m 200V/16A Per Cord Israel ► #1420 - 4.3m 200V/16A Per Cord EU/Asia ► #1421 - 4.3m 200V/16A Per Cord CH/DK ► #1451 - 200V 6-ft Line Cord ► #1452 - 200V 14-ft Line Cord ► #1453 - 200V 6-ft Locking Line Cord ► #1454 - 200V 12A 14-ft TL Line Cord ► #1455 - 200V 6-ft Watertight Line Cord ► #1456 - 200V 14-ft Watertight Line Cord ► #1476 - 4.3m 200V/12A Power Cord UK Initial order or MES Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER V5.2 The #8294 is a Customer Install Feature.
#8420	**#8420 - Base Service Processor** Provides service processor function for the Model 570. The #8420 contains the system Rack Indicator Port, two SPCN (RS485) ports for control of attached I/O subsystems, and two Service Processor Ethernet or HMC ports. Supported on Model 570. The #8420 is a Customer Install Feature.
#8453	**#8453 - Base custom placement** The #8453 places hardware components as directed by hardware placement information from the LPAR Verification Tool (LVT). The #8453 is supported on new system builds only. If the #8453 is not on the initial order, hardware placement can be provided at the customer site by IBM Global Services for a fee. Initial order or MES Supported on Models 570, 570 (POWER6), 595 and 9411-100. Customer Install Feature: N/A
#9074	**#9074 Base I/O Tower** The #9074 Base I/O Tower is the base I/O tower shipped on the Model 830. The #9074 supports up to 45 disk units (15 units are “base”, with an additional 30 provided with #5101 or #5111), up to 11 PCI IOAs, up to two removable media units, one battery backup, and redundant or hot swap power supplies. The #9074 has a #9943 Base PCI IOP and a #9748 Base PCI RAID Disk Unit Controller. The 14 PCI slots are used and supported (driven) by the #9943 Base PCI IOP and by #2843/#2844/#2847 PCI IOPs. The #2790 PCI Integrated Netfinity Server or the #2791/#2792/#2799 PCI Integrated xSeries Server can also support selected LAN cards. The #1460 - 3m Copper HSL Cable is included automatically on the order. Select an additional two of the following HSL cables when the Model 830 is in a clustered loop with the Models 825, 870, or 890: ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable

#9074 (contd.)	**#9074 Base I/O Tower** One #14xx power cord must be specified (geography dependent). See 13.2, “SPCN (power) cables” on page 545, for power cord options. The #9074 is capable of controlling Ultra2 SCSI disk units. The two removable media devices (internal tape, CD-ROM or DVD) are supported by the #9748/#9778. The #9074 is a Customer Install Feature. The #9074 was withdrawn from marketing as of 01 January 2004. A #5074 attached to the Model 520 or 570 is the recommended replacement.
#9079	**#9079 Base I/O Tower** The #9079 Base I/O Tower is the base I/O tower shipped on the Model 840. The #9079 supports up to 45 disk units (15 are “base”, with an additional 30 provided with #5101 or #5111), up to 11 PCI IOAs, up to two removable media units, one battery backup, and redundant or hot swap power supplies. The #9079 has a #9943 Base PCI IOP and a #9748 Base PCI RAID Disk Unit Controller. The 14 PCI slots are used and supported (driven) by the #9943 Base PCI IOP and by #2843/#2844/#2847 PCI IOPs. The #2790 PCI Integrated Netfinity Server or the #2791/#2792/#2799 PCI Integrated xSeries Server can also support selected LAN cards. Select two (any combination) of the following HSL cables: ► #1460 - 3m Copper HSL Cable ► #1461 - 6m Copper HSL Cable ► #1462 - 15m Copper HSL Cable Select an additional two of the following HSL cables, when the Model 840 is in a clustered loop with Model 825, 870 or 890: ► #1474 - 6m HSL to HSL-2 Cable ► #1475 - 10m HSL to HSL-2 Cable Select one of the following SPCN cables per tower: ► #1463 - 2m SPCN Cable ► #1464 - 6m SPCN Cable ► #1465 - 15m SPCN Cable ► #1466 - 30m SPCN Cable One #14xx power cord (two when dual line cord feature #5104 is ordered for the 840 system unit) feature must be specified (geography dependent). See Chapter 13, “HSL, 12X, SPCN, line cord, and communication cables for the System i family of models” on page 539, for power and line cord options. The #9079 is capable of controlling Ultra2 SCSI disk units. The two removable media devices (internal tape, CD-ROM, and DVD) are supported by the #9748/#9778 PCI Raid Disk Unit Controller. Supported on Models 840, 870, 890. The #9079 is a Customer Install Feature.
#9094	**#9094 Base PCI I/O Enclosure** The #9094 Base PCI I/O Enclosure is the base enclosure shipped with the 870 and 890 system units to constitute a system. The #9094 is attached to the system unit via HSL cable through a #9887 Base HSL-2 Bus Adapter. A #9887 Base HSL-2 Bus Adapter is required on the order. One JTAG cable and one V/S Communications cable (VPD and SPCN combined) are included for the attachment of the #9094 to the system unit. The #9094 Base PCI I/O Enclosure has 15 disk unit slots, with an additional 30 slots available with #5107 30 Disk Expansion. The #9094 also has two removable media slots and 14 PCI-X card slots. A #9844 Base PCI IOP or #9943 Base PCI IOP is included (feature code required) and a PCI/PCI-X Disk Controller is required. The PCI/PCI-X Disk Controller drives the disk units in the base 15 disk unit slots and the removable media devices in the two removable media slots. The PCI/PCI-X Disk Controllers (one or two) are required to drive the disk units in the 30 feature disk unit slots. The disk unit slots (both base and feature) are in groups of 15. Each group of 15 is further divided into three groups of five disk units. Each group of five disk units is on a separate SCSI bus from a PCI/PCI-X Disk Controller The #5094 and #9094 expansion towers offer additional LPAR configuration flexibility. Instead of the previous maximum number of three disk controllers supported in a #5094/#9094, now up to nine total disk controllers are supported. These can be either OS/400 controlled (maximum of six OS/400 partitions) or Linux controlled. The #5294 and #8094 are similarly enhanced and now support a maximum of 18 disk controllers.

#9094 (contd.)	**#9094 Base PCI I/O Enclosure** Each tower must have at least one PCI/PCI-X Disk Controller for each group of 15 disk units in the tower. Only the #5703/#0628 can be ordered as an extra controller (up to two #5703/#0628s per group of 15 disk units in the same tower) if #0143 Disk Controller Placement Exception is also ordered. A maximum of six #5703/#0628s per #5094/#9094 tower is supported. The number of disk units per PCI/PCI-X Disk Controller varies by configuration. Refer to Disk Controller Feature Code Section for controller description for limitations. The 14 PCI slots are used and supported (driven) by the #9844 Base PCI IOP or the #9943 Base PCI IOP, by feature #2843/#2844/#2847 PCI IOPs and by #2790/#2791/#2792/#2799 PCI Integrated xSeries Servers or #4710/#9710 Integrated xSeries Servers. Select two (any combination) of the following HSL cables: ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable ► #1485 - 15m HSL-2 Cable With a #5114 Dual Line Cords Tower, two of the following line cords for the #9094 Base PCI I/O Enclosure are required to be specified: ► #1406 - 200V 16A 14-ft TL Line Cord ► #1408 - 4.3m 200V/16A Power Cord Italy ► #1409 - 4.3m 200V/16A Power Cord Australia/New Zealand ► #1418 - 4.3m 200V/16A Power Cord South Africa ► #1419 - 4.3m 200V/16A Power Cord Israel ► #1420 - 4.3m 200V/16A Power Cord EU/Asia ► #1421 - 4.3m 200V/16A Power Cord CH/DK ► #1451 - 200V 6-ft Line Cord ► #1452 - 200V 14-ft Line Cord ► #1453 - 200V 6-ft Locking Line Cord ► #1454 - 200V 12A 14-ft TL Line Cord (default U.S.) ► #1455 - 200V 6-ft Watertight Line Cord ► #1456 - 200V 14-ft Watertight Line Cord ► #1476 - 4.3m 200V/12A Power Cord UK Supported on Models 870 and 890. The #9094 is not a Customer Install Feature. The #9094 was withdrawn from marketing as of 01 October 2005.
#9194	**#9194 Base PCI-X Expansion Tower** This feature is the base PCI I/O enclosure that is shipped with a Model 595 system. The #9194 is attached to the Model 595 system unit via 2 HSL-2/RIO-G cables (HSL-2/RIO-G loop) through a #9517 Base HSL-2/RIO-G Bus Adapter. Two SPCN cables are also required to form an SPCN loop with service processors in the system unit. The #9194 also has dual line cord capability; #5164 Dual Power Cords - #8294/#9194 must be on the order. The #9194 has 15 disk unit slots, with an additional 30 slots available with a #5168 30-Disk Expansion for the #9194 Tower. The #9194 also has two removable media slots and 14 PCI card slots. A #9844 Base PCI IOP is included (feature code required) and a #2780 PCI-X Ultra4 RAID Disk Controller is also required. The PCI/PCI-X Disk Controller drives the disk units in the base 15 disk unit slots and the removable media devices in the two removable media slots. One or two PCI/PCI-X Disk Controllers are required to drive the disk units in the 30 feature disk unit slots. The disk unit slots (both base and feature) are partitioned in groups of 15 and each group of 15 is further partitioned into three groups of five. Each group of five is on a separate SCSI bus from the PCI/PCI-X Disk Controller. The 11 PCI IOAs are supported (driven) by the #9844 Base PCI IOP, by #2844 PCI IOP(s) and by #4810/#4812 PCI Integrated xSeries Servers. Select two (any combination) of the following HSL cables: ► #1307 -1.75m Copper HSL-2 Cable ► #1308 -2.5m Copper HSL-2 Cable ► #1482 - 3.5m HSL-2 Cable ► #1483 - 10m HSL-2 Cable Specify two of the following line cords for the #9194 Base PCI Enclosure: ► #1451 - 200V 6-ft Line Cord ► #1452 - 200V 14-ft Line Cord ► #1453 - 200V 6-ft Locking Line Cord

#9194 (contd.)	**#9194 Base PCI-X Expansion Tower** ► #1454 - 200V 12A 14-ft TL Line Cord (Default-US) ► #1455 - 200V 6-ft Watertight Line Cord ► #1456 - 200V 14-ft Watertight Line Cord ► #1406 - 200V 16A 14-ft TL Line Cord ► #1408 - 4.3m 200V/16A Power Cord Italy ► #1409 - 4.3m 200V/16A Power Cord Australia/New Zealand ► #1418 - 4.3m 200V/16A Power Cord South Africa ► #1419 - 4.3m 200V/16A Power Cord Israel ► #1420 - 4.3m 200V/16A Power Cord EU/Asia ► #1421 - 4.3m 200V/16A Power Cord CH/DK ► #1476 - 4.3m 200V/12A Power Cord UK Select two of the following SPCN cables for each #9194: ► #1463 2m SPCN Cable ► #1464 6m SPCN Cable ► #1465 15m SPCN Cable ► #1466 30m SPCN Cable ► #0369 100m Optical SPCN Cable ► #1468 250m Optical SPCN Cable ► #6001 2m SPCN Cable ► #6006 3m SPCN Cable ► #6007 15m SPCN Cable ► #6008 6m SPCN Cable ► #6029 30m SPCN Cable Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER V5.2 Supported on Model 595. The #9194 is a Customer Install Feature. **Note**: When viewed from the HMC, the HSL-2/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#9369, #9370, #9371, #9372, #9374, #9375, #9376, #9377, #9378, #9379, #9397	**Disk attachment-based hardware for Model 525 Solution Edition disk packages** The following are disk hardware features that are part of the optional #5567, #5568, and #5569 disk packaging features available on for: ► #6913 Model 525 Oracle Solution Edition ► #6914 Model 525 SAP Solution Edition The following features are without distinction as being part of either #5567, #5568, or #5569 disk packaging features. See the feature descriptions for #5567, #5568, and #5569 for that information. ► #9369: PCI-X Expansion Drawer (#0595 PCI-X Expansion Unit in Rack) ► #9370: 70.56GB 15k rpm Disk Unit (#4327 70.56 GB 15k RPM Disk Unit) ► #9371: HSL-2/RIO-G Ports - 2 Copper (#2888 RIO-G Ports - 2 Copper) ► #9372: PCI-X Expansion Tower(#5095 PCI-X Expansion Tower- 5095) ► #9374: EXP24 6 Disk Slot Enabler (#5741 Expansion 24 6 Disk Slot Enabler) ► #9375: EXP24 6/12 Disk Slot Enabler (#5742 Expansion 24 6/12 Disk Slot Enabler) ► #9376: EXP24 Controller (#5778 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP) ► 9377: Total Storage EXP24 Controller 1.5GB (#5782 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP) ► #9378: Total Storage EXP24 Disk Drawer (#5786 TotalStorage Expansion 24 Disk Drawer) ► #9379: Total Sto rage EXP24 Controller 1.5 GB in Model 525 processor enclosure (#5800 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP) ► #9397: 1.5 GB Disk Controller with Auxiliary Write Cache (#5583 Controller with 1.5GB Auxiliary Write Cache without IOP)

#9517	**#9517 Base HSL-2/RIO-G Bus Adapter** The #9517 Base HSL-2/RIO-G Bus Adapter provides two HSL-2/RIO-G ports. The #6417 can be selected as base on initial orders of #0595, #5094, #5095, #5294 or #8294 expansion units and towers. The #9517 is a base feature version of the #6417 HSL-2/RIO-G Bus Adapter. The migration of existing #9517s to eServer i5 servers is allowed. Existing #9517s are installed in migrated #0595, #5094, #5095 and #5294 expansion towers/units. Minimum operating system level: i5/OS V5R3 Supported on all POWER5 and POWER6 models and 9411-100. The #9517 is a Customer Install Feature. **Note**: When viewed from the HMC, the HSL-2/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#9531	**#9531 Base HSL-2 Bus Adapter** The #9531 Base HSL-2 Bus Adapter is a base feature on the #5790 PCI Expansion Drawer. It provides two HSL-2/RIO-G ports. Minimum operating system level: i5/OS V5R3 Supported on all POWER5 and POWER6 models and 9411-100. The #9531 is a Customer Install Feature. **Note**: When viewed from the HMC, the HSL-2/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#9691	**#9691 Base Bus Adapter (Copper HSL)** The #9691 is a base bus adapter card that installs in the #5074 PCI Expansion Tower and #5079 1.8 M I/O Tower, the #9079 Base I/O Tower or the #8079 Optional Base 1.8 M I/O Rack on a Model 840 system unit, and in the #0578/#5078 PCI Expansion Unit. The #9691 supports HSL Copper. Minimum operating system level: OS/400 V4R50 Supported on all POWER5 and POWER6 models and Models 810, 825, 870, and 890. Customer Install Feature: N/A The #9691 was withdrawn from marketing as of 1 December 2005.
#9730	**#9730 Base HSL-2 Ports - 4 Copper** The #9730 Base HSL-2 Ports - 4 Copper is a base 4-port copper HSL-2 bus adapter for Models 870 and 890. This adapter also has connectors for JTAG and CSP. Minimum operating system level: OS/400 V5R2 Supported on Models 870 and 890. The #9730 is a Customer Install Feature. The #9730 was withdrawn from marketing as of 01 October 2005.
#9739	**#9739 Base Optical Bus Adapter** The #9739 Base Optical Bus Adapter is used in the #5074 PCI Expansion Tower and #5079 1.8 M I/O Tower and in the #5078/#0578 to allow these towers to connect via optical HSL. The #9739 supports clustering (HSL OptiConnect). Minimum operating system level: OS/400 V5R1 or V5R2 when connected to Models 810, 825, 870, and 890 Supported on Models 825, 870, and 890. The #9739 is a Customer Install Feature.
#9785	**#9785 Base HSL-2 Ports - 2 Copper** The #9785 Base HSL-2 Ports - 2 Copper is a base 2-port copper HSL-2 adapter for the Model 825. The #9785 can be installed in either of the two HSL adapter slots (C08 or C09) on the Model 825 backplane. This feature can be ordered with a new Model 825 system unit on initial order or on model upgrade. If the system unit is already installed, order a #2785 HSL-2 Ports - 2 Copper for this function. Minimum operating system level: OS/400 V5R2 Supported on Model 825. The #9785 is a Customer Install Feature. The #9785 withdrawn from marketing as of 01 October 2005.

#9786	**#9786 Base HSL Ports - 2 Optical** The #9786 Base HSL Ports - 2 Optical is a base 2-port optical HSL adapter for the Model 825. The #9786 can be installed in either of the two HSL adapter slots (C08 or C09) on the Model 825 backplane. This feature can be ordered with a new Model 825 system unit on initial order or on model upgrade. If the system unit is already installed, order a #2786 HSL Ports - 2 Optical for this function. Minimum operating system level: OS/400 V5R2 Supported on Model 825. The #9786 is a Customer Install Feature. The #9786 withdrawn from marketing as of 01 October 2005.
#9787	**#9787 Base HSL-2 Ports - 2 Copper** The #9787 Base HSL-2 Ports - 2 Copper board provides two copper HSL-2 ports. On the Model 825, the #9787 is attached to the processor board and does not plug into HSL adapter slots C08 or C09. Supported on Model 825. The #9787 is not a Customer Install Feature. The #9787 was withdrawn from marketing as of 01 June 2006.
#9789	**#9789 Base HSL Ports - 4 Optical** The #9789 Base HSL Ports - 4 Optical is a base 4-port optical HSL-2 bus adapter for the Model 890. This adapter also has connectors for JTAG and CSP. Minimum operating system level: OS/400 V5R2 Supported on Model 890. The #9789 is a Customer Install Feature.
#9876	**#9876 Base Optical Bus Adapter** The #9876 Base Optical Bus Adapter is a base feature that provides optical HSL connectivity with two HSL optical ports to support the #0588/#5088, #0595/#5095, #5094, #5294, and #8294 expansion towers and expansion units. The #9876 is only available on initial orders. Migration of existing #9876 adapters to eServer i5 servers is allowed. Existing #9876 adapters are installed in migrated #5074, #5079, #5094, #5294, #0595, and #5095 expansion towers/units. The #9876 replaces the #9886 Base Optical Bus Adapter. Minimum operating system level: i5/OS V5R3 Supported on Models 550, 570, 595, 825, 870, and 890. The #9876 is a Customer Install Feature. **Note**: When viewed from the HMC, the HSL-2/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#9877	**#9877 - Base HSL-2 Bus Adapter** The #9877 - Base HSL-2 Bus Adapter is a base feature, which provides optical HSL-2/RIO-G connectivity with two HSL optical ports to support #0588/#5088 expansion towers and expansion units. The #9877 is only available on initial orders. Migration of existing #9877 adapters to eServer i5 servers is allowed. Existing #9877 adapters are installed in migrated #5074, #5079, #5094, #5294, #0595, and #5095 expansion towers or units. The #6417 is required on the #5088/#0588 when migrating to a Model 520, 550, 570, or 595. The #9877 replaces the #9887 Base HSL-2 Bus Adapter. Minimum operating system level: i5/OS V5R3 Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #9877 is a Customer Install Feature. **Note**: When viewed from the HMC, the HSL-2/RIO-G adapter slots can be generically identified only with the characters *GX Adapter Card,* rather than a feature number.
#9886	**#9886 Base Optical Bus Adapter** The #9886 Base Optical Bus Adapter provides optical HSL connectivity for the #5094, #0595/#5095, #0588/#5088 PCI, #5294, #8094 (top unit only), and #9094 expansion towers and expansion units. The #9886 can only be ordered with a new expansion tower or unit. If the expansion unit is already installed, order a #2886 for this function. Minimum operating system level: OS/400 V5R2 Supported on Models 825, 830, 840, 870, and 890. The #9886 is a Customer Install Feature. The #9886 was withdrawn from marketing as of 01 June 2006. A #9876 Base Optical Bus Adapter is the recommended replacement.

#9887	**#9887 Base HSL-2 Bus Adapter** The #9887 Base HSL-2 Bus Adapter provides HSL-2 connectivity for the #9094 Base PCI I/O Enclosure. The #9887 can only be ordered with a new expansion tower or unit. If the expansion unit is already installed, order a #2887 for this function. The #9887 is a Customer Install Feature. The #9887 was withdrawn from marketing as of 01 June 2006. A #9877 is the recommended replacement.

4.4 i5/OS partitions on System p5 models

i5/OS partitions on System p models	
9411-100	**9411-100 eServer p5 I/O Subsystem for i5/OS** Specific IBM System p Models 570 and 595 support an i5/OS partition. The IBM System p5™ 9411-100 type model number enables the ordering of i5/OS supported I/O hardware. Each i5/OS supported I/O tower, drawer, IOP, I/O adapter controller, and disk device is a feature of the subsystem of this machine type. A unique 9411-100 serial number is associated with a specific System p5 machine and stays with that system. All the I/O features associated with the 9411-100, with the exception of the Enterprise Enablement feature, can be transferred to another 9411-100, associated with a different System p5 server. The 9411-100 uses the same hardware feature codes as used for the 9406 System i5 machine type. If a System p5 client has all the System i (iSeries) I/O they need, the 9411-100 starts as an empty model. The IBM ordering administrative system transfers the existing System i5 I/O features into this 9411-100. New System i5 I/O features are ordered against the 9411-100. The 9411-100 provides the I/O for any i5/OS partitions running on a 1.65 GHz System p5 570, 590, or 595 server. Specifically, the 9411-100 is supported on the following System p5 models: ► The 1.65 GHz 9117 570, which supports one processor worth of i5/OS workload ► The 1.65 GHz 9119 590 and 595, which support up to two processors worth of i5/OS workload. The I/O maximums for a 9411 are consistent with an IBM System p5 Model 570: ► 270 disk drives ► 19 TB disk storage ► 18 Integrated xSeries Servers ► Eight Integrated xSeries Adapters ► 84 PCI slots ► 192 communication lines – 36 LAN ports – 48 twinax controllers ► 12 internal DVD/CD/tape drives The minimum configuration for a 94100 is: ► One IOP in an iSeries I/O tower or drawer ► One disk controller for a load source drive For more information go to the IBM Systems Hardware Information Center at: http://publib.boulder.ibm.com/eserver Select IBM Systems Hardware Information Center. Search for “9411.”

4.5 Models 825, 870, and 890 Capacity on Demand

Models 825, 870 and 890 Capacity On Demand	
#1609	**#1609 825 CUoD Activation** The #1609 825 CUoD Activation is used to order a password to activate one additional processor on the Model 825 with a CUoD processor feature. Up to three #1609s can be ordered on initial orders or via MES to activate additional processors. Minimum operating system level: OS/400 V5R2 Supported on the #2473 Model 825 3/6-way processor.
#1610	**#1610 890 CUoD Activation** The #1610 890 CUoD Activation is used to order a password to activate one additional processor on the Model 890 with a CUoD processor. Up to eight #1610s can be ordered on initial orders or via MES to activate additional processors. Minimum operating system level: OS/400 V5R2 Supported on the #2487 Model 890 16/24-way Processor and #2488 Model 890 24/32-way Processor
#1611	**#1611 870 CUoD Activation** The #1611 870 CUoD Activation is used to order a password to activate one additional processor on a Model 870 with a CUoD processor. Up to eight #1611s can be ordered on initial orders or via MES to activate additional processors. Minimum operating system level: OS/400 V5R2 Supported on the #2486 Model 870 8/16-way Processor.
#1612	**#1612 890 CUoD Activation** The #1612 890 CUoD Activation is used to order a password to activate one additional processor on a Model 890 with a CUoD processor. Up to eight #1612s can be ordered on initial orders or via MES to activate additional processors. Minimum operating system level: OS/400 V5R2 Supported on the #2497 Model 890 16/24-way Processor.
#1613	**#1613 890 CUoD Activation** The #1613 890 CUoD Activation is used to order a password to activate one additional processor on a Model 890 with a CUoD processor. Up to eight #1613s can be ordered on initial orders or via MES to activate additional processors. Minimum operating system level: OS/400 V5R2 Supported on the #2498 Model 890 16/24-way Processor.
#1614	**#1614 870 CUoD Activation** The #1614 870 CUoD Activation is used to order a password to activate one additional processor on a Model 870 with a CUoD processor. Up to three #1614s can be ordered on initial orders or via MES to activate additional processors. Minimum operating system level: OS/400 V5R2 Supported on the #2489 Model 870 5/8-way Processor.
#1682	**#1682 On/Off Prepaid for Model 825** The #1682 On/Off Prepaid for Model 825 Standard Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2473 Model 825 3/6-way Processor with #1773 TCoD Enablement.
#1683	**#1683 On/Off Prepaid for Model 825** The #1683 On/Off Prepaid for Model 825 Enterprise Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2473 Model 825 3/6-way Processor with #1773 TCoD Enablement.
#1684	**#1684 On/Off Prepaid for Model 870** The #1684 On/Off Prepaid for Model 870 Standard Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2489 Model 870 5/8-way Processor with #1774 TCoD Enablement.

#1685	**#1685 On/Off Prepaid for Model 870** The #1685 On/Off Prepaid for Model 870 Standard Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2486 Model 870 8/16-way Processor with #1776 TCoD Enablement.
#1686	**#1686 On/Off Prepaid for Model 870** The #1686 On/Off Prepaid for Model 870 Enterprise Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2486 Model 870 8/16-way Processor with #1776 TCoD Enablement.
#1688	**#1688 On/Off Prepaid for Model 890** The #1688 On/Off Prepaid for Model 890 Standard Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2497 Model 890 16/24-way Processor with #1777 TCoD Enablement.
#1689	**#1689 On/Off Prepaid for Model 890** The #1689 On/Off Prepaid for Model 890 Enterprise Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2497 Model 890 16/24-way Processor with #1777 TCoD Enablement.
#1691	**#1691 On/Off Prepaid for Model 890** The #1691 On/Off Prepaid for Model 890 Standard Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2498 Model 890 24/32-way Processor with #1778 TCoD Enablement.
#1692	**#1692 On/Off Prepaid for Model 890** The #1692 On/Off Prepaid for Model 890 Enterprise Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2498 Model 890 24/32-way Processor with #1778 TCoD Enablement.
#1695	**#1695 On/Off Prepaid for Model 870** The #1695 On/Off Prepaid for Model 870 Enterprise Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2489 Model 870 5/8-way Processor with #1774 TCoD Enablement.
#1697	**#1697 On/Off Prepaid for Model 825** The #1697 On/Off Prepaid for Model 825 Capacity BackUp Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2
#1698	**#1698 On/Off Prepaid for Model 870** The #1698 On/Off Prepaid for Model 870 Capacity BackUp Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2496 Model 870 2/16-way Processor with #1780 TCoD Enablement
#1699	**#1699 On/Off Prepaid for Model 890** The #1699 On/Off Prepaid for Model 890 Capacity BackUp Edition provides an account for 30 processor days of On/Off Capacity on Demand. The system must be enabled for On/Off Capacity on Demand before ordering prepaid days. Minimum operating system level: OS/400 V5R2 Supported on the #2499 Model 890 4/32-way Processor with #1781 TCoD Enablement.

#177x	**#177x On/Off Capacity on Demand (enablement)** A #177x feature code is used to enable On/Off Capacity on Demand by providing a password to be installed on an iSeries server. After this password is installed, unused On/Off Capacity on Demand processors can be activated. A limit of 192 processor days can be used on a temporary basis. Requires a contract to be signed before the #177x feature is ordered. On/Off Capacity on Demand processor usage must be reported on, minimally, a monthly basis to IBM or the client's Business Partner. A #178x or #179x On/Off Capacity on Demand billing feature initiates quarterly invoices based on the number of processor days used. A new contract can be signed and the #177x feature reordered as the limit of usable temporary processor days approaches. Supported feature codes by model are: ► #1773 TCoD Enablement for Model 825 ► #1774 TCoD Enablement for Model 870 ► #1776 TCoD Enablement for Model 870 ► #1777 TCoD Enablement for Model 890 ► #1778 TCoD Enablement for Model 890 ► #1779 TCoD Enablement for Model 825 ► #1780 TCoD Enablement for Model 870 ► #1781 TCoD Enablement for Model 890
#178x #179x	**#178x-#179x On/Off Capacity on Demand Billing** A #178x-#179x feature code is used for On/Off Capacity on Demand billing. After a #177x On/Off Capacity on Demand feature is ordered and the associated password is installed on the system, the user must report monthly to IBM their On/Off Capacity on Demand usage. This information is used to compute the On/Off Capacity on Demand billing. One On/Off Capacity on Demand billing feature is required for each processor day that is used for temporary capacity. There is a limit to the number of processor days that are agreed to in the contract that was signed prior to ordering the On/Off Capacity on Demand feature. To continue using temporary capacity after the initial limit has been reached, a new contract is required and a second On/Off Capacity on Demand feature is ordered. An On/Off Capacity on Demand feature cannot be concurrently ordered with an On/Off Capacity on Demand billing feature. ► #1782 TCoD Billing for Model 825 Prerequisites: #1773 TCoD Enablement for Model 825, #7416 Standard Edition ► #1783 TCoD Billing for Model 825 Prerequisites: #1773 TCoD Enablement for Model 825, #7418 Enterprise Edition ► #1784 TCoD Billing for Model 870 Prerequisites: #1774 TCoD Enablement for Model 870, #7431 Standard Edition ► #1785 TCoD Billing for Model 870 Prerequisites: #1776 TCoD Enablement for Model 870, #7419 Standard Edition ► #1786 TCoD Billing for Model 870 Prerequisites: #1776 TCoD Enablement for Model 870, #7421 Enterprise Edition ► #1788 TCoD Billing for Model 890 Prerequisites: #1777 TCoD Enablement for Model 890, #7422 Standard Edition ► #1789 TCoD Billing for Model 890 Prerequisites: #1777 TCoD Enablement for Model 890, #7424 Enterprise Edition ► #1791 TCoD Billing for Model 890 Prerequisites: #1778 TCoD Enablement for Model 890, #7425 Standard Edition ► #1792 TCoD Billing for Model 890 Prerequisites: #1778 TCoD Enablement for Model 890, #7427 Enterprise Edition ► #1795 TCoD Billing for Model 870 Prerequisites: #1774 TCoD Enablement for Model 870, #7433 Enterprise Edition ► #1797 TCoD Billing for Model 825 Prerequisites: #1779 TCoD Enablement for Model 825, #7439 Capacity BackUp Edition ► #1798 TCoD Billing for Model 870 Prerequisites: #1780 TCoD Enablement for Model 870, #7440 Capacity BackUp Edition ► #1799 TCoD Billing for Model 890 Prerequisites: #1781 TCoD Enablement for Model 890, #7444 Capacity BackUp Edition
#9603	**#9603 Base CUoD Activation** The #9603 Base CUoD Activation feature is used to activate one additional processor with a CUoD feature as part of an initial order on Models 870 and 890 Enterprise Editions. The #9603 was withdrawn from marketing as of 01 October 2005.

4.6 Main storage

Main storage	
Base	There is no base memory on Models 520, 525, 550, 570 595, 800, 810, 825, 870, and 890. On a system supporting and configured with different memory card features, the memory plugged into the same processor card run at the slowest memory speed.
Model 515, 520+ and 525 Main Memory Rules	**Memory features for the Model 515, 520 and 525 with #8325, #8327 and #8330 processors** ► #4400 - 1 GB DDR2 Main Storage (2 x 512 MB DIMMs: 533 MHz sdram CCIN 313A) ► #4474 - 2 GB DDR2 Main Storage (2 x 1 GB DIMMS: 533 MHz sdram CCIN 313B) ► #4475 - 4 GB DDR2 Main Storage (2 x 2 GB DIMMs: 533 MHz sdram CCIN 313D) ► #4477 - 8 GB DDR2 Main Storage (2 x 4 GB DIMMs: 533 MHz sdram CCIN 313E) ► #9548 - Base1 GB DDR2 Main Storage (2 x 512 MB DIMMs: 533 MHz sdram CCIN 313A) ► #9549 - Base 2 GB DDR2 Main Storage (2 x 1 GB DIMMs: 533 MHz sdram CCIN 313B) Each feature code is a pair of DIMMs. A minimum of one pair of DIMMs is required on each processor card. That is, DIMMs may be installed in pairs (one FC), not in quads. For 9405, 9406 and 9407 processors, the first or only DIMM pair goes into DIMM slots J0A & J2A. If additional memory DIMMs are to be installed, the second pair of DIMMs goes into slots J0C & J2C, the third pair goes into DIMM slots J0B & J2B and the fourth pair goes into DIMM slots J0D & J2D.
Model 520 Main Memory Rules	**Memory features for the Model 520** ► #3093 - 512 MB Main Storage DIMM (DDR; 256 Mb technology, unstacked, CCIN 3093) (9406 Model 520 only) ► #3094 - 1 GB Main Storage DIMM (DDR; 256 Mb technology, stacked, CCIN 3094) (9406 Model 520 only) ► #3096 - 2 GB Main Storage DIMM (DDR; 256 Mb technology, stacked, CCIN 3096) (9406 Model 520 only) ► #4443 - 512 MB DDR Main Storage (DDR1; 256 Mb technology, CCIN 309B) ► #4444 - 1 GB DDR Main Storage (DDR1; 256 Mb technology, CCIN 309B) (ships four 256 MB DIMMs for a total of 1 GB) ► #4445 - 4 GB DDR Main Storage (DDR1; 128 Mb technology, CCIN 30D3) (ships four 1 GB DIMMs for a total of 4 GB) ► #4447 - 2 GB DDR Main Storage (DDR1; 64 Mb technology, CCIN 30D2) (ships four 512 MB DIMMs for a total of 2 GB) ► #4449 - 8 GB DDR Main Storage (DDR1; 128 Mb technology, stacked, CCIN 30D5) (ships four 2 GB DIMMs for a total of 8 GB) ► #4450 - 16 GB DDR Main Storage (DDR1; 1 Gb technology, stacked, CCIN 30AC) (ships four 4 GB DIMMs for a total of 16 GB) Install DIMMs in sets of four (quads) with one exception: A single pair of 256 MB DIMMs is allowed on the #8950 processor. Add an additional pair of 256 MB DIMMs to the original pair (to make a quad) whenever more DIMMs are added. Then one additional quad of DIMMs can be added to the system. For the #8950 processor, the first DIMM pair goes into DIMM slots J0A and J2A. The second pair of DIMMs goes into slots J0C and J2C. The first quad of DIMMs is plugged into DIMM slots J0A, J2A, J0C, and J2C. The second quad of DIMMs is plugged into DIMM slots J0B, J2B, J0D, and J2D.
Model 550+ Main Memory Rules	**Memory features for the Model 550 with #8312 processors** ► #4400 - 1 GB DDR2 Main Storage (2 x 512 MB DIMMs: 533 MHz sdram CCIN 313A) ► #4474 - 2 GB DDR2 Main Storage (2 x 1 GB DIMMs: 533 MHz sdram CCIN 313B) ► #4475 - 4 GB DDR2 Main Storage (2 x 2 GB DIMMs: 533 MHz sdram CCIN 313D) ► #4477 - 8 GB DDR2 Main Storage (2 x 4 GB DIMMs: 533 MHz sdram CCIN 313E) The Model 550+ has two x #8312 processor cards. A minimum of one memory feature (one pair of DIMMs) is required on each processor card. Each feature code is a pair of DIMMs. A minimum of one pair of DIMMs is required on each processor card. That is, DIMMs may be installed in pairs (one FC), not in quads per card. The first DIMM pair goes into DIMM slots P1-C8-C1 and P1-C8-C8, or slots P1-C9-C1 and P1-C9-C8. If additional memory DIMMs are to be installed: ► The second pair of DIMMs goes into slots P1-C8-C3 and P1-C8-C6, or slots P1-C9-C3 and P1-C9-C6. ► The third pair goes into DIMM slots P1-C8-C2 and, P1-C8-C7, or slots P1-C9-C2 and P1-C9-C7. ► The fourth pair goes into DIMM slots P1-C8-C4 and P1-C8-C5, or slots P1-C9-C4 and P1-C9-C5. The Model 550+ requires a minimum of 2 GB memory.

Model 550 Main Memory Rules	**Memory features for the Model 550** ► #3093 - 512 MB Main Storage (DIMM; DDR 256 Mb technology) ► #3094 - 1 GB Main Storage (DIMM; DDR 256 Mb technology) ► #3096 - 2 GB Main Storage (DIMM; DDR 256 Mb technology) ► #4444 - 1 GB DDR Main Storage (DDR1; 256 Mb technology, CCIN 309B) (ships four 256 MB DIMMs for a total of 1 GB) ► #4445 - 4 GB DDR Main Storage (DDR1; 128 Mb technology, CCIN 30D3) (ships four 1 GB DIMMs for a total of 4 GB) ► #4447 - 2 GB DDR Main Storage (DDR1; 64 Mb technology, CCIN 30D2) (ships four 512 MB DIMMs for a total of 2 GB) ► #4449 - 8 GB DDR Main Storage (DDR1; 128 Mb technology, stacked, CCIN 30D5) (ships four 2 GB DIMMs for a total of 8 GB) ► #4450 - 16 GB DDR Main Storage (DDR1; 1 Gb technology, stacked, CCIN 30AC) (ships four 4 GB DIMMs for a total of 16 GB) Install DIMMs in sets of four (quads). The 550 has two processor cards and best memory access performance is achieved when memory is balanced on each processor card: ► Plug the first quad of memory modules into memory module slots P1-C8-C1, P1-C8-C3, P1-C8-C6, and P1-C8-C8 on each processor card, or slots P1-C9-C1, P1-C9-C3, P1-C9-C6, and P1-C9-C8 on each processor card. ► Plug the second quad of memory modules into memory module slots P1-C8-C2, P1-C8-C4, P1-C8-C5, and P1-C8-C7 on each processor card or, slots P1-C9-C2, P1-C9-C4, P1-C9-C5, and P1-C9-C7 on each processor card.
Model 570 (POWER6) Main Memory Rules	**Memory features for the Model 570 (POWER6)** ► #5692 0/2GB DDR2 Memory provides 0/2GB of 667MHz DDR2 buffered memory and consists of four 512MB DDR2 DIMMs. On the system, this is identified by either of the following CCIN values: 319B or 31B5. ► #5693 0/4GB DDR2 Memory provides 0/4GB of 667MHz DDR2 buffered memory and consists of four 1 GB DDR2 DIMMs. On the system, this is identified by either of the following CCIN values: 319C or 31B6. ► #5694 0/8GB DDR2 Memory provides 0/8GB of 667 MHz DDR2 buffered memory and consists of four 2 GB DDR2 DIMMs. On the system, this is identified by either of the following CCIN values: 319E or 31B7. ► #5695 0/16GB DDR2 Memory provides 0/16GB of 533MHz DDR2 buffered memory and consists of four 4 GB DDR2 DIMMs. On the system, this is identified by either of the following CCIN values: 319D or 31B9. ► #5696 0/32GB DDR2 Memory provides 0/32GB of 400MHz DDR2 buffered memory and consists of four 8 GB DDR2 DIMMs. On the system, this is identified by either of the following CCIN values: 31BD, 319F, 31BA, or 31BC. The different CCIN values are based on engineering change level updates - “EC level.” System i POWER6 model 570 uses fully buffered DDR2 DIMMs. Each processor card has 12 memory DIMM slots. Each memory feature represents four physical DIMMs that are plugged in quads. Each processor card must have at least one memory feature. Therefore, there must be at least two memory features per processor enclosure. The requirement for at least one memory feature per processor card is independent of the number of processor activations. System i POWER6 model 570 memory features must be purchased from IBM with memory activations for at least 50% of the memory feature capacity. Memory Capacity on Demand activates memory hardware only in the system serial number for which it is purchased. If memory is moved to a different system, the memory activations remain on the system for which the memory was initially ordered. These activations can be used for other memory features on the initial system. For special situations, contact IBM CoD administration about transferring memory activations between systems. Memory DIMMs of the same MHz can be mixed on the same processor card independent of their capacity. Memory DIMMs of different MHz frequency can be mixed on the same system or processor enclosure, but the #5696 0/32 GB feature (400 MHz) cannot be mixed on the same processor card with smaller GB memory features (667 MHz or 533 MHz). The 0/2 GB, 0/4 GB and 0/8 GB memory features (667 MHz) can be mixed on the same processor card with the 0/16 GB memory feature (533 MHz). If different frequency memory DIMMs are used, the system will run all memory at the lowest MHz installed. When you configure the memory in a System i POWER6 model 570, placing two memory features (8 DIMMs) on a single processor card gives you the maximum available memory bandwidth. Adding the third memory feature gives you additional memory capacity but does not increase memory bandwidth. System performance that is dependent on memory bandwidth can be improved by purchasing two smaller memory features per processor card as opposed to one large feature per processor card. You should weigh this two-feature performance advantage against the future need for additional memory. The Model 570 (POWER6) memory activation features are #5680 1 GB activation and #5681 256 units of 1 GB memory activation. The unbuffered DDR2 memory features for the POWER5+ Model 570 and the DDR1 memory features for the POWER5 Model 570 are not compatible with the System i POWER6 model 570 memory features.

Model 570+ Main Memory Rules	**Memory features for the IBM System i5 570+** ► #7892 - 2 GB DDR2 Main Storage provides 2 GB of MS and consists of four 512 MB DDR2 DIMMs (CCIN 30F0). ► #7893 - 4 GB DDR2 Main Storage provides 4 GB of MS and consists of four 1 GB DDR2 DIMMs (CCIN 30F2). ► #7894 - 8 GB DDR2 Main Storage provides 8 GB of MS and consists of four 2 GB DDR2 DIMMs (CCIN 30F3). ► #4495 - 4/8 GB CUoD DDR2 Main Storage provides 4 GB of activated and additional 4 GB of DDR2 memory available for activation with four 2 GB DIMMs (CCIN 316F). The 4 GB of additional memory can be activated in increments of 1 GB. If a memory feature is moved to a different system, that system recognizes only 4 GB as available unless additional memory activations are acquired or already present on that server. For the original system, four 1 GB memory activations remain and can be used for other CUoD memory features. For special situations, contact IBM CoD administration about transferring memory activations between systems. ► #4496 - 8/16 GB CUoD DDR2 Main Storage provides 8 GB of activated DDR2 and additional 8 GB of DDR2 memory available for activation with four 4 GB DIMMs (CCIN 314E). The 8 GB of additional memory can be activated in increments of 1 GB. If a memory feature is moved to a different server, that server recognizes only 8 GB as available unless additional memory activations are acquired or already present on that server. For the original server, eight 1 GB memory activations remain and can be used for other CUoD memory features. For special situations, contact IBM CoD administration about transferring memory activations between servers. ► #4497 - 16 GB DDR2 Main Storage provides 16 GB of MS and consists of four 4 GB DDR2 DIMMs (CCIN 312F). ► #4498 - 32 GB DDR2 Main Storage provides 32 GB of MS and consists of four 8 GB DDR2 DIMMs (CCIN 314C). The #4498 is comprised of 400 MHz DDR2 DIMMs and cannot be mixed with other Model 570 memory on the same processor card. The #4498 can be mixed with other DDR2 memory in the same enclosure or in the same system. ► #7663 - 570 1GB Memory Activation provides the activation of 1 GB of additional Capacity on Demand memory. Multiple #7663 features are allowed up to the maximum CUoD memory of the server. Memory activations are stored in the server. If CUoD memory is moved to a different server, the additional activations remain with the original server. The System 570+ offers pluggable DIMMs for memory. Each feature above ships four DDR2 Dimms. There is a minimum of two memory features per processor enclosure. 2/4-way = minimum 2, maximum 4; 4/8-way = minimum 4, maximum 8; 8/16-way = minimum 8, maximum 16 The minimum memory for a 2/4-way 570+ is 4 GB, for a 4/8-way it is 8 GB and for the 8/16-way it is 16 GB. The maximum memory capacity depends upon the number of processors ordered for the system and on the type of memory and functionality required. The rules for mixing and matching DIMMs are: ► Install memory DIMMs in quads. ► Quads must be the same DIMM. ► Memory balancing and spreading is required.
Model 570 Main Memory Rules	**Memory features for the Model 570** ► #3043 - 512 MB Main Storage DIMM (DDR: 256 Mb technology, unstacked, CCIN 3043) ► #3044 - 1 GB Main Storage DIMM (DDR; 256 Mb technology, stacked, CCIN 3044) ► #3046 - 2 GB Main Storage DIMM (DDR; 256 Mb technology, stacked, CCIN 3046) ► #4452 - 2 GB DDR Main Storage (DDR1 CCIN 309D) (ships four 512 MB DIMMs for a total of 2 GB) ► #4454 - 8 GB DDR Main Storage (DDR1 CCIN 30AA) (ships four 2 GB DIMMs for a total of 8 GB) ► #4490 - 4 GB DDR Main Storage (DDR1 CCIN 309E) (ships four 1 GB DIMMs for a total of 4 GB) ► #4491 - 16 GB DDR Main Storage (DDR1 CCIN 30B3) (ships four 4 GB DIMMs for a total of 16 GB) ► #4492 - 32 GB DDR Main Storage (DDR1 CCIN 30F7) (ships four 8 GB DIMMs for a total of 32 GB) (#8971 Processor only). Must be installed on a processor card by itself or with another #4492 or with features #4494 or #7049. ► #4494 - 16 GB Main Storage (ships four 4 GB DIMMs for a total of 16 GB) Must be installed on a processor card by itself or with another #4494 or with features #4492 or #7049. ► #7049 - 8/16 GB DDR-1 Main Storage: Provides 8 GB of activated memory and an additional 8 GB of memory available for activation. The 8 GB of additional memory can be activated in increments of 1 GB. The #7049 must be installed on a processor card either by itself or with another #7049 or with features #4492 or #4494. The Model 570 offers pluggable DIMMs for memory. Each 0/2-way processor card contains eight slots for up to eight pluggable DIMMs. The minimum memory for a for a Model 570 is 2 GB. The maximum memory capacity depends upon the number of processors ordered for the system and on the type of memory and functionality required. The rules for mixing and matching DIMMs are: ► Install memory DIMMs in quads. ► Quads must be the same DIMM. ► Memory balancing and spreading is required. For the #0931 1/2-way server, DIMMs are installed in the following sequence: ► The first quad of DIMMs is plugged into DIMM slots J0A, J0C, J1A, and J1C. ► The second quad of DIMMs is plugged into DIMM slots J0B, J0D, J1B, and J1D.

Model 570 Main Memory Rules (contd.)	**Memory features for the Model 570** For the #0921 2/4-way server, DIMMs are installed in the following sequence: ► Enclosure 1, Processor Card 1: Slots J0A, J0C, J1A, and J1C ► Enclosure 1, Processor Card 2: Slots J0A, J0C, J1A, and J1C ► Enclosure 1, Processor Card 2: Slots J0B, J0D, J1B, and J1D ► Enclosure 1, Processor Card 1: Slots J0B, J0D, J1B, and J1D For the #0923 5/8-way server, DIMMs are installed in the following sequence: ► Enclosure 1, Processor Card 1: Slots J0A, J0C, J1A, and J1C ► Enclosure 1, Processor Card 2: Slots J0A, J0C, J1A, and J1C ► Enclosure 2, Processor Card 3: Slots J0A, J0C, J1A, and J1C ► Enclosure 2, Processor Card 4: Slots J0A, J0C, J1A, and J1C ► Enclosure 2, Processor Card 4: Slots J0B, J0D, J1B, and J1D ► Enclosure 2, Processor Card 3: Slots J0B, J0D, J1B, and J1D ► Enclosure 1, Processor Card 2: Slots J0B, J0D, J1B, and J1D ► Enclosure 1, Processor Card 1: Slots J0B, J0D, J1B, and J1D For the #0925 9/12-way server, DIMMs are installed in the following sequence: ► Enclosure 1, Processor Card 1: Slots J0A, J0C, J1A, and J1C ► Enclosure 1, Processor Card 2: Slots J0A, J0C, J1A, and J1C ► Enclosure 2, Processor Card 3: Slots J0A, J0C, J1A, and J1C ► Enclosure 2, Processor Card 4: Slots J0A, J0C, J1A, and J1C ► Enclosure 3, Processor Card 5: Slots J0A, J0C, J1A, and J1C ► Enclosure 3, Processor Card 6: Slots J0A, J0C, J1A, and J1C ► Enclosure 3, Processor Card 6: Slots J0B, J0D, J1B, and J1D ► Enclosure 3, Processor Card 5: Slots J0B, J0D, J1B, and J1D For the #0927 13/16-way server, DIMMs are installed in the following sequence: ► Enclosure 2, Processor Card 4: Slots J0B, J0D, J1B, and J1D ► Enclosure 2, Processor Card 3: Slots J0B, J0D, J1B, and J1D ► Enclosure 1, Processor Card 2: Slots J0B, J0D, J1B, and J1D ► Enclosure 1, Processor Card 1: Slots J0B, J0D, J1B, and J1D ► Enclosure 1, Processor Card 1: Slots J0A, J0C, J1A, and J1C ► Enclosure 1, Processor Card 2: Slots J0A, J0C, J1A, and J1C ► Enclosure 2, Processor Card 3: Slots J0A, J0C, J1A, and J1C ► Enclosure 2, Processor Card 4: Slots J0A, J0C, J1A, and J1C ► Enclosure 3, Processor Card 5: Slots J0A, J0C, J1A, and J1C ► Enclosure 3, Processor Card 6: Slots J0A, J0C, J1A, and J1C ► Enclosure 4, Processor Card 7: Slots J0A, J0C, J1A, and J1C ► Enclosure 4, Processor Card 8: Slots J0A, J0C, J1A, and J1C ► Enclosure 4, Processor Card 8: Slots J0B, J0D, J1B, and J1D ► Enclosure 4, Processor Card 7: Slots J0B, J0D, J1B, and J1D ► Enclosure 3, Processor Card 6: Slots J0B, J0D, J1B, and J1D ► Enclosure 3, Processor Card 5: Slots J0B, J0D, J1B, and J1D ► Enclosure 2, Processor Card 4: Slots J0B, J0D, J1B, and J1D ► Enclosure 2, Processor Card 3: Slots J0B, J0D, J1B, and J1D ► Enclosure 1, Processor Card 2: Slots J0B, J0D, J1B, and J1D ► Enclosure 1, Processor Card 1: Slots J0B, J0D, J1B, and J1D Each processor feature should have at least one memory feature associated with it. Memory spreading and balancing: Performance measurements have determined that optimal performance requires both spreading of memory across processors and balancing memory across processors. Use the following rules for Model 570 memory. ► Memory minimums: Each processor card must have at least one set of memory DIMM placed on it. Memory is in feature codes of quads. ► Balancing: Each 0/2-way processor card must have a minimum of 2 GB memory on it. ► Spreading: Spread memory across the processor cards. Select memory DIMMs to enable equal memory configurations across processors in a n-way unit. If memory greater than the minimum is ordered, base the selection of memory features on driving the most number of DIMM quads onto the system, as evenly distributed across the processors as possible.

Model 595 Main Memory Rules	**Memory features for the Model 595** ► #7816 CUoD 2/4 GB (4 X 1 GB), DDR1, 512 Mb, 266 MHZ, DRAM DIMMS (CCIN 303E) ► #7828 16 GB (4 X 4 GB), DDR1 1 Gb, 266 MHZ, DRAM DIMMS (CCIN 304E) ► #7829 32 GB (4 X 4 GB), DDR1 1 Gb, 266 MHZ, DRAM DIMMS ► #7835 CUoD 4/8 GB (4 X 2 GB), DDR1 512 Mb, 266 MHZ, DRAM DIMMS ► #4500 CUoD 0/4 GB (4 X 1 GB), DDR2 512 Mb 533 MHZ, DRAM DIMMS (CCIN 316A) A minimum of 50% (2 GB) of the memory must be activated via features #7669 or #7280 at time of purchase. Memory can be activated up to the maximum memory in increments of: – #7269: Increment of 1 GB (for example, two #7269s achieve a 2 GB increment) – #7280: Package of 256 DDR2 activations ► 4501 CUoD 0/8 GB (4 X 2 GB), DDR2 512 Mb, 533 MHZ, DRAM DIMMS (CCIN 316B) A minimum of 50% (4 GB) of the memory must be activated via features #7669 or #7280 at time of purchase. Memory can be activated up to the maximum memory in increments of: – #7269: Increment of 1 GB (For example, two #7269s achieve a 2 GB increment.) – #7280: Package of 256 DDR2 activations ► #4502 CUoD 0/16 GB (4 X 4 GB), DDR2 1 Gb, 533 MHZ, DRAM DIMMS (CCIN 316C) A minimum of 100% (16 GB) of the memory must be activated via features #7669 or #7280 at time of purchase. Note that DDRn model rules specify that activations are for a specific system. However, customers do move memory cards to another system. If this memory feature is moved to a system other than the ordered system, its initial memory capacity will be 0 GB. Memory can be activated up to the maximum memory in increments of: – #7269: Increment of 1 GB (For example, two #7269s achieve a 2 GB increment.) – #7280: Package of 256 DDR2 activations ► #4503 CUoD 0/32 GB (4 X 8 GB), DDR2 1 Gb, 400 MHZ, DRAM DIMMS (CCIN 316D A minimum of 100% (16 GB) of the memory must be activated via features #7669 or #7280 at time of purchase. Note that DDRn model rules specify that activations are for a specific system. However, customers do move memory cards to another system. If this memory feature is moved to a system other than the ordered system, its initial memory capacity will be 0 GB. Memory can be activated up to the maximum memory in increments of: – #7269: Increment of 1GB (For example, two #7269s achieve a 2 GB increment.) – #7280: Package of 256 DDR2 activations Memory rules: ► The minimum memory requirements are four feature codes (two pairs) per node with 16 GB per node. ► DDR2 memory is not compatible with DDR1 memory. DDR2 memory is supported on 1.9 GHz or faster models. ► DDRn model rules specify that activations are for a specific system. ► Memory must be ordered in identical pairs. ► Each node #8981 has 16 memory slots. There can be up to four nodes in a system. ► Memory is spread out in identical pairs per MCM. ► Only one increment difference is allowed in memory size within a node. This means that 4 and 8, 8 and 16, 16 and 32 GB increments in a node are allowed, but 4 and 16/4 and 32/8in a node are not allowed. ► The #7799 requires #7835 x 64. ► The #7970 requires at least one #7816 or #7835. ► The #7976 requires at least one #7828 or #7829. Placement rules: ► Memory must be placed in pairs. ► The placement sequence is: – Fill slots 1 and 2 first starting with Node 1, 2, 3, and then 4 (2). – Fill slots 3 and 4 starting with Node 1, 2, 3, and then 4 (3). – Fill slots 5 and 6 starting with Node 1, 2, 3, and then 4 (4). – Fill slots 8 and 9 starting with Node 1, 2, 3, and then 4 (5). – Fill slots 12 and 13 starting with Node 1, 2, 3, and then 4 (6). – Fill slots 7 and 10 slots starting with Node 1, 2, 3, and then 4 (7). – Fill 11 and 14 slots starting with Node 1, 2, 3, and then 4. ► Nodes 1, 2, 3 and 4 are placed left to right as viewed from the front.
Model 800 Main Memory Rules	**Memory features for the Model 800 #2463 and #2464 processors**: ► #3092 - 256 MB Main Storage DIMM (DDR - 128 Mb technology, unstacked) ► #3093 - 512 MB Main Storage DIMM (DDR - 256 Mb technology, unstacked) ► #3094 - 1 GB Main Storage DIMM (DDR - 256 Mb technology, stacked) ► #3096 - 2 GB Main Storage DIMM (DDR - 256 Mb technology, stacked) A single main storage DIMM feature is allowed on Model 800 processors. When the total number of main storage DIMMs is increased greater than one, the single existing DIMM must be paired up with a DIMM of the same capacity. Any additional DIMMs must be added in pairs of the same capacity. Eight memory DIMM slots are available in the base system for main storage DIMMs, which plug directly onto the backplane.

Model 810 Main Memory Rules	**Memory features for the Model 810 #2465, #2466, and #2467 processors** ► #3092 - 256 MB Main Storage DIMM (DDR - 128 Mb technology, unstacked) ► #3093 - 512 MB Main Storage DIMM (DDR - 256 Mb technology, unstacked) ► #3094 - 1 GB Main Storage DIMM (DDR - 256 Mb technology, stacked) ► #3096 - 2 GB Main Storage DIMM (DDR - 256 Mb technology, stacked) A single main storage DIMM feature is allowed on Model 810 processors. When the total number of main storage DIMMs is increased greater than one, the single existing DIMM must be paired up with a DIMM of the same capacity. Any additional DIMMs must be added in pairs of the same capacity. Eight memory DIMM slots are available in the base system for main storage DIMMs, which plug directly onto the backplane. Memory features for the Model 810 #2469 processor There are 16 DIMM memory positions on the memory riser card (CCIN 2884), and all memory plugs into this card: ► #3022 - 128 MB Main Storage (64 Mb technology): Support only, orderable up to the minimum number of DIMMs required to meet a pair or quad system memory requirement. ► #3024 - 256 MB Main Storage (128 Mb technology) (unstacked) ► #3025 - 512 MB Main Storage (128 Mb technology) (stacked): The #3025 cannot be mixed with the #3026 for pairs or quads. ► #3026 - 512 MB Main Storage (256 Mb technology) (unstacked): The #3026 cannot be mixed with the #3025 for pairs or quads. ► #3027 - 1 GB Main Storage (256 Mb technology) (stacked) ► #3029 - 128 MB Main Storage (128 Mb technology) (unstacked): The #3029 cannot be mixed with the #3022 for pairs or quads. A maximum of eight #3029 DIMM features is allowed on a system. A minimum of two DIMMs (same feature code) must be selected. If more than two DIMMs are required, all memory features must be in sets of four (quads) of the same feature code. This means a quad must also be made out of the initial two DIMMs.
Model 825 Main Memory Rules	**Memory features for the Model 825**: The following memory features are available on the Model 825: ► #3042 - 256 MB Main Storage DIMM (default 4 x 256 MB) (DDR - 128 Mb technology, unstacked) ► #3043 - 512 MB Main Storage DIMM (DDR - 256 Mb technology, unstacked) ► #3044 - 1024 MB Main Storage DIMM (DDR - 256 Mb technology, stacked) ► #3046 - 2048 MB Main Storage DIMM (DDR - 512 Mb technology, stacked) For the Model 825, the main storage DIMMs are installed directly onto the processor cards. Each processor card has eight DIMM slots. The eight slots are arranged in two sets of four. The DIMMs must be installed in sets of four (quads). Each set of four DIMMs must be the same memory capacity and technology. Each system order must have at least three sets of four main storage DIMMs (quad) installed (twelve DIMMs total). The exception is the 2 GB memory capacity where two quads (8 DIMMs total) are allowed. There is a total of 24 DIMM slots in which 8, 12, 16, 20, or 24 memory DIMMs can be installed. Except on systems with 2 GB of memory capacity, no processor is allowed to contain more than twice the memory capacity of any other processor. The IBM marketing configurator determines the correct quantity and correct card capacities for valid system configurations based on the total amount of memory desired. On systems with 2 GB of memory, the IBM marketing configurator issues a message informing the user that IBM does not recommend operating a system with this memory configuration. The sequence for plugging memory DIMMs for processor #2473 is: ► Fill four slots on the first processor card. ► Then fill four slots on the second processor card. ► Then fill four slots on the third processor card. ► Then start again with the first processor card filling four slots.

Model 870 Main Memory Rules	**Memory features for the Model 870**: The following memory features are available on the Model 870: ► #3020 - 4096 MB Main Storage Card (inside): Plugs into memory card slots 0, 1, 2, and 3 ► #3015 - 8192 MB Main Storage Card (inside): Plugs into memory card slots 0, 1, 2, and 3 ► #3035 - 16384 MB Main Storage Card (inside): Plugs into memory card slots 0, 1, 2, and 3 ► #3017 - 32768 MB Main Storage Card inside): Plugs into memory card slots 0, 1, 2, and 3 There are eight main storage card sockets on the backplane, but a maximum of four main storage cards can be placed in the system. The Model 870 main storage cards are installed according to the following rules: ► Main storage cards are installed in pairs of equal capacity. ► Pairs of main storage cards must plug into memory card slots under the same MCM (slots 0 and 1, slots 2 and 3). ► Mixed main storage cards must be of the adjacent capacity. (4 GB with 8 GB is allowed, and 4 GB with 16 GB is not allowed.) ► Cannot mix main storage cards of more than two capacities. (4 GB with 8 GB is allowed, and 4 GB with both 8 GB and 16 GB is not allowed.) ► Mixed main storage cards can be in any order.
Model 890 Main Memory Rules	**Memory features for the Model 890**: The following memory features are available on the Model 890: ► #3020 - 4096 MB Main Storage Card (inside): Plugs into memory card slots 0, 1, 2 and 3 ► #3021 - 4096 MB Main Storage Card (outside): Plugs into memory card slots 4, 5, 6 and 7 ► #3015 - 8192 MB Main Storage Card (inside): Plugs into memory card slots 0, 1, 2 and 3 ► #3016 - 8192 MB Main Storage Card (outside): Plugs into memory card slots 4, 5, 6 and 7 ► #3035 - 16384 MB Main Storage Card (inside): Plugs into memory card slots 0, 1, 2 and 3 ► #3036 - 16384 MB Main Storage Card (outside): Plugs into memory card slots 4, 5, 6 and 7 ► #3017 - 32768 MB Main Storage Card (inside): Plugs into memory card slots 0, 1, 2 and 3 ► #3018 - 32768 MB Main Storage Card (outside): Plugs into memory card slots 4, 5, 6 and 7 The Model 890 main storage cards are installed into the eight memory card slots in the system unit backplane. The Model 890 main storage cards are installed according to the following rules: ► Main storage cards are installed in pairs of equal capacity. ► The pairs of main storage cards must plug into memory card slots under the same MCM (slots 0 and 1, slots 2 and 3, slots 4 and 5, and slots 6 and 7). ► Mixed main storage cards must be of the adjacent capacity. (4 GB with 8 GB is allowed, and 4 GB with 16 GB is not allowed.) ► Cannot mix main storage cards of more than two capacities. (4 GB with 8 GB is allowed, 4 GB with 8 GB and 16 GB is not allowed.) ► Mixed main storage cards can be in any order. **Important**: Fill all slots. An exception is allowed for 16 GB on a 24-way processor and for 24 GB on a 32-way processor.
#3015	**8192 MB Main Storage Card ((PSIMM))** The #3015 is used in the Models 870 and 890. The #3015 can be placed in an “inside” main storage card slot only (slots 0, 1, 2, and 3). See “Model 870 Main Memory Rules” on page 203 or “Model 890 Main Memory Rules” on page 203 for memory restrictions. The #3015 was withdrawn from marketing as of 01 June 2006.
#3016	**8192 MB Main Storage Card (PSIMM)** The #3015 is used in the Model 890. The #3016 can be placed in an “outside” main storage card slot only (slots 4, 5, 6, and 7). See “Model 890 Main Memory Rules” on page 203 for memory restrictions. The #3016 was withdrawn from marketing as of 01 June 2006.
#3017	**32768 MB Main Storage Card (PSIMM)** The #3017 is used in the Models 870 and 890. The #3017 can be placed in an “inside” main storage card slot only (slots 0, 1, 2, and 3) See “Model 870 Main Memory Rules” on page 203 or “Model 890 Main Memory Rules” on page 203 for memory restrictions. The #3017 was withdrawn from marketing as of 01 June 2006.
#3018	**32768 MB Main Storage Card (PSIMM)** The #3018 is used in the Model 890. The #3018 can be placed in an “outside” main storage card slot only (slots 4, 5, 6, and 7). The #3018 was withdrawn from marketing as of 01 June 2006.

#3020	**4096 MB Main Storage Card (PSIMM)** The #3020 is used in the Models 870 and 890. The #3020 can be placed in an “inside” main storage card slot only (slots 0, 1, 2, and 3). See “Model 870 Main Memory Rules” on page 203 or “Model 890 Main Memory Rules” on page 203 for memory restrictions. The #3020 was withdrawn from marketing as of 01 June 2006.
#3021	**4096 MB Main Storage Card (PSIMM)** The #3021 is used in the Model 890. The #3021 can be placed in an “outside” main storage card slot only (slots 4, 5, 6, and 7). See “Model 890 Main Memory Rules” on page 203 for memory restrictions. The #3021 was withdrawn from marketing as of 01 June 2006.
#3022	**128 MB Main Storage (DIMM 64 Mb technology)** The #3022 is available as a support only feature on the Model 810. It can only be ordered up to the minimum number of DIMMs are required to meet a pair or quad system memory requirement. See “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 810 #2469 processor The #3022 is a Customer Install Feature. The #3022 was withdrawn from marketing as of 01 June 2006.
#3024	**256 MB Main Storage (DIMM 128 Mb technology, unstacked)** See “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 810 #2469 processor. The #3024 is a Customer Install Feature. The #3024 was withdrawn from marketing as of 01 June 2006.
#3025	**512 MB Main Storage (DIMM 128 Mb technology, stacked)** The #3025 cannot be mixed with the #3026 in pairs or quads. See “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 810 #2469 processor. The #3025 is a Customer Install Feature.
#3026	**512 MB Main Storage (DIMM 256 Mb technology, unstacked)** The #3026 cannot be mixed with the #3025 in pairs or quads. See “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 810 #2469 processor. The #3026 is a Customer Install Feature. The #3026 was withdrawn from marketing as of 01 June 2006.
#3027	**1 GB Main Storage (DIMM 256 Mb technology, stacked)** See “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 810 #2469 processor. The #3027 is a Customer Install Feature. The #3027 was withdrawn from marketing as of 01 June 2006.
#3029	**128 MB Main Storage (DIMM 128 Mb technology, unstacked)** The #3022 cannot be mixed with the #3029 in pairs or quads. See “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 810 #2469 processor. The #3029 is a Customer Install Feature.

#3035	**16384 MB Main Storage Card (PSIMM)** The #3035 is used in the Models 870 and 890. The #3035 can be placed in an “inside” main storage card slot only (slots 0, 1, 2, and 3). See “Model 870 Main Memory Rules” on page 203 and “Model 890 Main Memory Rules” on page 203 for memory restrictions. The #3035 was withdrawn from marketing as of 01 June 2006.
#3036	**16384 MB Main Storage Card (PSIMM)** The #3036 is used in the Model 890. The #3036 can be placed in an “outside” main storage card slot only (slots 4, 5, 6, and 7). See “Model 890 Main Memory Rules” on page 203 for memory restrictions. The #3036 was withdrawn from marketing as of 01 June 2006.
#3042	**256 MB Main Storage (DIMM - DDR - 128 Mb technology, unstacked)** Refer to “Model 825 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on Model 825 processors. The #3042 is a Customer Install Feature. The #3042 was withdrawn from marketing as of 01 June 2006.
#3043	**512 MB Main Storage (DIMM - DDR - 256 Mb technology, unstacked)** Refer to “Model 570 Main Memory Rules” on page 200 and “Model 825 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 570 and 825 processors. The #3043 is a Customer Install Feature. The #3043 was withdrawn from marketing as of 01 June 2006.
#3044	**1024 MB Main Storage (DIMM - DDR - 256 Mb technology, stacked)** Refer to “Model 570 Main Memory Rules” on page 200 and “Model 825 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 570 and Model 825 #2486 processors. The #3044 is a Customer Install Feature. The #3044 was withdrawn from marketing as of 01 June 2006.
#3046	**2048 MB Main Storage (DIMM - DDR - 512 Mb technology, stacked)** Refer to “Model 570 Main Memory Rules” on page 200 and “Model 825 Main Memory Rules” on page 202 for memory. Minimum operating system level: OS/400 V5R2 Supported on the Model 570 and 825 processors. The #3046 is a Customer Install Feature. The #3046 was withdrawn from marketing as of 01 June 2006.
#3092	**256 MB Main Storage DIMM (DDR - 128 Mb technology, unstacked)** See “Model 800 Main Memory Rules” on page 201 and “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 800 #2463 and #2464 processors, and Model 810 #2465, #2466, and #2467 processors The #3092 is a Customer Install Feature. The #3092 was withdrawn from marketing as of 01 June 2006.
#3093	**512 MB Main Storage DIMM (DDR - 256 Mb technology, unstacked)** See “Model 520 Main Memory Rules” on page 197, “Model 550 Main Memory Rules” on page 198, “Model 800 Main Memory Rules” on page 201, and “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 520 #8950, #8951, #8952, #8953, #8954 and #8955 (9406) processors, Model 550 #8958 processor, Model 800 #2463 and #2464 processors, and the Model 810 #2465, #2466, and #2467 processors The #3093 is a Customer Install Feature. The #3093 was withdrawn from marketing as of 01 June 2006.

#3094	**1 GB Main Storage DIMM (DDR- 256 Mb technology, stacked)** See “Model 520 Main Memory Rules” on page 197, “Model 550 Main Memory Rules” on page 198, “Model 800 Main Memory Rules” on page 201, and “Model 810 Main Memory Rules” on page 202 for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 520 #8950, #8951, #8952, #8953, #8954 and #8955 (9406) processors, Model 550 #8958 processor, Model 800 #2463 and #2464 processors, and the Model 810 #2465, #2466, and #2467 processors The #3094 is a Customer Install Feature. The #3094 was withdrawn from marketing as of 01 June 2006.
#3096	**2 GB Main Storage DIMM (DDR- 256 Mb technology, stacked)** See “Model 520 Main Memory Rules” on page 197, “Model 550 Main Memory Rules” on page 198, and “Model 800 Main Memory Rules” on page 201, for memory restrictions. Minimum operating system level: OS/400 V5R2 Supported on the Model 520 #8950, #8951, #8952, #8953, #8954 and #8955 (9406) processors, Model 550 #8958 processor, and Model 800 #2463 processor, and the Model 820 #2465, #2466, #2467 processors The #3096 is a Customer Install Feature. The #3096 was withdrawn from marketing as of 01 June 2006.
#4400	**#4400 1GB DDR2 Main Storage** The #4400 - 1 GB DDR2 Main Storage Consists of two 512 MB DDR2 DIMMs for a total of 1 GB of main storage. Two available DIMM slots are required. Minimum operating system level: i5/OS V5R3 with V5R3M5 LIC, AIX 5L for POWER V5.2 for IBM eServer, Red Hat Enterprise Linux AS for POWER Version 3, SUSE Linux Enterprise Server 9 for POWER Supported on Models 515, 520+, 525, and 550+. The #4400 is a Customer Install Feature.
#4443	**512 MB DDR Main Storage** DDR1 - 256 Mb technology Ships two 256 MB DIMMs for a total of 512 MB. It is orderable on the #8950 processor with a maximum of two of these features per system. See “Model 520 Main Memory Rules” on page 197. Supported on Model 520 processors. The #4443 is a Customer Install Feature.
#4444	**1 GB DDR Main Storage** DDR1 - 256 Mb technology Ships four 256 MB DIMMs for a total of 1 GB See “Model 520 Main Memory Rules” on page 197 and “Model 550 Main Memory Rules” on page 198. Supported on Model 520 and 550 processors. The #4444 is a Customer Install Feature.
#4445	**4 GB DDR Main Storage** DDR1 - 128 Mb technology Ships four 1 GB DIMMs for a total of 4 GB See “Model 520 Main Memory Rules” on page 197 and “Model 550 Main Memory Rules” on page 198. Supported on Model 520 and 550 processors. The #4445 is a Customer Install Feature.
#4447	**2 GB DDR Main Storage** DDR1 - 64 Mb technology Ships four 512 MB DIMMs for a total of 2 GB See “Model 520 Main Memory Rules” on page 197 and “Model 550 Main Memory Rules” on page 198. Supported on Model 520 and 550 processors. The #4447 is a Customer Install Feature.

#4449	**8 GB DDR Main Storage** DDR1 - 128 Mb technology, stacked Ships four 2 GB DIMMs for a total of 8 GB See “Model 520 Main Memory Rules” on page 197 and “Model 550 Main Memory Rules” on page 198. Supported on Model 520 and 550 processors The #4449 is a Customer Install Feature. The #4449 was withdrawn from marketing as of 01 June 2006. A #4450 16 GB DDR-1 Main Storage is the recommended replacement.
#4450	**16 GB DDR Main Storage** DDR1 - 1 GB technology, stacked Ships four 4 GB DIMMs for a total of 16 GB See “Model 520 Main Memory Rules” on page 197 and “Model 550 Main Memory Rules” on page 198. Supported on Model 520 and 550 processors. The #4450 is a Customer Install Feature.
#4452	**2 GB DDR Main Storage** DDR1 memory Ships four 512 MB DIMMs for a total of 2 GB See “Model 570 Main Memory Rules” on page 200. Supported on Models 570. The #4452 is a Customer Install Feature.
#4454	**8 GB DDR1 Main Storage** DDR1 memory, stacked Ships four 2 GB DIMMs for a total of 8 GB See “Model 570 Main Memory Rules” on page 200. Supported on Models 570. The #4454 is a Customer Install Feature.
#4474	**#4474 2GB DDR2 Main Storage** The #4474 - 2 GB DDR2 Main Storage consists of two 1 GB DDR2 DIMMs for a total of 2 GB of main storage. Two available DIMM slots are required. See “Model 515, 520+ and 525 Main Memory Rules” on page 197 and “Model 550+ Main Memory Rules” on page 197 for memory restrictions. Minimum operating system level: i5/OS V5R3 with V5R3M5 LIC, AIX 5L for POWER V5.2 for IBM eServer, Red Hat Enterprise Linux AS for POWER Version 3, SUSE Linux Enterprise Server 9 for POWER Supported on all Models 515, 520+, 525, and 550+. The #4474 is a Customer Install Feature.
#4475	**#4475 4GB DDR2 Main Storage** The #4475 - 4 GB DDR2 Main Storage consists of two 2 GB DDR2 DIMMs for a total of 4 GB of main storage. Two available DIMM slots are required. Minimum operating system level: i5/OS V5R3 with V5R3M5 LIC, AIX 5L for POWER V5.2 for IBM eServer, Red Hat Enterprise Linux AS for POWER Version 3, SUSE Linux Enterprise Server 9 for POWER Supported on all Models 515, 520+, 525, and 550+. The #4475 is a Customer Install Feature.
#4477	**#4477 8GB DDR2 Main Storage** The #4477 - 8 GB DDR2 Main Storage consists of two 4 GB DDR2 DIMMs for a total of 8 GB of main storage. Two available DIMM slots are required. See “Model 515, 520+ and 525 Main Memory Rules” on page 197 and “Model 550+ Main Memory Rules” on page 197 for memory restrictions. Minimum operating system level: i5/OS V5R3 with V5R3M5 LIC, AIX 5L for POWER V5.2 for IBM eServer, Red Hat Enterprise Linux AS for POWER Version 3, SUSE Linux Enterprise Server 9 for POWER Supported on all Models 520+, 525, and 550+. The #4477 is a Customer Install Feature.

#4490	**4 GB DDR1 Main Storage** Ships four 1 GB DIMMs for a total of 4 GB See “Model 570 Main Memory Rules” on page 200 for memory restrictions. Supported on Model 570. The #4490 is a Customer Install Feature.
#4491	**16 GB DDR1 Main Storage** Ships four 4 GB DIMMs for a total of 16 GB See “Model 570 Main Memory Rules” on page 200 for memory restrictions. Supported on Model 570. The #4491 is a Customer Install Feature.
#4492	**32 GB DDR1 Main Storage** The #4492 32 GB DDR-1 Main Storage feature consists of four 8 GB DIMMs for a total of 32 GB of main storage. The #4492 must be installed on a processor card either by itself (other four DIMM slots empty), with another #2292, with feature #4494, or #7409. See “Model 570 Main Memory Rules” on page 200 for memory restrictions. Supported on Model 570. The #4492 is a Customer Install Feature.
#4494	**#4494 - 16 GB DDR-1 Main Storage** The #4494 16 GB DDR1 Main Storage consists of four 4 GB DDR1 DIMMs for a total of 16 GB of main storage. The #4494 must be installed on a processor card either by itself (other four DIMM slots empty), with another #4494, or with features #4492 or #7049. Four available memory DIMM slots are required. See “Model 570 Main Memory Rules” on page 200 for memory restrictions. Minimum operating system level: i5/OS V5R3 Supported on Model 570. The #4494 is not a Customer Install Feature.
#4495	**#4495 4/8GB DDR2 Main Storage** The #4495 - 4/8 GB DDR2 Main Storage provides 4 GB of activated DDR2 memory and an additional 4 GB of DDR2 memory available for activation with four 2 GB DIMMs. The 4 GB of additional memory can be activated in increments of 1 GB. If a memory feature is moved to a different system, that system recognizes only 4 GB as available unless additional memory activations are acquired or already present on that server. For the original system, four 1 GB memory activations remain and can be used for other CUoD memory features. For special situations, contact IBM CoD administration about transferring memory activations between systems. Four available memory DIMM slots are required. See “Model 570+ Main Memory Rules” on page 199 for memory restrictions. Minimum operating system level: i5/OS V5R3 Supported on Model 570+ CUoD systems. The #4495 is not a Customer Install Feature.
#4496	**#4496 8/16GB DDR2 Main Storage** The #4496 - 8/16 GB DDR2 Main Storage provides 8 GB of activated DDR2 memory and an additional 8 GB of DDR2 memory available for activation with four 4 GB DIMMs. The 8 GB of additional memory can be activated in increments of 1 GB. If a memory feature is moved to a different server, that server recognizes only 8 GB as available unless additional memory activations are acquired or already present on that server. For the original server, eight 1 GB memory activations remain and can be used for other CUoD memory features. For special situations, contact IBM CoD administration about transferring memory activations between servers. Four available memory DIMM slots are required. See “Model 570+ Main Memory Rules” on page 199 for memory restrictions. Minimum operating system level: i5/OS V5R3 Supported on Model 570+ CUoD systems. The #4496 is not a Customer Install Feature.

#4497	**#4497 16GB DDR2 Main Storage** The #4497 - 16 GB DDR2 Main Storage provides 16 GB of DDR2 system memory with four 4 GB DDR2 DIMMs. Four available memory DIMM slots are required. See “Model 570+ Main Memory Rules” on page 199 for memory restrictions. Minimum operating system level: i5/OS V5R3 Supported on Model 570+. The #4497 is not a Customer Install Feature.
4498	**#4498 32GB DDR2 Main Storage** The #4498 - 32 GB DDR2 Main Storage provides 32 GB of DDR2 system memory with four 8 GB DDR2 DIMMs. The #4498 is comprised of 400 MHz DDR2 DIMMs and cannot be mixed with other Model 570 memory on the same processor card. The #4498 can be mixed with other DDR2 memory in the same enclosure or in the same system. Four available memory DIMM slots are required. See “Model 570+ Main Memory Rules” on page 199 for memory restrictions. Minimum operating system level: i5/OS V5R3 Supported on Model 570+. The #4498 is not a Customer Install Feature.
#7049	**#7049 - 8/16 GB DDR1 Main Storage** The #7049 - 8/16 GB DDR-1 Main Storage provides 8 GB of activated memory and an additional 8 GB of memory available for activation. The 8 GB of additional memory can be activated in increments of 1 GB. The #7049 must be installed on a processor card either by itself or with another #7049 or with features #4492 or #4494. See “Model 570 Main Memory Rules” on page 200 for memory restrictions.
#7816	**#7816 2/4 GB CUoD Main Storage** The #7816 is a DDR1, 512 Mb, 266 MHz, DRAM DIMMS DDR1 memory card, which provides 2 GB of activated system memory and an additional 2 GB of system memory available for activation. The 2 GB of additional system memory can be activated in increments of 1 GB. One #3757 Processor Book Service Shelf is required at the customer site for this upgrade. See “Model 595 Main Memory Rules” on page 201 for memory restrictions. Initial order or MES Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER V5.2 Supported on Model 595. The #7816 is an IBM Customer Service Representative setup feature.
#7828	**#7828 16 GB Main Storage** The #7828 is a DDR1 memory card, which provides 16 GB of activated system memory with four 4 GB DIMMS on a card. Initial order or MES. One #3757 Processor Book Service Shelf is required at the customer site if this is an upgrade. See “Model 595 Main Memory Rules” on page 201 for memory restrictions. Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER V5.2 Supported on Model 595. The #7828 is an IBM Customer Service Representative setup feature.
#7829	**#7829 32 GB Main Storage** The #7829 is a DDR1 memory card, which provides 32 GB of activated system memory with four 8 GB DIMMS on a card. One #3757 Processor Book Service Shelf is required at the customer site if this is an upgrade. See “Model 595 Main Memory Rules” on page 201 for memory restrictions. Initial order or MES Minimum operating system level: i5/OS V5R3, SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, AIX 5L for POWER V5.2 Supported on Model 595. The #7829 is an IBM Customer Service Representative setup feature.
#7835	**#7835 4/8 GB CUoD Main Storage** The #7835 is a DDR1 memory card, which provides 4 GB of activated system memory and an additional 4 GB of system memory available for activation. The 4 GB of additional system memory can be activated in increments of 1 GB. Initial order or MES One #3757 Processor Book Service Shelf is required at the customer site for this upgrade. See “Model 595 Main Memory Rules” on page 201 for memory restrictions. Supported on Model 595. The #7835 is an IBM Customer Service Representative setup feature.

#8195	**#8195 - 256 GB Main Storage (32X8)** The #8195 provides 32 #7835 4/8 GB fully activated memory features for a total of 256 GB of active DDR1 system memory. Only the #8195 feature is shown on the order or in the install records, not the 32 #7835 features. No #7970 memory activations are required. Requires 32 empty system memory slots an any of processor boards See “Model 595 Main Memory Rules” on page 201 for memory restrictions. Initial order or MES Supported only on Model 595. The #8195 is a Customer Install Feature.
#8197	**#8197 512 GB Main Storage (32x16)** The #8197 provides 32 #7828 16 GB fully activated memory features for a total of 512 GB of active DDR1 system memory. Only the #8197 feature is shown on the order or in the install records, not the 32 #7828 features. Requires 32 empty system memory slots an any of processor boards See “Model 595 Main Memory Rules” on page 201 for memory restrictions. Supported on Model 595. The #8197 is a Customer Install Feature.
#8198	**#8198 - 512 GB Main Storage (16x32)** The #8198 provides 16 #7829 32 GB fully activated memory features for a total of 512 GB of active DDR1 system memory. Only the #8198 feature is shown on the order or in the install records, not the 16 #7829 features. Requires 16 empty system memory slots an any of processor boards See “Model 595 Main Memory Rules” on page 201 for memory restrictions. Initial order or MES Supported on Model 595. The #8198 is a Customer Install Feature. The #8198 was withdrawn from marketing as of 31 January 2006.
#9544	**#9544 Base 1 GB DDR Main Storage** DDR1 - 256 Mb technology Ships four 256 MB DIMMs for a total of 1 GB See “Model 520 Main Memory Rules” on page 197 and “Model 550 Main Memory Rules” on page 198. Supported on Model 520 #7390, #7391, #7393 Express Editions.
#9545	**#9545 Base 4 GB DDR Main Storage** DDR1 - 128 Mb technology Ships four 1 GB DIMMs for a total of 4 GB See “Model 520 Main Memory Rules” on page 197 and “Model 550 Main Memory Rules” on page 198. Supported on Model 520 #7395 and #7396 Express Editions.
#9547	**2 GB DDR Main Storage** DDR1 - 64 Mb technology Ships four 512 MB DIMMs for a total of 2 GB See “Model 520 Main Memory Rules” on page 197 and “Model 550 Main Memory Rules” on page 198. Supported on Models 520 #7392, #7394 Express Editions.
#9548	**#9548 Base 1GB Main Storage** Provides 1 GB of zero-priced main storage. #9548 consists of two 512 MB DDR2 DIMMs Supported on 9405 520 and 9407 515
#9549	**#9549 Base 2GB Main Storage** Provides 2 GB of zero-priced main storage. #9549 consists of two 1 GB DDR2 DIMMs. Supported on 9405 520, 9406 520+ and 9407 515.
#9553	**#9553 Base 4GB Main Storage** Provides 4 GB of zero-priced main storage. #9553 consists of two 2 GB DDR2 DIMMs. Supported on 9405 520 and 9406 520+

4.7 PCI IOP controllers

PCI IOP controllers	
PCI Rules	PCI cards are subject to plugging rules. Refer to 4.2, “PCI card placement for System i family of processor models” on page 138, for an introduction to PCI. *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, and *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for OS/400 V5R2 and earlier releases, describe the configuration and card placement rules that you must understand and follow to develop valid configurations. Use these papers as a guide when configuring IOAs and IOPs so that the system is sized to meet client expectations.
Embedded IOP	**Embedded 32 MB Base PCI IOP (CCIN 284C)** The embedded IOP is standard on every Model 800, 810, and 820 system tower, and the #5075 PCI Expansion Tower. This IOP is embedded and, therefore, does not require a PCI card slot. The embedded base PCI IOP provides support for a maximum of four IOAs, including the #5702 PCI-X Ultra Tape Controller or #9767 Base PCI Disk Unit Controller SCSI IOA, the #9771, #9773, or #9774 PCI 2-Line WAN with integrated modem and the System Console IOA. See “#2843 PCI IOP” on page 213 for a list of other supported cards.
#9844 Base IOP	**#9844 Base PCI IOP** The #9844 Base PCI IOP (CCIN 2844) is a PCI I/O processor, which drives PCI IOA adapters. It has been included as part of the base system units for Models 515, 520, 525, 570, 825, 870, and 890, and also can be included as part of the base with the following expansion towers or units: ► #5094 PCI-X Expansion Tower ► #0595/#5095 PCI-X Expansion Tower ► #5294 1.8m I/O Tower (Quantity of two) ► #8094 Optional 1.8 M I/O Rack (Quantity of two) ► #9094 Base PCI I/O Enclosure ► #9194 Base PCI I/O Enclosure The #9844 Base PCI IOP can be on initial system orders or on MES orders that add #0595/#5095, #5094, #5294, #8094, or #9094 towers to an installed system. As of 31 January 2006, the #9844 is not included in all systems and towers. See “#9844 Inclusion Rules” on page 211 for configuration considerations. On the #0588/#5088 PCI-X Expansion Unit or Tower, a #9844 Base PCI IOP is *not* included as part of the base unit or tower. See “#2844 #9844” on page 214 for a list of other supported cards. Supported on Models 515, 520, 525, 550, 570, 595, 800, 810, 825, 870, 890, and 9411-100. See the following #9844 Inclusion Rules for additional considerations as inclusion with some model base orders has changed over time.
#9844 Inclusion Rules	**As of 31 January 2006, the #9844 is not always included in system units and expansion towers. The inclusion rules are as follows:** ► For expansions ordered after 31 January 2006, a #9844 or #9943 IOP is not included at no-charge. The order process tools (LVT, manufacturing configurator and marketing configurator) cease to default any IOP for expansion units, but do require priced IOPs (for example, the #2844) as required to support the IOAs that are ordered. The exception to this is the “base” I/O tower (#8294 or #9194) on the Model 595. The marketing configurator defaults to a #9844 on a Model 595 with a 1.65 GHz processor and allows de-selection of the #9844 if i5/OS V5R4 is ordered. ► The existing definition of features #5560, #5561, #5562 and #5563 mirror tower packages include an enclosure equivalent to a #0595 or #5095. The #0595 and #5095 have included an IOP to be ordered at no-charge. That IOP is assumed to be part of the #0595 and #5095 in the four mirror tower packages. As of 31 January 2006, #0595 and #5095 ordered as features, on their own, no longer allow a no-charge IOP to be ordered for them. However, because each of the four mirror tower package features also include two disk IOAs (that cannot run IOP-less), the intent is to continue to allow a no-charge IOP (a #9844) to be ordered with each of the four mirroring package features. ► Model 520, 550 and 570 systems ordered with processors announced prior to 31 January 2006 (1.5 GHz and 1.65 GHz processors) include one no-charge IOP (a #9844) to be placed in the first IOP slot in the system unit. This is limited to one #9844 per system including a Model 570 with multiple system unit enclosures. ► A Model 595 system ordered with processor features (1.65 GHz) announced prior to 31 January 2006 include one no-charge IOP (#9844), regardless of whether i5/OS V5R3 or V5R4 is ordered. When V5R3 is ordered, this #9844 must be placed in the #8294 or #9194. When V5R4 is ordered, the marketing configurator allows the #9844 to be de-selected. If the #9844 is ordered, it can be placed wherever required within the system.

#9844 Inclusion Rules (contd.)	**Inclusion rules (contd.)** ► 9406 systems ordered with 31 January 2006 announced processors (1.9 GHz and 2.2 GHz) do not allow any no-charge IOPs (except in conjunction with mirror tower package features), regardless of whether i5/OS V5R3 or V5R4 is ordered. ► Models 550, 570 and 595 ordered with 31 January 2006 announce processors (1.9 GHz and 2.2 GHz) and i5/OS V5R3 require an IOP. The required IOP (a #2844) must be purchased. ► 9405 Model 520 systems ordered with 31 January 2006 announce processors (1.9 GHz) allow a single no-charge IOP (a #9844 to drive the included twinaxial IOA) to be ordered and placed in the first IOP slot in the system unit. ► 9406 systems ordered with i5/OS V5R4 support IOP-less in all expansion towers, including the primary I/O tower on the Model 595 (1.65 GHz and 1.9 GHz processors). A Model 595 ordered with a 1.65 GHz processor and i5/OS V5R4 continues to default a no-charge IOP, even though IOP-less is supported in the primary I/O tower. The marketing configurator defaults to a #9844 on the interface for all Model 595s when a 1.65 GHz processor is selected. The #9844 can be deselected if i5/OS V5R4 is also selected. See page 222 for IOP-less placement considerations. ► IOPs on existing systems (both priced and no-charge features) migrate when doing model upgrades. No-charge IOP features are supported but are not orderable, except as explicitly noted otherwise. Originally announced as included in all Model 515 and 525 Express and 525 Capacity BackUp configurations, as of 9 October 2007, most 515 and 525 configurations no longer include the #9844. 515 Express configuration #2 (#6011) continues to support the #9844. The following 515 and 525 editions no longer include the #9844: ► 515: – Express configuration #1 (#6010) – Express configuration #3 (#6021 ► 525: – Express configuration #1 (#7790) – Express configuration #2 (#7791) – Express configuration #3 (#7792) – Capacity BackUp configuration #1 (#6910 **Note**: If an IOP is required, feature #2844 can be ordered. Alternatively a supported IOP-less adapter (IOA) can be ordered. For example, if a WAN adapter is required for an Express or Capacity BackUp configuration, a n older WAN adapter that require an IOP, then you can order #2844. Otherwise, you should consider using the dual mode (“smart”) IOA WAN adapters supported by i5/OS V5R4 and LIC level V5R4M5. These can operate without an IOP: ► #2893/9693 PCIe 2-Line WAN with Modem (i5/OS, Linux, AIX) ► #2894/9694 PCIe 2-Line WAN with Modem (Complex Impedence Matching (CIM)) (i5/OS, Linux, AIX)
#9943 Base IOP	**#9943 Base PCI IOP** The #9943 Base PCI IOP (CCIN 2843) is included as the base IOP for Model 830 (in the #9074 Base I/O Tower), Model 840 (in either the #9079 Base I/O Tower or the #8079 Optional Base 1.8 M I/O Rack), and Model 890 (in either the #9094 Base PCI I/O Enclosure or #8093 Optional 1.8 M I/O Rack) and in the #5074 PCI Expansion Tower and #5079 1.8 M I/O Tower. The #5079, #8079, and #8093/#5097 include two base IOPs. See “#2843 PCI IOP” on page 213 for a list of other supported cards.
#2843 #9943	**#2843 PCI IOP** The #2843/#9943 is a PCI I/O processor with 64 MB of memory that drives up to four PCI IOA adapters on the Models 810, 820, 825, 830, 840, 870, 890, #5074 PCI Expansion Tower, #5075 PCI Expansion Tower when attached to the Model 820, and on the #0578/#5078 PCI Expansion Unit, #0588/#5088 PCI-X Expansion Unit, #5094 PCI-X Expansion Tower, #0595/#5095 PCI-X Expansion Tower, #5294 1.8m I/O Tower, and the #5079 1.8 M I/O Tower. The #2843 can be also used on Models 520 (not the 9405 Model 520), 525, 550, 570 (POWER6), and 595. The following IOAs are supported (driven) by the embedded PCI IOP on the Model 820 and the #2843/#9943 PCI IOP: ► #2742 Two-Line WAN IOA ► #2743 1 Gbps PCI Ethernet IOA ► #2744 PCI 100 Mbps Token Ring IOA ► #2749 PCI Ultra Magnetic Media Controller ► #2757 PCI-X Ultra RAID Disk Controller ► #2760 PCI 1 Gbps Ethernet UTP Adapter ► #2763 PCI RAID Disk Unit Controller ► #2765 PCI Fibre Channel Tape Controller ► #2766 PCI Fibre Channel Disk Controller ► #2768 PCI Magnetic Media Controller ► #2772 PCI Dual WAN/Modem IOA ► #2773 PCI Dual WAN/Modem IOA ► #2780 PCI-X Ultra4 RAID Disk Controller ► #2787 PCI-X Fibre Channel Disk Controller

#2843 #9943 (contd.)	**#2843 PCI IOP** ► #2793 Two-Line WAN IOA with Modem ► #2794 Two-Line WAN IOA with Modem ► #2805 PCI Quad Modem IOA ► #2806 PCI Quad Modem (CIM) ► #2817 PCI 155 Mbps MMF ATM IOA ► #2849 10/100 Mbps Ethernet Adapter ► #4723 PCI 10 Mbps Ethernet Adapter ► #4745 PCI 2-line WAN IOA ► #4746 PCI Twinaxial IOA ► #4748 PCI RAID Disk Unit Controller ► #4750 PCI ISDN BRI U IOA ► #4751 PCI ISDN BRI S/T IOA ► #4761 PCI Integrated Analog Modem ► #4778 PCI RAID Disk Unit Controller ► #4801 PCI Cryptographic Coprocessor ► #4805 PCI Cryptographic Accelerator ► #4815 PCI ATM 155 Mbps UTP OC3 ► #4816 PCI ATM 155 Mbps MMF ► #4818 PCI ATM 155 Mbps SMF OC3 ► #4838 PCI 100/10 Mbps Ethernet IOA ► #5700 PCI 1 Gbps Ethernet IOA ► #5701 PCI 1 Gbps Ethernet UTP IOA ► #5702 PCI-X Ultra Tape Controller ► #5703 PCI-X RAID Disk Unit Controller ► #5704 PCI-X Fibre Channel Tape Controller ► #5705 PCI-X Tape/DASD Controller ► #5712 PCI-X Tape/DASD Controller ► #5715 PCI-X Tape/DASD Controller ► #5760 PCI-X Fibre Channel DASD Controller ► #5761 PCI-X Fibre Channel Tape Controller ► #9767 Base PCI Disk Unit Controller ► #9771 Base PCI 2-Line WAN with integrated modem ► #9778 Base PCI RAID Disk Unit Controller ► #9793 2-Line WAN IOA with Modem ► #9794 2-Line IOA with Modem Up to five #2843 PCI IOPs can be added to the Model 820 system unit. When attached to a Model 820, the #5075 can contain or support up to three #2843 PCI IOP features. On the #5074 PCI Expansion Tower, a PCI IOP is not embedded, but a #9943 Base PCI IOP is included. Up to five #2843 PCI IOPs can be added to a #5074. Up to six #2843 PCI IOPs can be added to a #5078. On the #5079 1.8 M I/O Tower, a PCI IOP is not embedded, but two #9943 Base PCI IOP are included. Up to 10 #2843 PCI IOPs can be added to the #5079. The #9943 can only be on initial system orders or on MES orders that add #5074, #5078, or #5079 towers to an installed system. The maximum number of #9943s installed on a system is one in the system unit, plus one in each #5074 and two in each #5079. Refer to *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, or *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for OS/400 V5R2 and earlier releases, for further restrictions. The #281x ATM, #2750, #2751, and #2761 are not supported with i5/OS V5R3. The #2843 is a Customer Install Feature. The #2843 was withdrawn from marketing as of 01 October 2004. A #2844 is the recommended replacement.

#2844 #9844	**#2844 PCI IOP** The #2844 PCI IOP is a PCI I/O processor, which drives PCI IOA adapters in the Model 270, 515, 520, 525, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, and 890 system units and the following expansion towers and units: ► #0578 PCI Expansion Unit in Rack ► #0588 PCI-X Expansion Unit in Rack ► #0595 PCI-X Expansion Unit in Rack ► #5074 PCI Expansion Tower ► #5075 PCI Expansion Tower ► #5078 PCI Expansion Unit ► #5079 1.8 M I/O Tower ► #5088 PCI-X Expansion Unit ► #5094 PCI-X Expansion Tower ► #5095 PCI-X Expansion Tower ► #5294 1.8m I/O Tower ► #5790 PCI Expansion Drawer ► #8079 Optional Base 1.8 M I/O Rack ► #8093 Optional 1.8 M I/O Rack ► #8094 Optional 1.8 M I/O Rack ► #8294 Optional Base 1.8 M Rack ► #9079 Base I/O Tower (PCI) ► #9094 Base PCI I/O Enclosure ► #9194 Base PCI-X Expansion Tower The #9844 Base PCI IOP is included with some 5xx, 8xx, and I/O tower orders and not others, depending upon when the order was placed. See the index entry for “#9844 Inclusion Rules” for more information. The following IOAs are supported (driven) by the #2844/#9944 PCI IOP: ► CCIN 288E Embedded 10/100 Mbps Ethernet IOA (Model 825 only) ► #2742 2-Line WAN IOA ► #2743 1 Gbps PCI Ethernet IOA ► #2744 PCI 100 Mbps Token Ring IOA ► #2749 PCI Ultra Magnetic Media Controller ► #2757 PCI-X Ultra RAID Disk Controller ► #2760 PCI 1 Gbps Ethernet UTP Adapter ► #2763 PCI RAID Disk Unit Controller ► #2765 PCI Fibre Channel Tape Controller ► #2766 PCI Fibre Channel Disk Controller ► #2768 PCI Magnetic Media Controller ► #2772 PCI Dual WAN/Modem IOA ► #2773 PCI Dual WAN/Modem IOA ► #2780 PCI-X Ultra4 RAID Disk Controller ► #2782 PCI-X RAID Disk Unit Controller ► #2787 PCI-X Fibre Channel Disk Controller ► #2793 2-Line WAN IOA with Modem ► #2794 2-Line WAN IOA with Modem ► #2805 PCI Quad Modem IOA ► #2806 PCI Quad Modem (CIM) ► #2817 PCI 155 Mbps MMF ATM IOA ► #2849 10/100 Mbps Ethernet Adapter ► #4723 PCI 10 Mbps Ethernet Adapter ► #4745 PCI 2-line WAN IOA ► #4746 PCI Twinaxial IOA ► #4750 PCI ISDN BRI U IOA ► #4751 PCI ISDN BRI S/T IOA ► #4748 PCI RAID Disk Unit Controller ► #4761 PCI Integrated Analog Modem ► #4778 PCI RAID Disk Unit Controller ► #4801 PCI Cryptographic Coprocessor (not supported by embedded IOP) ► #4805 PCI Cryptographic Accelerator (not supported by embedded IOP) ► #4811 PCI Integrated xSeries Server ► #4812 PCI Integrated xSeries Server ► #4813 PCI Integrated xSeries Server ► #4815 PCI ATM 155 Mbps UTP OC3 ► #4816 PCI ATM 155 Mbps MMF ► #4818 PCI ATM 155 Mbps SMF OC3

#2844 #9844 (contd.)	**#2844 PCI IOP** ► #4838 PCI 100/10 Mbps Ethernet IOA ► #5738 Controller with 1.5 GB Auxiliary Write Cache with IOP ► #2780 Controller with Auxiliary Write Cache ► #2757 Controller with Auxiliary Write Cache ► #5700 PCI 1 Gbps Ethernet IOA ► #5701 PCI 1 Gbps Ethernet UTP IOA ► #5702 PCI-X Ultra Tape Controller ► #5703 PCI-X RAID Disk Unit Controller ► #5704 PCI-X Fibre Channel Tape Controller ► #5705 PCI-X Tape/DASD Controller ► #5712 PCI-X Tape/DASD Controller ► #5715 PCI-X Tape/DASD Controller ► #5736 PCI-X Disk/Tape Controller with IOP ► #5737 PCI-X Disk Controller 90MB with IOP ► #5738 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches with IOP ► #5739 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP ► #5760 PCI-X Fibre Channel DASD Controller ► #5761 PCI-X Fibre Channel Tape Controller ► #5799 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP ► #5781 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP ► #9748 Base PCI RAID Disk Unit Controller ► #9767 Base PCI Disk Unit Controller ► #9771 Base PCI 2-Line WAN with integrated modem ► #9778 Base PCI RAID Disk Unit Controller ► #9793 2-Line WAN IOA with Modem ► #9794 2-Line IOA with Modem ► #9812 Base PCI Integrated xSeries Server ► #9813 PCI Integrated xSeries Server Placement considerations (maximums) for the #2844 include: ► Up to two in the Model 270, 800, and 810 system units ► Five in the 820 system tower ► Up to five in the Model 820 system unit ► Up to three in the Model 825 system unit ► Four in the base I/O tower of the Model 830 and 840 ► Up to four in the Model 830, 840, 870, and 890 system units ► Three in a #5075 PCI Expansion Tower ► Two in an #0595/#5095 PCI-X Expansion Tower ► Two can be added to the base #9844 PCI IOP in the #0595/#5095 PCI-X Expansion Tower ► Five in a #5074 PCI Expansion Tower and #5094 PCI-X Expansion Tower ► Up to five can be added to the base #9844 PCI IOP in a #5074/#5094 ► Six in an #0578, #0588, #5078, or #5088 PCI-X Expansion Unit ► Up to six can be added in the #0578/#5078 and #0588/#5088 ► 10 in a #5079 1.8 M I/O Tower and #5294 1.8m I/O Tower ► Up to 10 can be added to a #5079/#5294 ► The #5790 PCI Expansion Drawer supports two #2844s with blindswap cards. Two #5790s can be placed side by side in a rack with #7307/#7311 Dual I/O Unit Enclosure The #2844 supports a maximum of 16 devices. Minimum operating system level: OS/400 V5R2 The #281x ATM, #2750, #2751, #2761, and #4761 are not supported with i5/OS V5R3. The #2844 is a Customer Install Feature.

#2847	**#2847 PCI IOP for SAN Load Source** The #2847 PCI IOP for SAN Load Source provides the specialized function required to locate the load source disk on an external disk server attached via a fibre channel adapter, and boot from that load source. The #2847 PCI IOP for SAN Load Source does not support multipath for the i5/OS load source disk unit, but does support multipath for all other logical unit numbers (LUNs) attached to this IOP. A minimum of two IOPs are required to enable redundancy. Refer to *iSeries and IBM TotalStorage: A Guide to Implementing External Disk on eServer i5*, SG24-7120, for more information. The #2847 PCI IOP for SAN Load Source supports a maximum of one IOA of either of the following types: ► #2766 PCI Fibre Channel Disk Controller ► #2787 PCI-X Fibre Channel Disk Controller ► #5760 PCI-X Fibre Channel Disk Controller Supported on all POWER5 and POWER6 models system units and on the following expansion towers and units: ► #0588 PCI-X Expansion Unit in Rack ► #0595 PCI-X Expansion Unit in Rack ► #5074 PCI Expansion Tower ► #5079 1.8 M I/O Tower ► #5088 PCI-X Expansion Unit ► #5094 PCI-X Expansion Tower ► #5095 PCI-X Expansion Tower ► #5294 1.8m I/O Tower ► #5790 PCI Expansion Drawer ► #8079 Optional Base 1.8 M I/O Rack ► #8093 Optional 1.8 M I/O Rack ► #8094 Optional 1.8 M I/O Rack ► #9079 Base I/O Tower (PCI) ► #9094 Base PCI I/O Enclosure ► #9194 Base PCI-x Expansion Tower ► #8294 Optional Base 1.8m rack Minimum operating system level: i5/OS V5R3 with #0531 i5/OS V5R3M5 LIC **Note:** LUN size up to 141 GB is supported for Load Source.
#2790 #2791 #2799	**#2790 PCI Integrated Netfinity Server, #2791 PCI Integrated xSeries Server, #2799 PCI Integrated xSeries Server** The #2790 PCI Integrated Netfinity Server contains a 700 MHz processor. The #2791 PCI Integrated xSeries Server contains an 850 MHz processor. The #2799 PCI Integrated xSeries Server contains a 1.0 GHz Intel® Pentium® III processor. Each processor contains four memory slots in the xSeries IOP. The #2790, #2791, or #2799 is supported in the system unit of the Models 820, 825, 830, 840, 870, and 890, and #5074 PCI Expansion Tower, #5075 PCI Expansion Tower, #5078 PCI Expansion Unit, #0588/#5088 PCI-X Expansion Unit, and #5079 1.8 M I/O Towers. Each main storage slot of the #2790, #2791, or #2799 server can contain either a 128 MB, 256 MB, or 1024 MB xSeries server main storage card, providing a total server main storage capacity ranging from 128 MB to 4096 MB (4 GB). A minimum of one main storage card is required on the xSeries IOP. A maximum of 3712 MB of memory is addressable. Allowable main storage increments in MB are 128, 256, 384, 512, 640, 768, 896, 1024, 1152, 1280, 1408, 1536, 1664, 1792, 2048, 2176, 2304, 2432, 2560, 3072, 3200, 3328, and 4096. The following main storage cards provide server memory for the #2790, #2791, or #2799 when installed in a Model 820, 825, 830, 840, 870, or 890 system unit or attachable HSL towers: ► #2795 - 128 MB server memory (withdrawn from marketing as of 19 November 2004) ► #2796 - 256 MB server memory (withdrawn from marketing as of 19 November 2004) ► #2797 - 1 GB server memory (withdrawn from marketing as of 01 June 2006) ► #2895 - 128 MB server memory (withdrawn from marketing as of 19 November 2004 for new orders only; conversions to feature remain) ► #2896 - 256 MB server memory (withdrawn from marketing as of 19 November 2004 for new orders only; conversions to feature remain) The #2790, #2791, and #2799 can support PCI 100/16/4 Mbps Token Ring IOAs, PCI 100/10 Mbps Ethernet IOAs, or PCI 1 Gbps Ethernet IOAs in any combination. At least one LAN IOA is required. The supported LAN IOA features are: ► #2743 1 Gbps PCI Ethernet IOA ► #2744 PCI 100 Mbps Token Ring IOA ► #2760 PCI 1 Gbps Ethernet UTP Adapter ► #4838 PCI 100/10 Mbps Ethernet IOA

#2790 #2791 #2799 (contd.)	**#2790 PCI Integrated Netfinity Server, #2791 PCI Integrated xSeries Server and #2799 PCI Integrated xSeries Server** A #0223 100 Mbps Token-Ring specify code is required on the Integrated xSeries Server for each #2744 selected to run on the #2790, #2791, or #2799. A #0224 100/10 Mbps Ethernet specify code is required on the Integrated xSeries Server for each #4838 selected to run on the #2790, #2791, or #2799. A #0225 1 Gbps Ethernet specify code is required on the Integrated xSeries Server for each #2743/#2760 selected to run on the #2790, #2791, or #2799. Up to three IOA LAN features are supported by the #2790, #2791, or #2799, depending on which system or expansion tower position the #2790, #2791, or #2799 is placed. The #2790, #2791, and #2799 require three PCI card slots on the Model 820, 830, or 840 system unit backplane. One slot is consumed. The second slot is unusable. The third slot is reduced to a short card slot, which is then used by the first attached LAN IOA card. The #2790, #2791, and #2799 do not require a #2843 or #9943. However, placement is limited to specific slots within the specific system tower and expansion tower. The #2790, #2791, and #2799 support only the Windows NT®, Windows 2000 and Windows Server® 2003 operating systems. The Windows 2003 Server operating system is supported at OS/400 V5R2 with PTFs and i5/OS V5R3. The following rules apply: ► #0325 IPCS Extension Cable for Windows is the default but can be removed. ► #1700 IPCS Keyboard or Mouse for Windows is the default in those countries or regions offering it. ► A display must be connected to the #2790 PCI Integrated Netfinity Server to support Windows. ► Windows NT is not supported with i5/OS V5R3. Upgrade to Windows 2000. For a non-U.S. keyboard, mouse and display, see: http://www.ibm.com/eserver/iseries/integratedxseries/ Restrictions: ► Native OS/400 functions are not supported. ► The #2790, #2791, and #2799 do not support an external host LAN. ► The #2849 is not supported on any Integrated Netfinity Server/Integrated xSeries Server. Refer to *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for complete rules for placing these PCI cards in OS/400 V5R2 and earlier configurations. Windows NT is not supported with i5/OS V5R3. Upgrade to Windows 2000. Minimum operating system level to support #2743 or #2760 on the #2790, #2791, or #2799: OS/400 V5R1 Minimum operating system level to support #2790 or #2791: OS/400 V4R5 with Cumulative Package C1005450 Minimum operating system level to support #2799: OS/400 V5R1 with PTFs identified in Information APAR II13105 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 The #2790, #2791, or #2799 are Customer Install Features or an IBM Customer Service Representative setup features depending upon card placement. The #2799 was withdrawn from marketing as of 21 November 2003.
#2792 #9792	**#2792 PCI Integrated xSeries Server** The #2792 PCI Integrated xSeries Server contains a 1.6 GHz processor and four memory slots in the xSeries IOP. The #9792 Base PCI Integrated xSeries Server is included with Models 825, 870, and 890 when ordered with the iSeries Enterprise Edition. The #9792 includes two #9726 server memory features (must be ordered as a pair). The #9792 is allowed only on new systems that have sufficient PCI slots for manufacturing to place the feature within the system. Each server memory slot of the #2792 PCI Integrated xSeries Server can contain either a 512 MB server memory card or 1024 MB server memory card. At least two server memory cards are required in the xSeries IOP and must be installed in identical pairs. Allowable main storage increments in MB are 1024, 2048, 3072, and 4096. A minimum of 1 GB xSeries IOP memory is required. The following server memory cards provide memory for the #2792 PCI Integrated xSeries Server: ► #0426 - 512 MB Server Memory (withdrawn from marketing as of 01 June 2006) ► #0427 - 1 GB Server Memory (withdrawn from marketing as of 01 June 2006) ► #9726 - Base 512 MB server memory (available only on the #9792 Base PCI Integrated xSeries Server) The #2792 PCI Integrated xSeries Server includes one embedded 100/10 Mbps Ethernet LAN controller. The #2792 PCI Integrated xSeries Server can be ordered without any further LAN cards, but supports up to three LAN IOAs in any combination depending on which slot the #2792 is placed. The features for the LAN IOAs are:

#2792 #9792 (contd.)	**#2792 PCI Integrated xSeries Server** ► #2744 PCI 100 Mbps Token Ring IOA ► #5700 PCI 1 Gbps Ethernet IOA ► #5701 PCI 1 Gbps Ethernet UTP IOA One #0223 100 Mbps Token-Ring Specify is required for each #2744 selected to run on the #2792. One #0226 1 Gbps Ethernet Specify code is required for each #5700 or #5701 selected to run on the #2792. The #2792 does not require a #2843, #2844, #9943, or #9844 IOP. Placement is limited to specific slots within the system towers and expansion towers. The #2792 requires two PCI slots and does not extend into a third slot. The #2792 ships with a keyboard or mouse splitter cable and can support either a standard or USB 1.1 keyboard or mouse. The #2792 PCI Integrated xSeries Server supports only the Windows 2000 Server and Windows 2003 Server operating systems. Windows 2003 Server operating system is supported with OS/400 V5R2 and required PTFs. The following rules apply: ► #0325 IPCS Extension Cable for Windows is the default (but can be removed). ► #1700 IPCS Keyboard/Mouse for Windows is the default (in those countries or regions offering it). ► A display must be connected to the Integrated xSeries Server to support Windows. For a non-U.S. keyboard or mouse and display, see: http://www.ibm.com/eserver/iseries/integratedxseries/ Native OS/400 functions are not supported. The #2792 does not support external host LAN. The #2849 10/100 Mbps Ethernet Adapter is not supported on the #2792/#9792 Base PCI Integrated xSeries Server. Minimum operating system level: OS/400 V5R2 Supported in the system unit of Models 820, 825, 830, 840, 870, 890 and in the following towers: #5074 PCI Expansion Tower, #5075 PCI Expansion Tower, #0578/#5078 PCI Expansion Unit, #5079 1.8 M I/O Tower, #0588/#5088 PCI-X Expansion Unit, #5094 PCI-X Expansion Tower, #0595/#5095 PCI-X Expansion Tower, #5294 1.8m I/O Tower, #8093/#8094 Optional 1.8 M I/O Rack. Card placement determines whether #2792 is a Customer Install Feature or an IBM Customer Service Representative setup feature. The #2792 and #9792 are withdrawn from marketing as of 01 January 2004.
#2890 #2891 #2899	**#2890 PCI Integrated Netfinity Server, #2891 PCI Integrated xSeries Server, #2899 PCI Integrated xSeries Server** The #2890 PCI Integrated Netfinity Server contains a 700 MHz processor. The #2891 PCI Integrated xSeries Server contains an 850 MHz processor. The #2899 PCI Integrated xSeries Server contains a 1 GHz Pentium III processor. Each processor contains four memory slots in the xSeries IOP. Each main storage slot of the #2890, #2891, or #2899 can contain either a 128 MB, 256 MB, or 1024 MB xSeries server main storage card, providing a total main storage capacity ranging from 128 MB to 4096 MB (4 GB). Allowable main storage increments in MB are: 128, 256, 384, 512, 640, 768, 896, 1024, 1152, 1280, 1408, 1536, 1664, 1792, 2048, 2176, 2304, 2432, 2560, 3072, 3200, 3328, and 4096. A minimum of 128 MB xSeries IOP memory is required. When the maximum memory is installed, only 3712 MB is addressable. The following main storage cards provide server memory for the #2890, #2891, and #2899: ► #2795 - 128 MB Server Memory (withdrawn from marketing as of 19 November 2004) ► #2796 - 256 MB Server Memory (withdrawn from marketing as of 19 November 2004) ► #2797 - 1 GB Server Memory (withdrawn from marketing as of 01 June 2006) The #2890, #2891, or #2899 can support PCI 100/16/4 Mbps Token Ring IOAs, PCI 100/10 Mbps Ethernet IOAs, or PCI 1 Gbps Ethernet IOAs in any combination. At least one LAN IOA is required. The following LAN IOA features: ► #2743 1 Gbps PCI Ethernet IOA ► #2744 PCI 100 Mbps Token Ring IOA ► #2760 PCI 1 Gbps Ethernet UTP Adapter ► #4838 PCI 100/10 Mbps Ethernet IOA A #0223 100 Mbps Token-Ring Specify is required on the #2890/#2891/#2899 PCI Integrated xSeries Server for each #2744 selected to run on the #2890/#2891/#2899. A #0224 100/10 Mbps Ethernet Specify is required on the #2890/#2891/#2899 PCI Integrated xSeries Server for each #4838 selected to run on the #2890/#2891/#2899. A #0225 1 Gbps Ethernet Specify is required on the #2890/#2891/#2899 PCI Integrated xSeries Server for each #2743 or #2760 selected to run on the #2890/#2891/#2899.

#2890 #2891 #2899 (contd.)	**#2890 PCI Integrated Netfinity Server, #2891 PCI Integrated xSeries Server, #2899 PCI Integrated xSeries Server** Up to three IOA LAN features can be supported by the #2890, #2891, or #2899, depending on which system or expansion tower position the #2890, #2891, or #2899 is placed. The #2890, #2891, or #2899 requires three PCI card slots. One slot is consumed. The second slot is unusable. The third slot is reduced to a short card slot, which is then used by the first attached LAN IOA card. The #2890, #2891, or #2899 does not require a #2843 or #9943, but placement is limited to specific slots within the various system towers and expansion towers. The #2890, #2891, or #2899 supports only the Windows NT, Windows 2000, and Windows 2003 operating systems. Ships with a keyboard or mouse splitter cable. The following considerations apply: ► #0325 IPCS Extension Cable for Windows is the default (but can be removed). ► #1700 IPCS Keyboard/Mouse for Windows is the default (in those countries or regions that offer it). ► A display must be connected to the Integrated xSeries Server to support Windows. For a non-U.S. keyboard, mouse and display, see: http://www.ibm.com/eserver/iseries/integratedxseries/ Restrictions: ► Native OS/400 functions are not supported. ► The #2890, #2891, or #2899 does not support external host LAN. ► The #2849 is not supported on any Integrated Netfinity Server/Integrated xSeries Server. ► Windows NT is not supported with i5/OS V5R3. Upgrade to Windows 2000. Minimum operating system level to support #2890/#2891: OS/400 V4R5 with Cumulative Package C1005450 Minimum operating system level to support #2899: OS/400 V5R1 with PTFs identified in Information APAR II13105 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 Minimum operating system level to support #2743 or #2760 on the #2890, #2891, or #2899: OS/400 V5R1 The #2890, #2891, or #2899 is supported (for migration only) in the Model 800, Model 810, and the #5074 PCI Expansion Tower, #5075 PCI Expansion Tower, #0578/#5078 PCI Expansion Unit, and #5079 1.8 M I/O Tower, #0595/#5095 PCI-X Expansion Tower, #5094/#5294 Expansion Towers, and #0588/#5088 PCI-X Expansion Unit. The #2890, #2891, and #2899 are Customer Install Features. The #2899 was withdrawn from marketing as of 21 November 2003 for new orders. Conversion to feature #2899 can be available. A #4811, #4812, or #4813 PCI Integrated xSeries Server is the recommended replacement, depending upon system IBM System i model.
#2892	**#2892 PCI Integrated xSeries Server** The #2892 PCI Integrated xSeries Server contains a 1.6 GHz processor and four memory slots in the xSeries IOP. Each server memory slot of the #2892 PCI Integrated xSeries Server can contain either a 512 MB server memory card or a 1024 MB server memory card, providing allowable main storage options of 1024 MB, 2048 MB, 3072 MB, and 4096 MB. All server memory cards must be installed in identical pairs. The following main storage cards provide memory for the #2892 PCI Integrated xSeries Server: ► #0446 - 512 MB Server Memory ► #0447 - 1 GB Server Memory The #2892 PCI Integrated xSeries Server includes one embedded 100/10 Mbps Ethernet LAN controller. The #2892 can be ordered without any further LAN cards. The #2892 supports up to three, in any combination (depending into which system or expansion tower position the #2892 is placed), of the following LAN IOA features: ► #2744 PCI 100 Mbps Token Ring IOA ► #5700 PCI 1 Gbps Ethernet IOA ► #5701 PCI 1 Gbps Ethernet UTP IOA One #0223 100 Mbps Token-Ring Specify is required for each #2744 selected to run on the #2892. One #0226 1 Gbps Ethernet Specify is required for each #5700 or #5701 selected to run on the #2892. The #2892 PCI Integrated xSeries Server does not require a #2843, #2844, #9943 or #9944 IOP, but placement is limited to specific slots within the various system towers and expansion towers. The #2892 requires two PCI slots and does not extend into a third slot. The #2892 supports only the Windows 2000 Server and the Windows.NET Server operating systems. The #2892 ships with a standard keyboard/mouse splitter cable, and can support either a standard or USB 1.1 keyboard, mouse, or both. The following rules apply: ► #0325 (IPCS Extension Cable for Windows) is the default (but can be removed). ► #1700 (IPCS Keyboard/Mouse for Windows) is the default (in those countries or regions offering it). ► A display must be connected to the #2790 PCI Integrated Netfinity Server to support Windows.

#2892 (contd.)	**#2892 PCI Integrated xSeries Server** For a non-U.S. keyboard, mouse and display, see: http://www.ibm.com/eserver/iseries/integratedxseries/ For the Models 800 and 810, the #2892 is orderable for placement in the #5074, #5094, #0578, #0588, #5078 and #5088 expansion towers or units and in the #5079 and #5294 on the Model 810. Native OS/400 functions are not supported. The #2892 PCI Integrated xSeries Server does not support external host LAN. The #2849 10/100 Mbps Ethernet Adapter is not supported on the #2892. Minimum operating system level: OS/400 V5R2 Supported on the Model 270, 800, and 810 system units, on the #5075 PCI Expansion Tower when it is attached to the Model 270. Supported in the #5075 PCI Expansion Tower and #0595/#5095 PCI-X Expansion Tower when these towers are attached to a Model 800 or 810. Card placement determines whether the #2892 is a Customer Install Feature or an IBM Customer Service Representative setup feature. The #2892 was withdrawn from marketing as of 01 January 2004. A #4811, #4812, or #4813 PCI Integrated xSeries Server is the recommended replacement, depending on IBM System i model.
#4710 #4810 #9710	**#4710/#4810/#9710 PCI Integrated xSeries Server** The #4710, #4810, or #9710 PCI Integrated xSeries Servers have 2 GHz processor and four memory slots. Each server memory slot can contain one of the following features, providing a total main storage capacity from 1024 MB to 4096 MB. The feature numbers of the server memory cards are: ► #0426/#9726 - 512 MB Server Memory (withdrawn from marketing as of 01 June 2006) ► #0427 - 1 GB Server Memory (withdrawn from marketing as of 01 June 2006) A minimum of two server memory cards are required and must be installed in identical capacity pairs. On model upgrades or MES orders, a #4710/#4810 can be ordered without memory features if usable supported memory features already exist on the installed system. The #4710, #4810, or #9710 includes one embedded 100/10 Mbps Ethernet LAN controller. The following LAN IOAs are supported in combination: ► #2744 PCI 100 Mbps Token Ring IOA ► #5700 PCI 1 Gbps Ethernet IOA ► #5701 PCI 1 Gbps Ethernet UTP IOA The #4710/#4810 can be ordered without any LAN IOA features. When a LAN feature is used in conjunction with a #4710, the following ordering rules apply: ► One #0223 100 Mbps Token-Ring Specify is required for each #2744 driven. ► One #0226 1 Gbps Ethernet Specify is required for each #5700/#5701 driven. ► Up to three IOA LAN features can be supported by the #4710/#4810, depending on the system unit or tower position into which the #4710, #4810, or #9710 is placed. ► Native OS/400 functions are not supported. The #4710, #4810, or #9710 do not support external host LAN. The #4710, #4810, or #9710 do not require a #2843, #2844, #9943 or #9844. Placement is limited to specific slots within the selected system unit and expansion tower. The #4710, #4810, or #9710 require two PCI card slots, and do not hang over a third slot. The #4710, #4810, or #9710 ship with a standard keyboard and mouse splitter cable and can support either standard or USB 1.1 keyboard, mouse, or both. Windows 2000 Server with PTFs and Windows 2003 Server operating systems are supported. The following apply: ► #0325 (IPCS Extension Cable for Windows) is the default (but can be removed). ► A minimum of 1 GB server memory is required. ► #1700 (IPCS keyboard or mouse for Windows) is default (in countries offering it). ► A display must be connected to the Integrated Server to support Windows. For a non-US keyboard/mouse and display, see: http://www.ibm.com/eserver/iseries/integratedxseries/ Minimum operating system level: OS/400 V5R2 with PTFs identified in Information APAR II13609 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 The #4710/#9710 is supported in the Model 520, 525, 550, 570, and 595 and the system unit of Models 820, 825, 830, 840, 870, and 890. It is also supported in the following expansion towers when attached to these models: #0578, #0588, #0595, #5074, #5075, #5078, #5079, #5088, #5094, #5095, and #5294, #8079, #8094, #9079, and #9094.

#4710 #4810 #9710 (contd.)	**#4710/#4810/#9710 PCI Integrated xSeries Server** The #4810 is supported in Model 270, 800, and 810 system units. It is also supported in the following towers when attached to the #5075, #0578/#5078, #0588/#5088, and #0595/#5095 Expansion Towers. For Models 800 and 810, if the #4810 is placed in a #5094 or #5294, the client install instructions indicate that an IBM Customer Service Representative must be called for card installation. The #9710 is supported in the Model 520, 525, 550, 570, and 595 and the system unit of Models 825, 870, and 890. It is also supported in the following expansion towers when attached to the #0578, #0588, #0595, #5074, #5075, #5078, #5079, #5088, #5094, #5095, and #5294 Expansion Towers. A #4710 is the recommended replacement for the #2792 PCI Integrated xSeries Server. A #4810 is the recommended replacement for the #2892 PCI Integrated xSeries Server. The #4710, #4810 and #9710 are withdrawn from marketing as of 01 June 2006. A #4811, #4812, or #4813 PCI Integrated xSeries Server is the recommended replacement, depending on IBM System i model.
#9726	**#9726 Base 512 MB Server Memory** The #9726 provides 512 MB DDR server memory for the #9792 Base PCI Integrated xSeries Server. The #9726 Base 512 MB Server Memory is allowed on the following editions, with a maximum of two per edition: ► #7421 Enterprise Edition ► #7424 Enterprise Edition ► #7427 Enterprise Edition The #9726 Base 512 MB Server Memory must be ordered in pairs. The #9726 is allowed on new systems or upgrades from non 810, 825, 870, or 890 systems into the 810, 825, 870, or 890 models. If the client does not select the #9726 on the initial order, they are not entitled to receive the feature in the future. Supported on Models 520, 525, 550, 570, 595, 800, 810, 825, 870, 890, and 9411-100.
#9744	**#9744 Base PCI IOP** The #9744 Base PCI IOP is a base PCI I/O processor that drives PCI IOA adapters in the system unit and in HSL attached PCI or PCI-X I/O expansion towers/units. One #9744 can drive a maximum of four IOAs, subject to configuration restrictions. One #9744 is the default on each order, but can be removed, when a #4811, #4812, #4813, #9812, or #9813 PCI-X Integrated xSeries Server is on the order. Supported on Models 520, 525, 550, 570, 595, 800, 810, 825, 870, 890, and 9411-100.

4.7.1 IOP-less IOAs and placement

Starting in 2006, the System i5 models started supporting IOAs, also referred to as *controllers*, that can operate with or without a "controlling IOP." As a result, there are three "classes" or "types" of IOAs that are supported by i5/OS:

- *IOP controlled IOAs*
- IOP-less
  - *IOP-less only IOAs*, such as the port Ethernet LAN adapter that is embedded in the 515, 520, 525, 550,and 570 processor enclosure (system unit) and its I/O tower or drawer pluggable feature #5706 PCI-X 1 Gbps Ethernet-TX IOA or #5707 PCI-X 1 Gbps Ethernet-SX IOA
  - *Single mode IOP-less IOAs* that are not recognized by IOPs

    These IOAs can be placed virtually anywhere relative to installed IOPs without causing problems.
- *Dual mode IOAs* (also referred to as *smart IOAs*), such as the #5582, #5583, #5736, #5737, #5739, #5775, #5776, #5778, #5781, #5782, #5799, and #5800 disk controller and their auxiliary write cache feature SCSI adapters

  If an IOP controls the IOA, order the IOA by the column A feature code. Place the IOA after an IOP on the same EADs boundary. To run in IOP-less mode, place the dual-mode IOA in front of (that is, in a lower) EADs address of any IOP in an EADs.

Dual-mode capability is dependent on i5/OS release level. See the following information for details. If the dual-mode IOA is placed in a slot that is under IOP control, then the IOA runs as IOP-based. If the slot is not controlled by an IOP, then the adapter runs in IOP-less mode.

IOP control of a dual-mode adapter always takes precedence over IOP-less, except in specific load source situations.

IOP control: An IOP in one partition cannot control an IOA in a different partition.

For the latest information about IOAs without or with an IOP, refer to *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011.

The placement details that are documented in this paper include:

- Features are supported with an IOP with i5/OS V5R3.
- i5/OS V5R4 is required to run in IOP-less mode except for the 1.9 GHz Model 520. This Model 520 supports the use of dual-mode IOAs and controllers running in IOP-less mode in the system unit with i5/OS V5R3 and V5R3M5 LIC. Dual-mode IOAs can run in IOP-less mode in attached I/O towers.
- The 1.9 and 2.2 GHz Models 550 and 570 support the use of dual-mode IOAs and controllers running in IOP-less mode in the system unit with OS/400 V5R4. Dual-mode cards can also run in IOP-less mode in attached I/O towers.
- Dual-mode IOAs and controllers are not supported running in IOP-less mode in the system unit of the 1.5 and 1.65 GHz Models 520, 550, or 570. Dual-mode cards can run in IOP-less mode in attached I/O towers.
- An Integrated xSeries Server can be placed in the 1.9 GHZ Model 520 system unit. An Integrated xSeries Server continues to require an IOP.
- Conversions between direct-attach, IOP- required, and IOP-less features are available.
- Controllers are auto-configured as IOP-less when possible.
- Direct access IOAs run without an IOP when used in a System i AIX or Linux partition.

Refer to the feature descriptions in this chapter for the IOA description and limitations for each feature. Refer to *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, for the latest information about IOA placement rules.

4.8 Workstation controllers and console features

Workstation controllers and console features	
#4746 #9746	**#4746 PCI Twinaxial IOA** The #4746 PCI Twinaxial IOA provides support for up to 40 active twinaxial displays and printer addresses or up to 120 active shared sessions. A 20-foot (6.2 m) cable with an eight-port expansion (breakout) box is included with this adapter. Each port supports seven attached devices, allowing for 56 total attached devices, of which only 40 can be active. The #9746 Base PCI Twinaxial IOA is allowed only on new systems. If the client does not select the feature on the initial order, they are not entitled to receive the feature in the future. The #9746 requires an #0864 and a #7400. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #4746 is a chargeable Customer Install Feature. The #9746 is the same IOA but indicates no charge as part of an initial Model 20 Express order. The #9746 was withdrawn from marketing as of 01 October 2005.
#5540	**#5540 System Console on Twinaxial Workstation IOA** A system console specify code must be selected on each new order. When the #5540 is on the order, the system console is driven by a #4746 PCI Twinaxial IOA. Supported on Models (including "+ models") 515, 520, 525, 550, 570, and 595; Models 800, 810, 820, 825, 830, 840, 870, and 890.
#5544	**#5544 System Console on Operations Console** A system console specify code must be selected on each new order. When a #5544 is specified, the primary i5/OS system console is driven by an IOP-based WAN adapter. The system console can be connected to a #0367 Operations Console PCI Cable attached to a #4745 PCI 2-line WAN IOA or a #9771, #9793, or #9794 Base PCI 2-Line WAN with integrated modem. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models.
#5546	**#5546 System Console on 100 Mbps Token Ring** A system console specify code must be selected on each new order. When the #5546 is on the order, the system console is LAN attached to a #2744 PCI 100 Mbps Token Ring IOA. This LAN adapter must be dedicated to console functions and cannot be used for any other purpose. One #0367 Operations Console PCI Cable is required to be on the order or present on the system. One #0367 per system is sufficient, regardless of the number of "LAN consoles" (via LPAR) defined per system. Minimum operating system level: OS/400 V5R1, except V5R3 or later required on System i5 models. Supported on all POWER5 and POWER6 models; Models 800, 810, 820, 830, 840, 870, and 890.
#5548	**#5548 System Console on 100 Mbps Ethernet** A system console specify code must be selected on each new order. When the #5548 is on the order, the system console is LAN attached to a #4838 PCI 100/10 Mbps Ethernet IOA or a #2849 10/100 Mbps Ethernet Adapter. This LAN adapter must be dedicated to console functions and cannot be used for any other purpose. The #5548 is specifically used for IOP-based IOAs. The embedded Ethernet ports on the Model 520, 550 and 570 system units can be used for LAN console when running under i5/OS V5R3 and with Licensed Internal Code V5R3M5 installed or V5R4 and Licensed Internal code V5R4M5 installed. See the #0553 specify code. One #0367 Operations Console PCI Cable is required to be on the order or present on the system. One #0367 per system is sufficient, regardless of the number of "LAN consoles" (via LPAR) defined per system. Minimum operating system level: OS/400 V5R1 except V5R3 or later required on System i5 models. Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models.

#5550	**#5550 System Console on HMC** A system console specify code must be selected on each new order. When the #5550 is on the order, the system console function is driven by the HMC via an Ethernet connection to a dedicated HMC port on the system unit. The HMC is required for LPAR, Capacity Upgrade on Demand, Concurrent Maintenance and Upgrade and Redundant Service Processor (SP) operations. Minimum operating system level: i5/OS V5R3. Model POWER6 570 requires i5/OS V5R4 and Licensed Internal Code V5R4M5 or later. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models. For POWER6 570, HMC level V7R3.1.0 or later is required. Firmware level must be at version EM310_048_048 or later. HMC V7R3.1.0 can also operate with POWER5 technology-based systems running at system firmware level 240_320 or later.
#5552	**#5552 System Console on Thin Console** A system console specify code must be selected on each new order. When the #5552 is on the order, the system console function is provided by a 9944-100 Thin Console attached via a standard Ethernet cable to either of the system unit HMC ports. The 9944-100 is made by Neoware for IBM. An alternative to twinax-attached 5250, HMC, and Operations Console (LAN or Direct attach), the Thin Console is designed to provide a 5250 interface to a single i5/OS partition. IBM does not support environments with both an HMC and Thin Console concurrently active on the same machine. Neoware provides hardware warranty and software support. Minimum operating system level: i5/OS V5R4. Supported on Models (including "+ models") 515, 520, 525 and 550. **Note:** Thin Console might not be a choice in some geographies.
#5553	**#5553 System Console Ethernet w/o IOP** A system console specify code must be selected on each new order. When the #5553 System Console Ethernet w/o IOP is on the order, it indicates the use of an embedded system unit LAN port for the system console connection using Operations Console (LAN). This LAN port is then dedicated to the console function and no longer available for other functions. On Models 515, 520 and 525, the embedded LAN console port is T5 On Model 550, the embedded LAN console port is T9 On Model POWER5 570, the embedded LAN console port is T6 Minimum operating system level: i5/OS V5R3 with LIC V5R3M5 on Model 520+; i5/OS V5R4 required for Models 515, 520, 525, 550, 550, 570 and 570 (POWER6).
#5557	**#5557 System Console Ethernet w/o IOP** The #5557 provides a system console connection through an IOP-less Ethernet LAN adapter. A system console specify code must be selected on each new order. A #5706 or #5707 PCI-X IOP-less Ethernet LAN adapter is required. When the #5706 or #5707 is used for LAN console, one port of the LAN adapter is dedicated to console support functions and cannot be used for any other purpose. Minimum operating system level: i5/OS V5R3 and Licensed Internal Code V5R3M5 or i5/OS V5R4 and later releases. Supported on all 595 models at i5/OS V5R3 and Licensed Internal Code V5R3M5 and later. Supported on all System i5 Models (including "+ models") 520, 550, and 570 at i5/OS V5R4.

4.8.1 Supported partition consoles summary

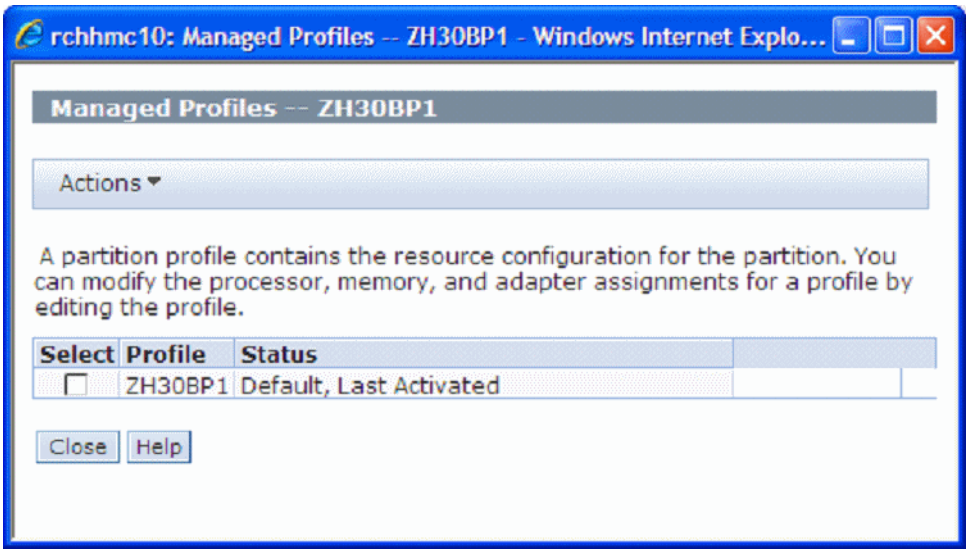
Supported console types:

- HMC
  - HMC V7R3.1.0 operates with POWER6 technology-based systems running at system firmware level EM310_048_048 or later.
  - HMC V7R3.1.0 can also operate with POWER5 technology-based systems running at system firmware level SF240_299 or later.
  - HMC Version 5.2.1 and HMC Version 6.1.2 or later can also operate with POWER5 technology-based systems running at system firmware level SF240_299 or later.

- IOP-less LAN consoles
  - #5636/#5639 IVE/HEA (default)

    On the HMC:

    i. Select the managed system.
    ii. Select the partition.
    iii. Click **Managed Profile** and you see the Managed Profiles window.



    The partition operating system must define one Logical Host Ethernet Adapter (LHEA) that represents a logical port associated with one of the physical ports of the associated physical Host Ethernet Adapter (Integrated Virtual Ethernet (IVE)) on the system. Refer to the following publications to help you configure an LHEA as a partition console:

    - *System i Operations Guide for i5/OS Consoles,* SA76-0128

      https://www-01.ibm.com/servers/resourcelink/lib03030.nsf/pagesByDocid/55719E40DD8536A7852573500046E6EF?OpenDocument&pathID=36

    - *System i and System p Logical Partitioning Guide,* SA76-0098

      https://www-01.ibm.com/servers/resourcelink/lib03030.nsf/pagesByDocid/0E6125F89F8B8EF6852572E6007E884D?OpenDocument&pathID=36

  - #5767/#5768
  - #5706/#5707

  To learn about the procedure to enable or disable a specific IOA and port for a partition console, refer to the IBM Systems Hardware Information Center at:

  http://publib.boulder.ibm.com/infocenter/systems/scope/hw/index.jsp

  When you reach the information center, navigate through the topics **Managing consoles, interfaces, and terminals** → **Managing i5/OS consoles** → **Managing Operations Console** → **Working with Operations Console** → **Working with the console service functions (65+21)** → **Using the console service functions (65+21)**.

- IOP-less Async (Direct cable #0367)
  - #9693/#9694
  - #6833/#6834

- IOP Consoles
  - #2849 Upgrade, withdrawn from marketing (1 June 2006)
  - #2742 Async (Direct cable #0367)
  - #4746/2746 PCI Twinaxial Workstation IOA

The following table summarizes operations console support on various System i adapter features, i5/OS releases, and processor technologies.

Table 4-1 Adapters supporting i5/OS Operations Console PC Workstation

Console Connection Type	Adapter Feature Number	Supported on 800, 810, 825, 870, 890 / Minimum LIC level	POWER5 515, 520, 525, 570, 595 / Minimum LIC level	POWER6 - requires minimum LIC level V5R4M5
LAN	#2744 (IOP reqd)	Yes, V5R2M0	Yes, V5R3M0	Yes
	#4838/2838 (IOP reqd)	Yes, V5R2M0	Yes, V5R3M0	Not supported
	#2849 (IOP reqd)	Yes, V5R2M0	Yes, V5R3M0	Yes
	POWER5 515,520,525,550,570 Processor Enclosure 2 port adapter (IOP-less)	No	Yes, V5R3M5 (default)	Not
	#5706/#5707 (IOP-less)	No	Yes, V5R3M5	Yes
	#5767/#5768 (IOP-less)	No	No	POWER6 only
	#5636/#5639 IVE/HEA (POWER6 570 Enclosure 2 or 4 port adapter - IOP-less)	No	No	POWER6 only, (default)
Async direct attach/remote support	#2742 (with/without IOP)	Yes, V5R2M0	IOP w/ V5R3M0 / IOP-less w/V5R4M5	Yes / IOP-less
	#6805 (IOP-less)	No	Yes / V5R4M5 POWER5 only	Yes
	#2793/#2893/#9793 (with or without IOP)	Yes, V5R2M0 (IOP required)	Yes / IOP-less w/V5R4M5	Yes / IOP-less
	#2794/2894/#9794 (PCIe no IOP, requires POWER6 system)			Yes / IOP-less
	4745/2745 (IOP reqd)	Yes, V5R2M0	Yes, V5R3M0	Not supported
	9771/2771 (IOP reqd)	Yes, V5R2M0	Yes, V5R3M0	Not supported
	#6803/6804/#6833/#9493/ #9494/#9933/#9934 (IOP-less)[4]	No	Yes / IOP-less w/ V5R4M5	Yes

Notes:
1. Supported PC workstation operating systems include: Windows 2000 Professional, Windows XP Professional, and Windows Vista®. Windows Vista can only be used for a local console on a network configuration. You cannot use Windows Vista for a local console directly attached or for a remote console. The System i Access for Windows versions, for both the local console and the remote console, must be at the same level. PC5250 or IBM Personal Communications V5.9 (V5.7 with CICS® system definition data set (CSD) 1 minimum) needs to be installed for the console only. It is not required for configurations that are used only for remote control panel.
2. Some IOAs originally required a controlling IOP. In later releases, the IOA could run without an IOP. In some cases the “without an IOP” could be ordered under a different feature. However, many of these older IOAs and new IOP-less feature number cards report as the same CCIN value. Newer License Internal Microcode (LIC) supports the IOP-less mode. Some older processor technology models do not support IOP-less mode.
3. LIC level V5R3Mn is associated with i5/OS V5R3M0. LIC level V5R4Mn is associated with i5/OS V5R4M0
4. Not formally supported. Should work.

All of these consoles provide a 5250 workstation interface. In 4.8, “Workstation controllers and console features” on page 223, we list the specific codes for the console offerings.

Refer to the following publications for more information about System i console support:

- *System i Operations Guide for i5/OS Consoles,* SA76-0128

  https://www-01.ibm.com/servers/resourcelink/lib03030.nsf/pagesByDocid/55719E40DD8536A7852573500046E6EF?OpenDocument&pathID=36

  At V5R4, according to this publication, Operations Console supports the following adapters:

  – Operations Console (LAN): #2744, #2849, POWER5 processor enclosure embedded two-port adapter; the #5706/#5707 adapter, #5767/#5768 adapter, and Integrated Virtual Ethernet (HEA) features #5636 and #5639

    For operations console support, the IOP-less LAN adapters #5706/#5709, #5767/#5768, #5636, and #5639 all require i5/OS V5R4 and licensed internal code (microcode) level V5R4M5. i5/OS V5R3 supports IOP-less LAN adapters for Operations Console with licensed internal code V5R3M5 installed.

    On the two port LAN adapters, except the #5636, the LAN console port must be:

    - The left-most or top port (labeled port 0 or A) on POWER5 Models 515, 520, 525, 550, and 570 embedded in a processor enclosure two-port adapter
    - The left-most or top port (labeled port 0 or A), depending on the horizontal or vertical position of the enclosure for #5706/#5707, or #5767/#5768 in I/O tower or drawer enclosure
    - For POWER6 only processor enclosure two-port #5636 adapter, the left-most or top-most port, depending on the horizontal or vertical position of the enclosure
    - For POWER6 only processor enclosure four-port #5639 adapter, the left-most or top-most port.

    The port used for Operations Console is dedicated only for Operations Console work and to a single active partition.

    For all adapters, except #5636 or #5639, after a port is assigned to a partition for general TCP/IP functions (non-console), all ports on that adapter are also “owned” by the partition. For additional details, including Operations Console over #5636 or #5639, read *System i Operations Guide for i5/OS Consoles* SA76-0128.

  – Operations Console (Direct): #2742, #2793/#2794, and #2893/#2894 (576C)

  #2744, #2849, and #2742 adapters: The #2744, #2849, and #2742 adapters require an IOP and can only be located in an expansion unit.

- *i5/OS Console Choices (V5R3 and V5R4)* white paper

  ftp://ftp.software.ibm.com/common/ssi/rep_wh/n/ISW00530USEN/ISW00530USEN.PDF

- *Hardware Management Console V7 Handbook,* SG24-7487 (Redbooks publication)

For additional documentation, refer to “Related publications” on page 619.

4.9 LAN and WAN adapters

LAN and WAN adapters	
Comm. Restrictions	Restrictions apply when using specific adapters and I/O processors. See “Comm. Restrictions” on page 230, for communications rules and restrictions. Also see *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, or *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for further placement rules.
Networking Fault Tolerance	Starting with OS/400 (i5/OS) V5R2M0 networking fault tolerance configuration support enables elimination of a single point of an Ethernet LAN-attached network failure. Requirements: ► Two or more physical network adapters must be connected to a separate link partner (hub or switch). ► Each link partner has a physical connection to each router to ensure fault tolerance. This cabling configuration prevents a single hardware failure from interrupting transmissions to or from the System i environment. To get full fault tolerance in this configuration, you must also configure i5/OS Virtual IP; refer to IBM Software Technical Document 25191404, “Fault Tolerance Configuration for the IBM System i Server Using Virtual IP,” which discusses fault tolerance configuration for the IBM System i products using RIP and Virtual IP: http://www-912.ibm.com/s_dir/slkbase.NSF/1ac66549a21402188625680b0002037e/6f3c2d316d97cd9286256b140048c770?OpenDocument
Comm. Restrictions	Configuration considerations for extra high performance adapters, including 5717, 5771, 5772, 5721, 5722, 1981, 5718, 1982, 5719, 1954, 5740: ► Performance Maximum: 2 adapters (for example, #5740) per 2 active processor cores and 1 per PCI Host Bridge (PHB) for best performance for the specific adapter and system-wide. ► Connectivity Maximum: 4 adapter (for example, #5740 per active processor core and 2 per PHB for connectivity when performance is not a factor. ► Pre-provisioning Maximum: 4 adapters per processor core. Operating more than 4 adapters can results in data overrun, service time out to be logged and affect overall system performance. Note: Not all operating systems support each adapter. For purposes of this documentation, consider PCI Host Bridge to be the same as the Multi-Adapter Bridge term familiar to IBM i customers. Configuration considerations for extra high performance adapters, including 5767, 5768, 1983, 1984, 5706, 5707, 1978, 1979, 5700, 5701: ► Performance Maximum: 4 adapters per active processor core for best adapter performance and system performance. ► Connectivity Maximum: 8 adapters per active processor core when performance is not a factor. ► Pre-provisioning Maximum: 8 adapters per active processor core. Operating more than 8 adapters per active processor, can results in data overrun, service time out to be logged and affect overall system performance. Note: Not all operating systems support each adapter.

Comm. Restrictions (contd.)	Basic communications restrictions when using the MFIOP, #2629, #2699, #2720, #2721, #2745, #2809, #2824, and other communications functions are identified and briefly summarized here: ► Maximum protocol speeds on the EIA-232/ITU V.24 electrical interfaces: – 64 Kbps for Synchronous PPP, BSC, SDLC, and X.25 – 115.2 Kbps for Asynchronous protocols (including Asynchronous PPP) ► Maximum protocol speeds on the ITU V.35: Permitted only on 20-ft (6.2 m) cable – 2.048 Mbps for Synchronous PPP, SDLC, and Frame Relay – 230.4 Kbps for Asynchronous PPP – 640 Kbps for X.25 – 64 Kbps for BSC Speeds faster than 512 Kbps can require either the “looped” or “inverted” clocking to be configured. ► Maximum protocol speeds on the EIA-449/ITU V.36: – 2.048 Mbps for Synchronous PPP, SDLC, and Frame Relay – 230.4 Kbps for Asynchronous PPP – 640 Kbps for X.25 – 64 Kbps for BSC “Looped” clocking is required on cables longer than 20 ft (6 m). Speeds faster than 512 Kbps can require either the “looped” or “inverted” clocking to be configured. ► Maximum protocol speeds on the ITU X.21 electrical interfaces: Permitted only on 20-ft (6.2 m) cable – 2.048 Mbps for Synchronous PPP, SDLC, and Frame Relay – 640 Kbps for X.25 Speeds faster than 512 Kbps can require either the “looped” or “inverted” clocking to be configured. ► Only one Frame Relay or one X.25 communication line is allowed per IOP. ► One high-speed line is permitted per IOP. ASYNC and ASYNC PPP above 115.2 Kbps is a high-speed line. Frame Relay, SDLC, SYNC PPP, and X.25 above 64 Kbps is a high-speed line. High-speed lines are supported on ITU X.21, ITU V.35 20-ft (6 m) cables, or EIA-449/ITU V.36 electrical interfaces.

Comm. Restrictions (contd.)

- No high-speed communication line is allowed when a #2750, #2751, or #2761 is installed under the same I/O processor.
- If it is desired to run multiple emulated LAN lines on an #281x ATM IOA, then the following restrictions must be satisfied:
  - The #281x ATM IOA must be running under a dedicated #2824 PCI Feature Controller (no other IOAs of any type).
  - The number of emulated LANs running on the #281x ATM IOA is limited to a maximum of two, one token ring and one Ethernet.
- Frame Relay restrictions:
  - Minimum line speed 56 Kbps
  - Frame Relay is not allowed on EIA-232/V.24 electrical interface
- Other IOAs allowed under same #2809 PCI LAN/WAN/Workstation IOP or #2824 PCI Feature Controller, one of two restrictions:
  - Either a #281x or #2838
  - A #2718 or #2729 and maximum of one #2721, #2722, #2723, #2724, #2729, #2745, or #2746
- IPX™ is supported on Frame Relay, LAN, and ATM.
  - IPX is supported only on OS/400 V5R1 and earlier releases. IPX is not supported on OS/400 V5R2 or later releases.
  - Devices running IPX over the Integrated xSeries Server is limited to 2400 routes and 2400 services.
  - Devices running IPX are limited to 1400 routes and 1400 services when:
    - #2723, #2724, or #2838 IOAs are not controlled by the Integrated xSeries Server.
    - Frame Relay running over a #2721, #2745, or #2699 IOA.
- SNA restrictions: None of the IOP-less WAN adapters or 1 Gbps LAN adapters directly support SNA. For the WAN adapters this means the Create Line SDLC (CRTLINSDLC) command is not supported. Some of these adapters can run with or without an IOP. To use an SDLC line description and thus run “direct SNA,” the adapter must run associated with a supported IOP. Alternatively SNA protocol can run over these IOP-less adapters encapsulated in TCP/IP protocol using AnyNet or, starting with i5/OS V5R4 or later, Enterprise Extenders (EE) support. EE is preferred. EE is preferred. See the iSeries Information Center for information about how to configure AnyNet and EE support: http://publib.boulder.ibm.com/iseries/
- SDLC restrictions:
  - Maximum of 64 remote locations per #2809, #2824, or #2629 IOP.
- X.25 restrictions:
  - Limit of 16 virtual circuits (16 remote locations).
  - Limit of 64 virtual circuits (64 remote locations) in the #5065 Storage/PCI Expansion Tower.
  - Speeds faster than 512 Kbps can require either “looped” or “inverted” clocking to be configured.
  - The other port of the #2721 or #2745 can be used as a low-speed communications line.
- No more than seven #2629s can be placed into each #5072 1063 Mbps System Unit Expansion Tower.
- Bisync is always limited to a maximum of 64 Kbps.
- Not allowed on the #2720/#9720 if this combination of adapters is installed on the base MFIOP:
  - #2722 or #2746 plus one #2723 or #2724

Additional restrictions include:

- V.25 autocall cable is not supported.
- Select standby mode is not supported.
- #2750, #2751, #2761, #4750, #4751, #4761 are not supported on i5/OS V5R3 and later releases.
- #2817, #481x #28x ATM not supported. Upgrade to Ethernet.

Important:

- It is imperative that these restrictions be understood and followed. If they are not followed, it is possible that a hardware configuration can be built that marginally works and later quits working when the machine is upgraded to future software releases.
- For best performance, we recommend that no other features be intermixed with a #2838 PCI 100/10 Mbps Ethernet IOA or a #2811, #2812, #2815, #2816, #2818, or #2819 ATM IOA on a #2809 PCI LAN/WAN/Workstation IOP.

The quantity and speed of each communications line must be known. Complete this table to determine the total communications CPW that is required. The #2750, #2751, and #2761 count as eight low-speed communications lines.

Maximum High-Speed Communication lines Calculation Table

	Quantity			Factor		CPW
Number of lines operating at	64 Kbps or less		_____	x 0.92	=	_____
Number of lines operating above	64 Kbps up to	128 Kbps	_____	x 1.84	=	_____
Number of lines operating above	128 Kbps up to	256 Kbps	_____	x 3.68	=	_____
Number of lines operating above	256 Kbps up to	512 Kbps	_____	x 7.36	=	_____
Number of lines operating above	512 Kbps up to	1,024 Kbps	_____	x 14.72	=	_____
Number of lines operating above	1,024 Kbps up to	2,048 Kbps	_____	x 29.44	=	_____
					Total	_____

For more information, refer to *iSeries Performance Capabilities Reference*, SC41-0607.

#0613	**#0613 - Direct Attach-2742** The #0613 is ordered when the function of a #2742 IOA is required but the card will be controlled by a non-OS/400 operating system. Cards controlled by a non-OS/400 operating system do not use/require PCI IOPs. Direct attach cards are supported only in a non-OS/400 partition. Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models. Prerequisites: ► #0140 Logical Partitioning Specify. ► #0142 Linux Partitioning Specify. ► Attributes provided: #2742 controlled by Linux Operating System. ► Attributes required: #0140, #0142.
#0629	**#0629 - Direct Attach #5758 4Gbps Fibre Channel 1-Port** The #0629 is the direct attach to AIX or Linux partition for the #5758 PCI-X 4Gbps Fibre Channel 1-Port feature. The #0629/#5758 provides a 4 Gbps Single Port Fibre Channel PCI-X 2.0 Adapter, which is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. Minimum operating system level: AIX 5L for Power V5.2S for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 4 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported on all POWER5 and POWER6 models.
#0630	**#0630 - Direct Attach #5713 PCI-X 1Gbps iSCSI TOE-Copper** The #0630 provides a 1 Gbps iSCSI TOE PCI-X adapter that encapsulates SCSI commands and data into TCP and transports them over the Ethernet via IP packets. The adapter operates as an iSCSI TCP/IP Offload Engine (TOE). This offload of the host eliminates protocol processing and reduces CPU interrupts. The adapter uses RJ45 1 Gbps Ethernet connector. This iSCSI adapter can be used to initiate requests to external storage devices from AIX 5L and Linux partitions. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported on all POWER5 and POWER6 models. The #0630 is a Customer Install Feature.
#0631	**#0631 - Direct Attach #5714 PCI-X 1Gbps iSCSI TOE-Optic** The #0631 provides a 1 Gbps iSCSI TOE PCI-X adapter that encapsulates SCSI commands and data into TCP and transports them over the Ethernet via IP packets. The adapter operates as an iSCSI TOE. This offload of the host eliminates protocol processing and reduces CPU interrupts. The adapter uses small form factor LC type fiber optic connector. This iSCSI adapter can be used to initiate requests to external storage devices from AIX 5L and Linux partitions. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported on all POWER5 and POWER6 models. The #0631 is a Customer Install Feature.
#0632	**#0632 PCI USB 2.0 Adapter** The #0632 is a USB 2.0 capable adapter that provides for the connection of one USB keyboard and mouse. Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, or AIX 5L for POWER V5.2. Support is limited to USB 1.1 with AIX. Supported on all POWER5 and POWER6 models.
#0633	**#0633 Graphics Adapter** The #0633 POWER GXT135P Graphics Accelerator with Digital Support adapter is a versatile 2D graphics accelerator, which can be configured to operate in either 8-bit or 24-bit color modes. The #0633 supports both analog and digital monitors. Minimum operating system level: AIX Versions 5.1 or 5.2 for analog and digital support Supported on all POWER5 and POWER6 models.

#0634	**#0634 128-port Asynchronous Adapter** The #0634 provides attachment for up to 128 asynchronous lines from a single PCI bus slot. This gives the system the ability to serve a large number of user of EIA-232 or RS-422 devices such as terminals, printers, and modems. Two 2.4 Mbps synchronous channels link the adapter to a maximum of eight 16-Port Remote Async Nodes (RANs). Up to four RANs can be linked to each synchronous channel. RANs can also be used with this adapter. If the RANs are connected the synchronous channel the data rate drops down to 1.2 Mbps. For the best results, keep the previous and new RANs on separate synchronous channels. One PCI slot and a #0140 Logical Partitioning Specify and #0145 AIX Partition Specify are required. Supported in Linux and AIX partitions with AIX 5L for POWER V5.2, or AIX 5L for POWER V5.2 Supported on all POWER5 and POWER6 models. The #0634 was withdrawn from marketing as of 01 December 2005
#0635	**#0635 SDLC/X.25 - 2-port Adapter** The #0635 SDLC/X.25 - 2-port Adapter provides high-speed connections between stand-alone system units on a WAN. To access WAN lines, the #0635 adapter connects via external communications equipment including Channel Service Units (CSU) and Data Service Units (DSU). This adapter, together with IBM AIX link/X.25, provides a two-port connection to X.25 packet switched networks. IBM AIXlink/X.25 is a separately orderable LPP (5696-926). The #0635, with an appropriate cable, is compatible with: ► #2954 X.21 DCE - Using 2-Port Cable, X.21 ► CCITT X.21 Signalling ► CCITT V.11 Electrical ► CCITT X.27 Electrical ► EIA-422-A Electrical ► ISO 4903 Connector for DCE side of an X.21 VHSI Modem Cable ► V.24 DCE - Using 2-Port Cable, V.24/EIA-232 (#2951) ► CCITT V.24 Signalling ► CCITT V.28 Electrical ► CCITT X.21bix Electrical and Signalling ► EIA-232-C Electrical and Signalling ► ISO 2110 Connector for DCE side of an V.24 VHSI Modem Cable ► V.35 DCE - Using 2-Port Cable, V.35 (#2952) ► CCITT V.35 Some signals for signalling ► CCITT V.28 Some signals for electrical and signalling ► ISO 2593 Connector for DCE side of an V.35 VHSI Modem Cable ► V.36 DCE - Using 2-Port Cable, V.36/EIA-449 (#2953) ► CCITT V.10 Electrical ► CCITT V.11 Electrical One PCI slot, #0140 Logical Partitioning Specify and #0145 AIX Partition Specify code is required. Supported on all POWER5 and POWER6 models. The #0635 was withdrawn from marketing as of 01 December 2005.
#2732	**#2732 PCI Serial HIPPI Adapter** The #2732 is a single slot, full size, 32-bit PCI adapter supporting TCP/IP over a serial High Performance Parallel Interface (HIPPI) link. Data is sent and received over optical fiber at 1.2 Gbps using the HIPPI standard 20/24 bit encoding scheme with short wave optical transducers. The effective maximum data rate of the HIPPI interface is 800 Mbps. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later Supported on Models 570, 570 (POWER6), and 595. The #2732 was withdrawn from marketing as of 15 October 2004.
#2737	**#2737 PCI USB 1.1 Adapter** This adapter provides for connection of one USB keyboard and mouse. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported on Models 570, 570 (POWER6), and 595. The #2737 was withdrawn from marketing as of 15 October 2004.

#2742	**#2742 2-Line WAN IOA** The #2742 2-Line WAN IOA supports up to two multiple protocol communications (RVX) ports when one or two (in any combination) of the following cables are attached. Select one of the following cables to attach to port 1 or 2 (RVX port): ► #0348 V.24/EIA232 20-ft (6 m) PCI cable ► #0349 V.24/EIA232 50-ft (15 m) PCI cable ► #0353 V.35 20-ft PCI cable ► #0354 V.35 50-ft PCI cable ► #0355 V.35 80-ft/24m PCI cable ► #0356 V.36 20-ft PCI cable ► #0358 V.36 150-ft/45m PCI cable ► #0359 X.21 20-ft PCI cable ► #0360 X.21 50-ft PCI cable ► #0365 V.24/EIA232 80-ft PCI cable ► #0367 Operations Console PCI Cable The #0367 cable ships with a 25 pin to 9 pin adapter. When #0140 Logical Partitioning Specify is ordered, multiple #0367 cables can be ordered to connect the operations console in each partition. One #0367 cable per #2742. When #2742 is selected to support ECS, one of following cables must be specified: ► #0348 V.24/EIA232 20-ft (6 m) PCI cable ► #0349 V.24/EIA232 50-ft (15 m) PCI cable ► #0367 Operations Console PCI Cable The #2742 can be directly attached to a Linux partition. When ordered as #0613 - Direct Attach #2742 PCI 2-Line WAN IOA, an IOP is not required. When directly attached to a Linux partition, the #2742 cannot be accessed by OS/400 partitions. The #2742 does not support Remote Power On. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. With an associated supported IOP, the following protocols are supported on this adapter. ► Async ► Bisync ► Fax ► PPP ► SNA With i5/OS V5R4 and Licensed Internal Code V5R4M5 and later installed this adapter can run IOP-less. When running IOP-less, the following restrictions apply: ► X.25 is not supported. ► Remote power on via ring-indicator is not supported. ► SNA is supported only through the i5/OS AnyNet or Enterprise Extender support. The #2742 is a Customer Install Feature.
#2743	**#2743 1 Gbps PCI Ethernet IOA** The #2743 PCI 1 Gbps Ethernet IOA feature allows the iSeries server to attach to IEEE standard 802.3Z high-speed Ethernet LANs (1 Gbps). It can also be used to connect to existing 100 Mbps Ethernet LANs using switches with 10/100/1000 Mbps ports. The adapter supports multi-mode fiber media attachment to client-supplied cabling. The multi-mode interface has a 62.5/125 micron (µm) or 50.0/125 µm cable requirement with an SC connector. The #2743 requires a gigabit-capable switch with at least one port that supports a 1000BASE-SX interface with IEEE 802.3z and 802.3u compliance. It supports only a multi-mode fiber optic cable connection from the adapter to the switch. The #2743 supports 1000 Mbps (1 Gbps) full duplex interface only. It cannot negotiate down to a lower speed. Stations on the 10 Mb and 100 Mb switched LANs can communicate with the #2743 through a switch that is capable of handling all these speeds. In this case, the switch handles the speeds. If a #2743 is controlled by a #2790, #2791, or #2799, then one specify code #0225 1 Gbps Ethernet Specify must be ordered for each #2743 controlled by an Integrated Server. It can be directly attached to a Linux partition. When ordered as #0601 - Direct Attach #2743 PCI 1 Gbps Ethernet IOA, an IOP is not required. When directly attached to a Linux partition, the #2743 cannot be accessed by OS/400 partitions.

#2743 (contd.)	**#2743 1 Gbps PCI Ethernet IOA** A 64-bit card slot is required. Protocols supported: TCP/IP only; IPX connections are not supported. SNA supported with Enterprise Extenders with V5R4. Maximum: One per Multi-adapter Bridge Boundary Minimum operating system level: OS/400 V4R5 Minimum operating system level when used with the #2790/#2791: OS/400 V4R5 with Cumulative PTF package C1005450 Minimum operating system level when used with the #2799: OS/400 V5R1 with PTFs identified in Information APAR II13105 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 Supported on Models 520 (9406 only), 525, 550, 570, 595, 810, 820, 830, 840, 870, 890 and 9411-100. The #2743 is a Customer Install Feature. The #2743 was withdrawn from marketing as of 01 October 2004. A #5700 is the recommended replacement.
#2744	**#2744 PCI 100 Mbps Token Ring IOA** The #2744 PCI 100 Mbps Token Ring IOA provides a single attachment to a 100 Mbps, 16 Mbps, or 4 Mbps IBM Token Ring Network. The feature consists of an IOA card, with internal code that supplies IEEE 802.5 Media Access Control (MAC) and IEEE 802.2 Logical Link Control (LLC) functions. The 100/16/4 Token Ring IOA is capable of operating in half or full duplex mode. A 2.44m (8 ft) Token Ring Type 1 cable is included with the #2744. As an alternative, the client can attach a separately priced twisted pair cable to the RJ45 connection on the IOA. IBM Cabling System patch cables, included with the #2744, can increase the length as required. If the #2744 is selected to run on the #2790 PCI Integrated Netfinity Server or the #2791/#2799 PCI Integrated xSeries Server, a #0223 100 Mbps Token-Ring Specify is required for each #2744 selected to run on the #2790, #2791, or #2799. The #2744 can be directly attached to a Linux partition. When ordered as #0603 - Direct Attach #2744 PCI 100 Mbps Token-Ring IOA, an IOP is not required. When directly attached to a Linux partition, the #2744 cannot be accessed by OS/400 partitions. Minimum operating system level: OS/400 V4R5 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #2744 is a Customer Install Feature. The #2744 was withdrawn from marketing as of 01 June 2006.
#2760	**#2760 PCI 1 Gbps Ethernet UTP Adapter** The #2760 PCI 1 Gbps Ethernet UTP Adapter feature allows the iSeries server to attach to IEEE standard 802.3Z high-speed Ethernet LANs (1 Gbps) to provide a significant performance improvement over other LAN solutions. The adapter supports a UTP CAT 5 media interface. When driven by a #2843 PCI IOP, this adapter only supports TCP/IP. This adapter can directly attach to 10 Mbps or 100 Mbps networks. The #2760 is supported by a #2790, #2791, or #2799 PCI Integrated xSeries Server. If a #2760 is controlled by a #2790, #2791, or #2799, then one specify code #0225 1 Gbps Ethernet Specify must be ordered for each #2760 controlled by an Integrated Server. Maximum: One per Multi-adapter Bridge Boundary. Ignore this maximum for any #2760 controlled (driven) by an Integrated xSeries Server. Combinations of Integrated Server controlled and PCI IOP controlled #2760s within Multi-adapter Bridge boundaries are permitted. The #2760 can be directly attached to a Linux partition. When ordered as #0602 - Direct Attach #2760 PCI 1 Gbps Ethernet UTP IOA, an IOP is not required. When directly attached to a Linux partition, the #2760 cannot be accessed by OS/400 partitions. One 64-bit PCI slot is required. There are exceptions for 32-bit slot placement in the Model 270 and 820 system units. TCP/IP is the only protocol supported. IPX connections are not supported. SNA supported using Enterprise Extenders starting in V5R4. Minimum operating system level: OS/400 V5R1 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #2760 is a Customer Install Feature. The #2760 was withdrawn from marketing as of 01 October 2004. A #5701 is the recommended replacement.

#2772	**#2772 PCI Dual WAN/Modem IOA** The #2772 PCI Dual WAN/Modem IOA is a two-line WAN adapter, with two ports (RJ11) supporting V.90 56K Async PPP and Fax applications at data rates up to 14.4K via internal modems. Connection to the V.90 ports is via telephone cable. This is the non-CIM version of the #2772/#2773 card. The #2772 can be directly attached to a Linux partition. When ordered as #0609 - Direct Attach #2772 PCI Dual WAN/Modem IOA, an IOP is not required. When directly attached to a Linux partition, the #2772 cannot be accessed by OS/400 partitions. The #2772 does *not* ship with country-specific or region-specific telephone cables. A minimum of one modem cable, or a maximum of two, must be selected/ordered for each #2772. All modem cables ordered or present on a system must be the same feature number. ► #1010 Modem Cable-Austria ► #1011 Modem Cable-Belgium ► #1012 Modem Cable-Africa ► #1013 Modem Cable-Israel ► #1014 Modem Cable-Italy ► #1015 Modem Cable-France ► #1016 Modem Cable-Germany ► #1017 Modem Cable-United Kingdom ► #1018 Modem Cable-Iceland/Sweden ► #1021 Modem Cable-Finland/Norway ► #1022 Modem Cable-Netherlands ► #1023 Modem Cable-Swiss ► #1024 Modem Cable-Denmark ► #1025 Modem Cable-U.S./Canada The feature is country-specific or region-specific. Remote ring indicate is not supported. One PCI card slot is required. Minimum operating system level: OS/400 V5R1 Supported on Models (including “+ models”) 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #2772 is a Customer Install Feature. The #2772 was withdrawn from marketing 01 June 2006.
#2773	**#2773 PCI Dual WAN/Modem IOA** The #2773 is a two-line WAN adapter, with two ports (RJ11) supporting V.90 56K Async PPP and Fax applications at data rates up to 14.4K via internal modems. Connection to the V.90 ports is via telephone cable. This is the CIM version of this #2772/#2773 card. The #2773 can be directly attached to a Linux partition. When ordered as #0610 - Direct Attach #2773 PCI Dual WAN/ModemIOA, an IOP is not required. When directly attached to a Linux partition, the #2773 cannot be accessed by OS/400 partitions. The #2773 does *not* ship with country-specific or region-specific telephone cables. A minimum of one modem cable, or maximum of two, must be selected or ordered for each #2773. All modem cables ordered or present on a system must be the same feature number. ► #1019 Modem Cable-Australia ► #1020 Modem Cable-China (Hong Kong S.A.R.)/New Zealand The feature is country-specific or region-specific. Remote ring indicate is not supported. PCI card slots required: One Minimum operating system level: OS/400 V5R1 Supported on Models (including “+ models”) 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #2773 is a Customer Install Feature. The #2773 was withdrawn from marketing 01 June 2006.

#2793 #9793	**#2793 2-Line WAN IOA with Modem** The #2793/#9793 is a two-line WAN with modem adapter and is the non-CIM version that is offered in all countries or regions except Australia and New Zealand. Port 0 is the modem port and supports V.92 56K Async PPP, V.92 data modem, V.44 data compression, and V.34 Fax modem and Fax functions such as ECM and 2D/1D conversion. Port 0 does not provide sync modem capabilities (SDLC and Sync PPP). Port 1 is the RVX port and supports multiple communications protocols. The #2793 can be directly attached to a Linux partition. When ordered as #0614 - Direct Attach #2793 PCI 2-Line WAN w/Modem, an IOP is not required. When directly attached to a Linux partition, the #2793 cannot be accessed by OS/400 partitions. Select one of the following cables to attach to port 0 (modem port): ► #1010 Modem Cable-Austria ► #1011 Modem Cable-Belgium ► #1012 Modem Cable-Africa ► #1013 Modem Cable-Israel ► #1014 Modem Cable-Italy ► #1015 Modem Cable-France ► #1016 Modem Cable-Germany ► #1017 Modem Cable-United Kingdom ► #1018 Modem Cable-Iceland/Sweden ► #1021 Modem Cable-Finland/Norway ► #1022 Modem Cable-Netherlands ► #1023 Modem Cable-Swiss ► #1024 Modem Cable-Denmark ► #1025 Modem Cable-U.S./Canada Select one of the following cables to attach to port 1 (RVX port): ► #0348 V.24/EIA232 20-ft (6 m) PCI cable ► #0349 V.24/EIA232 50-ft (15 m) PCI cable ► #0353 V.35 20-ft PCI cable ► #0354 V.35 50-ft PCI cable ► #0355 V.35 80-ft/24m PCI cable ► #0356 V.36 20-ft PCI cable ► #0358 V.36 150-ft/45m PCI cable ► #0359 X.21 20-ft PCI cable ► #0360 X.21 50-ft PCI cable ► #0365 V.24/EIA232 80-ft PCI cable ► #0367 cable ships with a 25 pin to 9 pin adapter When #0140 logical partitioning is specified, multiple #0367 cables can be ordered to connect the operations console in each partition. ECS is supported from the RVX port and one of the following cables is required to support ECS: #0348, #0349, or #0365. ECS is supported from the modem port with OS/400 V5R1 or later. For further configuration information, see: http://www.iseries.ibm.com/tstudio/planning/esa/esa.htm See the “Soft rules: iSeries IOA requirements” topic in *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, or *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for OS/400 V5R2 and earlier releases, for additional restrictions. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. With an associated supported IOP the following protocols are supported on port 1 of this adapter. ► V.92 56K Async SLIP/PPP ► Async ► Bisync ► Fax ► PPP ► SNA via CRTLINSDLC

#2793 #9793 (contd.)	**#2793 2-Line WAN IOA with Modem** Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595. When running IOP-less, the following support applies to port 1 of this adapter: ► V.92 56K Async SLIP/PPP is supported. ► Fax applications at data rates up to 33.6K is supported. ► Bisync is supported. ► SNA communications is supported through i5/OS AnyNet or Enterprise Extender functions. ► X.25 is not supported. ► Remote power on via ring-indicator is not supported. The #2793 is a Customer Install Feature.
#2794 #9794	**#2794 2-Line WAN IOA with Modem** The #2794/#9794 is a two-line WAN with modem adapter and is the CIM version that is offered only in Australia and New Zealand. Port 0 is the modem port and supports V.92 56K Async PPP, V.92 data modem, V.44 data compression, and V.34 Fax modem and Fax functions such as ECM and 2D/1D conversion. Port 0 does not provide sync modem capabilities (SDLC and Sync PPP). Port 1 is the RVX port and supports multiple communications protocols. The #2794 can be directly attached to a Linux partition. When ordered as #0615 - Direct Attach #2794 PCI 2-Line WAN w/Modem, an IOP is not required. When directly attached to a Linux partition, the #2794 cannot be accessed by OS/400 partitions. Select one of the following cables to attach to port 0 (modem port): ► #1019 Modem Cable-Australia ► #1020 Modem Cable-China (Hong Kong S.A.R.)/New Zealand Select one of the following cables to attach to port 1 (RVX port): ► #0348 V.24/EIA232 20-ft (6 m) PCI cable ► #0349 V.24/EIA232 50-ft (15 m) PCI cable ► #0353 V.35 20-ft PCI cable ► #0354 V.35 50-ft PCI cable ► #0355 V.35 80-ft/24m PCI cable ► #0356 V.36 20-ft PCI cable ► #0358 V.36 150-ft/45m PCI cable ► #0359 X.21 20-ft PCI cable ► #0360 X.21 50-ft PCI cable ► #0365 V.24/EIA232 80-ft PCI cable ► #0367 Operations Console PCI Cable The #0367 cable ships with a 25 pin to 9 pin adapter. When #0140 logical partitioning is specified, multiple #0367 cables can be ordered to connect the operations console in each partition. ECS is supported from the RVX port and one of the following cables is required to support ECS: #0348, #0349 or #0365. ECS is supported from the modem port with OS/400 V5R1 or later. The #2794 does not support the remote ring indicate function. For further configuration information, see: http://www.iseries.ibm.com/tstudio/planning/esa/esa.htm See the “Soft rules: iSeries IOA requirements” topic in *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, or *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for OS/400 V5R2 and earlier releases, for additional restrictions. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. With an associated supported IOP, the following protocols are supported on port 1 of this adapter: ► V.92 56K Async SLIP/PPP ► Async ► Bisync ► Fax ► PPP ► SNA via CRTLINSDLC

#2794 #9794 (contd.)	**#2794 2-Line WAN IOA with Modem** Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595. When running IOP-less, the following support applies to port 1 of this adapter: ► V.92 56K Async SLIP/PPP is supported. ► Fax applications at data rates up to 33.6K is supported. ► Bisync is supported. ► SNA communications is supported through i5/OS AnyNet or Enterprise Extender functions. ► X.25 is not supported. ► Remote power on via ring-indicator is not supported. The #2794 is a Customer Install Feature.

#2805	**#2805 PCI Quad Modem IOA** The #2805 is a four-line WAN adapter with four WAN ports with internal modems. Connection to the ports is via telephone cable (RJ-11). This is the non-CIM version of the IOA. Supported protocols are: ► V.92 56K Async PPP ► Fax applications at data rates up to 33.6K The V.92 functions offer increased upload throughput, improved V.44 data compression, and shortened modem synchronization periods. The #2805 can be directly attached to a Linux partition. When ordered as #0616 - Direct Attach #2805 PCI Quad Modem IOA, an IOP is not required. When directly attached to a Linux partition, the #2805 cannot be accessed by OS/400 partitions. Country- or region-specific telephone cables must be ordered. A minimum of one modem cable and a maximum of four must be selected for each #2805. All modem cables on a system must be the same feature number. The supported modem cables are: ► #1010 Modem Cable-Austria ► #1011 Modem Cable-Belgium ► #1012 Modem Cable-Africa ► #1013 Modem Cable-Israel ► #1014 Modem Cable-Italy ► #1015 Modem Cable-France ► #1016 Modem Cable-Germany ► #1017 Modem Cable-United Kingdom ► #1018 Modem Cable-Iceland/ Sweden ► #1021 Modem Cable-Finland/Norway ► #1022 Modem Cable-Netherlands ► #1023 Modem Cable-Swiss ► #1024 Modem Cable-Denmark ► #1025 Modem Cable-U.S./Canada The feature is country-specific or region-specific. Contact your IBM representative or Business Partner for details on availability. Restrictions: ► The call waiting and modem on hold functions associated with V.92 are not supported. ► Remote Power On via ring-indicator, SDLC, and synchronous PPP are not supported. One PCI card slot is required. Minimum operating system level: OS/400 V5R1 with PTFs identified in Information APAR II30079 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. With an associated supported IOP, the following protocols are supported on this adapter: ► Async ► Bisync ► Fax ► PPP ► SNA via CRTLINSDLC Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595. When running IOP-less, the following support applies: ► V.92 56K Async PPP is supported ► Fax applications at data rates up to 33.6K is supported ► SNA communications is supported through i5/OS AnyNet or Enterprise Extender functions. ► X.25 is not supported. The #2805 is a Customer Install Feature.

#2806	**#2806 PCI Quad Modem (CIM)** The #2806 is a four-line WAN adapter with four WAN ports with internal modems. Connection to the ports is via telephone cable (RJ-11). This is the CIM version of the IOA. Supported protocols are: ► V.92 56K Async PPP ► Fax applications at data rates up to 33.6K The V.92 functions offer increased upload throughput, improved V.44 data compression, and shortened modem synchronization periods. The #2806 can be directly attached to a Linux partition. When ordered as #0617 - Direct Attach #2806 PCI Quad Modem (CIM), an IOP is not required. When directly attached to a Linux partition, the #2806 cannot be accessed by OS/400 partitions. Country- or region-specific telephone cables must be ordered. A minimum of one modem cable and a maximum of two must be selected for each #2806. All modem cables on a system must be the same feature number. The supported modem cables are: ► #1019 Modem Cable- Australia ► #1020 Modem Cable- China (Hong Kong S.A.R.)/New Zealand The #2806 is country-specific or region-specific. Contact your IBM representative or Business Partner for details on availability. Restrictions: ► The call waiting and modem on hold functions associated with V.92 are not supported. ► Remote Power On via ring-indicator, SDLC, and synchronous PPP are not supported. One PCI card slot is required. Minimum operating system level: OS/400 V5R1 with PTFs identified in Information APAR II13079 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. With an associated supported IOP, the following protocols are supported on this adapter: ► Async ► Bisync ► Fax ► PPP ► SNA via CRTLINSDLC Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595. When running IOP-less, the following support applies: ► V.92 56K Async PPP is supported ► Fax applications at data rates up to 33.6K is supported ► SNA communications is supported through i5/OS AnyNet or Enterprise Extender functions. ► X.25 is not supported. The #2806 is a Customer Install Feature.
#2817	**#2817 PCI 155 Mbps MMF ATM IOA** The #2817 is a 155 Mbps Asynchronous Transfer Mode (ATM) PCI card that allows the server to be attached to an ATM network using the Multi-Mode Fiber (MMF) 62.5 µm interface. This interface is intended for connection to both local area switches and direct connection to service provider equipment. The #2817 is typically used where 155 Mbps speeds are required over distances of less than 2 km. The #2817 is capable of supporting both multiple emulated LAN environments and enhanced TCP/IP performance with OS/400 V5R1. The #2817 is a 64-bit card, but is allowed to plug into any 32-bit or 64-bit slot. Feature maximums can be limited when used in combination with other LAN/ATM IOPs. One PCI card slot is required. Minimum operating system level: OS/400 V5R1; not supported with i5/OS V5R3 Supported on Models 810, 820, 825, 830, 840, 870, and 890. The #2817 is a Customer Install Feature.

#2848	**#2848 PCI 2D Entry Graphics Adapter** The #2848 PCI 2D Entry Graphics Adapter is a versatile, low-priced 2D graphics accelerator, which can be configured to operate in either 8-bit or 24-bit color modes. Hardware description: ► 128-bit graphics processor ► 8-bit CLUT or 24-bit true color ► 16 MB SDRAM ► 32-bit PCI interface ► Universal PCI (5.0v or 3.3v) ► One hardware color map Features supported: ► Up to approximately 16.7 million colors ► Rectangular clipping ► Two analog monitor outputs ► Up to 1600 x 1200 resolution ► 60 to 85 Hz refresh rates (ISO 9241, Part 3) APIs supported ► X-Windows and Motif ► UMS 2.3.0 (no hardware scaling) Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, SUSE Linux Enterprise Server 9 for POWER or later Supported on Models 520 (9406 only), 525, 550, 570, 570 (POWER6), and 595. The #2848 was withdrawn from marketing as of 15 October 2004. The #2848 is a Customer Install Feature.
#2849 #9749	**#2849 10/100 Mbps Ethernet Adapter** The #2849 10/100 Mbps Ethernet Adapter allows an iSeries server to attach to standardized 100 Mbps high-speed Ethernet LANs and allows attachment to existing 10 Mbps Ethernet LANs. The adapter comes standard with an RJ45 connector for attachment to UTP-5 media. Cabling for 10 Mbps must be CAT-3 or CAT-5, cabling for 100 Mbps must be CAT-5 that meets or exceeds Industry Standard EIA/TIA T568A or T568B. Maximum cable length is 100m. The #9749 Base PCI 100/10 Ethernet IOA is an optional feature available on new Model 800 and 810 systems, or as part of an upgrade order from a Model 270, 720, 730, or 820 to a Model 810. If the client does not select the feature on the initial order, they are not entitled to receive the feature in the future. The #2849 can be directly attached to a Linux partition. When ordered as #0623 - Direct Attach #2849 PCI 100/10 Mbps Ethernet IOA, an IOP is not required. When directly attached to a Linux partition, the #2849 cannot be accessed by OS/400 partitions. Supports LAN console. The #2849 is not supported on any Integrated Netfinity Server or Integrated xSeries Server. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #2849 is a Customer Install Feature. The #9749 was withdrawn from marketing as of 01 October 2005. The #2849 was withdrawn from marketing as of 01 June 2006. A #5701 PCI 1 Gbps Ethernet IOA is the recommended replacement.

#2893 #9693	**#2893 PCIe 2-Line WAN IOA with Modem** The #2893/#9693 is a two-line WAN with modem adapter and is the non-CIM version that is offered in all countries or regions except Australia and New Zealand. Select one of the following cables to attach to port 0 (modem port): ► #1010 Modem Cable-Austria ► #1011 Modem Cable-Belgium ► #1012 Modem Cable-Africa ► #1013 Modem Cable-Israel ► #1014 Modem Cable-Italy ► #1015 Modem Cable-France ► #1016 Modem Cable-Germany ► #1017 Modem Cable-United Kingdom ► #1018 Modem Cable-Iceland/Sweden ► #1021 Modem Cable-Finland/Norway ► #1022 Modem Cable-Netherlands ► #1023 Modem Cable-Swiss ► #1024 Modem Cable-Denmark ► #1025 Modem Cable-U.S./Canada Select one of the following cables to attach to port 1 (RVX port): ► #0348 V.24/EIA232 20-ft (6 m) PCI cable ► #0353 V.35 20-ft PCI cable ► #0356 V.36 20-ft PCI cable ► #0359 X.21 20-ft PCI cable ► #0367 Operations Console PCI Cable (ships with a 25 pin to 9 pin adapter). Multiple #0367 cables can be ordered but only one per #2893) to serve as consoles for secondary partitions when logical partitioning is used. ECS is supported from both the modem port and the RVX port. ECS is supported from the RVX port with #0348 - V.24/EIA232 20-Ft PCI Cable. For further configuration information, see: http://www.iseries.ibm.com/tstudio/planning/esa/esa.htm Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. Supported on Model 570 (POWER6). When running IOP-less, the following support applies to this adapter: ► Port 0 is the modem port and supports: – V.92 56K Async PPP – V.92 data modem, – V.44 data compression – V.34 Fax modem and Fax functions such as ECM and 2D/1D conversion ► Port 1Port 1 is the RVX port and supports multiple communications protocols, including synchronous operations. – V.92 56K Async SLIP/PPP – Fax – Bisync – SNA communications is supported through i5/OS V5R4 Enterprise Extender function and later releases. – X.21 One PCIe slot is required. Restrictions: ► IOP-less X.25 is not supported. ► Remote power on via ring-indicator is not supported. The #2893 is a Customer Install Feature.

#2894 #9694	**#2894 PCIe 2-Line WAN with Modem CIM** The #2894/#9694 is a two-line WAN with modem PCIe adapter. This feature is the CIM version that is offered only in Australia and New Zealand. Select one of the following cables to attach to port 0 (modem port): ► #1019 Modem Cable - Australia ► #1020 Modem Cable- China (Hong Kong S.A.R.)/New Zealand Select one of the following cables to attach to port 1 (RVX port): ► #0348 V.24/EIA232 20-ft (6 m) PCI cable ► #0353 V.35 20-ft PCI cable ► #0356 V.36 20-ft PCI cable ► #0359 X.21 20-ft PCI cable ► #0367 Operations Console PCI Cable (ships with a 25 pin to 9 pin adapter). Multiple #0367 cables can be ordered but only one per #2894) to serve as consoles for secondary partitions when logical partitioning is used. ECS is supported from both the modem port and the RVX port. ECS is supported from the RVX port with #0348 - V.24/EIA232 20-Ft PCI Cable. For further configuration information, see: http://www.iseries.ibm.com/tstudio/planning/esa/esa.htm Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. Supported on Model 570 (POWER6). When running IOP-less, the following support applies to this adapter: ► Port 0 is the modem port and supports: – V.92 56K Async PPP – V.92 data modem, – V.44 data compression – V.34 Fax modem and Fax functions such as ECM and 2D/1D conversion. ► Port 1Port 1 is the RVX port and supports multiple communications protocols, including synchronous operations. – V.92 56K Async SLIP/PPP – Fax – Bisync – SNA communications is supported through i5/OS V5R4 Enterprise Extender function and later releases. – X.21 One PCIe slot is required. Restrictions: ► IOP-less X.25 is not supported. ► Remote power on via ring-indicator is not supported. The #2893 is a Customer Install Feature.
#4723	**#4723 PCI 10 Mbps Ethernet Adapter** The #4723 PCI Ethernet IOA provides single attachment to one Carrier Sense Multiple Access/Collision Detect Local Area Network. The feature consists of an adapter card and internal code that supplies Ethernet version 2 and IEEE 802.3 MAC plus IEEE 802.2 LLC functions. The Ethernet/IEEE 802.3 IOA is capable of operating in half or full duplex mode. The #4723 has an RJ45 connector and a 15 pin D-Shell connector for attachment to client-supplied cabling. A vendor AUI Ethernet cable or RJ45 twisted pair cable must be ordered separately. The #4723 is not supported by the #2790 PCI Integrated Netfinity Server or the #2791/#2799 PCI Integrated xSeries Server. Both SNA and TCP/IP protocols are directly supported. Minimum operating system level: OS/400 V4R5 Supported on Models 520 (9406 only), 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #4723 is a Customer Install Feature. **Notes:** ► The #4723 IOA requires a supporting IOP. ► The #2723/#9723 PCI 10 Mbps Ethernet Adapter are the same card except the they were designated as IBM CE installed. ► The #2723, #9723, or #4723 are no longer marketed. A #5701 is the recommended replacement.

#4745	**#4745 PCI 2-line WAN IOA** The #4745 supports up to two multiple protocol communications ports when one or two of the following cables are attached: ► #0348 V.24/EIA232 20-ft (6 m) PCI cable ► #0349 V.24/EIA232 50-ft (15 m) PCI cable ► #0353 V.35 20-ft PCI cable ► #0354 V.35 50-ft PCI cable ► #0355 V.35 80-ft PCI cable ► #0356 V.36 20-ft PCI cable ► #0358 V.36 150-ft PCI cable ► #0359 X.21 20-ft PCI cable ► #0360 X.21 50-ft PCI cable ► #0365 V.24/EIA232 80-ft PCI cable ► #0367 Operations Console PCI Cable The #4745 can be directly attached to a Linux partition. When ordered as #0608 - Direct Attach #4745 PCI WAN IOA, an IOP is not required. When directly attached to a Linux partition, the #4745 cannot be accessed by OS/400 partitions. When #0140 Logical Partitioning Specify is ordered, multiple #0367 cables can be ordered to connect the operations console in each partition. One #0367 cable per #4745. When the #4745 is selected to support ECS, one of the following cables must be specified: ► #0348 V.24/EIA232 20-ft (6 m) PCI cable (Default) ► #0349 V.24/EIA232 50-ft (15 m) PCI cable ► #0365 V.24/EIA232 80-ft PCI cable Restrictions: Requires an IOP Minimum operating system level: OS/400 V4R5 Supported on Models 520 (9406 only), 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #4745 is a Customer Install Feature. The #4745 was withdrawn from marketing as of 01 June 2006.
#4750	**#4750 PCI ISDN BRI U IOA** The #4750 is a four-port (8 channel) ISDN BRI (basic rate) full sized PCI card. Each port consists of 2B+D configuration. The #4750 is the “U”-bus (2 wire) version of the ISDN BRI PCI card. The #4750 supports the following protocols: ► PPP (communicates with remote analog modems (V.90) as well as with remote ISDN devices) ► IDLC ► Fax Four 30-ft (9.3 m) RJ-45 to RJ-45 network cables are shipped with each #4750. For configuration purposes, each #4750 counts as eight lines (two lines per port) toward the system communication maximums. Supports full duplex. The #4750 requires country (region) certification or homologation. A full sized PCI card slot is required. Maximum: One per IOP Minimum operating system level: OS/400 V4R5; OS/400 V5R1 is the last release to support the #4750. Supported in Models 820, 830, 840, 890, #5075, #0578, #5078, #5074, #5079, #8079, #8093/5097, #9074, and #9079. The #4750 is a Customer Install Feature.
#4751	**#4751 PCI ISDN BRI S/T IOA** The #4751 is a four-port (eight channel) ISDN BRI (basic rate) full sized PCI card. Each port consists of a 2B+D configuration. The #4751 is the “S/T”-bus (four wire) version of the #4750 PCI ISDN BRI U IOA. The #4751 requires a network terminating device in the circuit. In the United States and Canada, this must be provided by the client. In other countries or regions, it is most likely provided by the telephone company. The #4751 supports the following protocols: ► PPP (communicates with remote analog modems (V.90) as well as with remote ISDN devices) ► IDLC ► Fax Four 30-ft (9.3 m) RJ-45 to RJ-45 network cables are shipped with each #4751. For configuration purposes, each #4751 counts as eight lines (two lines per port) towards the system communication maximums. Supports full duplex. Maximum: One per IOP. The #4751 requires country or region certification or homologation. A full sized PCI card slot is required. Minimum operating system level: OS/400 V4R5; OS/400 V5R1 is the last release to support the #4751. Supported in Models 270, 820, 830, 840, #5075, #0578, #5074, #5078, #5079, #8079, #8093/#5097, #9074, and #9079. The #4751 is a Customer Install Feature.

#4761	**#4761 PCI Integrated Analog Modem** The #4761 is based on the latest Digital Signal Processor (DSP) technology. The #4761 allows the modem function to be integrated into the IOA and supports multiple analog modem ports (eight phone lines). The #4761 supports the following protocols without the need for an external modem: ► SLIP/PPP (uses V.90, so the maximum line speed is 56 Kbps) ► SDLC (uses V.34, so the maximum line speed is 33.6 Kbps) ► Fax (uses V.17 to achieve a 14.4 Kbps maximum line speed) OS/400 V5R1 is the last release to support non-Fax functions on the #4761. An ASYNC line description is required for Fax and can only be used for Fax. The ECS line is not supported. To the iSeries or AS/400e server, the #4761 appears like a single IOA with eight individual line resources available. Eight 30-ft (8 m) phone cables are shipped with each #4761. For configuration purposes, each #4761 counts as eight communications lines toward the system communication maximums. Supports full duplex. The #4761 requires country or region certification or homologation. A full sized PCI card slot is required. Minimum operating system level: OS/400 V4R5; not supported on i5/OS V5R3 and later releases. Supported in Models 820, 830, 840, #5075, #0578, #5078, #5074, #5079, #8079, #8093/#5097, #9074, and #9079. The #4761 is a Customer Install Feature.
#4801	**#4801 PCI Cryptographic Coprocessor** The #4801 is a hardware cryptography solution. The #4801 is a half-length PC form-factor PCI card that offers rich cryptography function, secure storage of cryptographic keys, and 12 MBps performance (at the card level) for bulk data encryption and triple DES capability. The #4801 is available worldwide. The level of cryptographic function is determined by the Cryptographic Access Provider licensed program that is downloaded to the adapter. If your application requires a Federal Information Processing Standard (FIPS) 140-1 certified, tamper-resistant module for storing cryptographic keys, financial PIN processing, or both, then the #4801 PCI Cryptographic Coprocessor should be your choice. FIPS 140-1 is a U.S. Government National Institute of Standards and Technology (NIST) administered standard and certification program for cryptographic modules. Due to temperature requirements (card temperature must not drop below 5 degrees F (-15 degrees C)), the #4801 is shipped separately from the system in special packing. Minimum operating system level: OS/400 V4R5 Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #4801 is a Customer Install Feature. The #4801 was withdrawn from marketing as of 1 June 2006. A #4806 PCI-X Cryptographic Coprocessor is the recommended replacement. **Note**: The #4801 is the System i hardware feature code for the IBM 4758-023 PCI Cryptographic Coprocessor. Other features codes that are associated with the 4758 include: ► #4802: CCIN = 4758-023 ► #4803: CCIN = 4548-002 ► #4804: CCIN = 4758-002
#4805	**#4805 PCI Cryptographic Accelerator** The #4805 provides improved performance for high transaction rate secure Web applications that use the Secure Sockets Layer (SSL) or Transport Layer Security (TLS) protocols. The process of using SSL/TLS secure Web connections is compute intensive. The Cryptographic Accelerator can be used to off-load cryptographic processing from a main CPU. SSL/TLS secure Web connections are used to protect information (for example, credit card number) as it is transferred over the Internet, such as between a Web browser and a server. The Cryptographic Accelerator is targeted to high transaction rate secure Web applications using SSL/TLS. There is a maximum of two per IOP. The #4805 requires an available PCI card slot under a feature IOP, not under a base or embedded IOP in the system unit. Minimum operating system level: OS/400 V5R2 Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #4805 is a Customer Install Feature. The #4805 was withdrawn from marketing as of 01 June 2006. **Note**: The #4805 is the System i hardware feature code for the 2058 PCI Cryptographic Coprocessor.

#4806	**#4806 PCI-X Cryptographic Coprocessor** The #4806 PCI-X Cryptographic Coprocessor provides both cryptographic coprocessors and secure-key cryptographic accelerator functions in a single PCI-X card. The coprocessor functions are targeted to banking and finance applications. Financial PIN processing and Europay, Master Card, Visa (EMV) credit card functions are provided. EMV is a standard for integrated-chip based credit cards. The secure-key accelerator functions are targeted to improving the performance of i5/OS SSL transactions. The #4806 provides the security and performance required to support e-business and emerging digital signature applications. The #4806 provides secure storage of cryptographic keys in a tamper-resistant hardware security module (HSM), which is designed to meet FIPS 140 security requirements. FIPS 140 is a U.S. Government NIST administered standard and certification program for cryptographic modules. The firmware for the #4806 is available on a separately ordered/distributed CD. This firmware is an LPO product: 5733-CY1 Cryptographic Device Manager. Supported on all POWER5 and POWER6 models (except 515 models) and 9411-100. This feature has country-specific usage. Refer to your IBM representative in your country for availability or restrictions. **Supported on all POWER5 and POWER6 models (except 515 models)** **Notes**: ► The #4806 also requires licensed program 5722-AC3 Cryptographic Access Provider to enable data encryption, up through i5/OS V5R3. The 5722-ACx products were required through i5/OS V5R3,because these products contained a Function Control Vector (FCV) for the coprocessor. The FCV is used to enable cryptography on the card. 5722-AC3 is not available starting with i5/OS V5R4. Starting with V5R4, the FCV has been moved i5/OS, 5722-SS1, itself. ► #4806 is the System i hardware feature code for the IBM 4764-000 PCI-X Cryptographic Coprocessor. ► On System i configurations, the #4806 is a Customer Install Feature.
#4811 #4812 #4813 #9812 #9813	**#4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server** The #4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server contains a 2.0 GHz processor with 2 MB integrated L2 cache. The #4811 is supported in the 520 and 525 system tower. The #4812 is supported in the 550, 570 (POWER6), 595, 800, 810, 825, 870 and 890 system towers and in the #0588, #0595, #5088, #5095, #5074, #5079, #5094 and #5294 expansion towers. The #4813 is supported in the 570 and 570 (POWER6) system tower and in the #5790 PCI Expansion Drawer. The #9812 and #9813 are functionally identical to #4812 and #4813 but are included in the base with orders for Enterprise Editions on Models 550, 595 and 570. The #4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server has two memory slots and supports up to 2 GB of memory. Both slots must always contain a pair of identical memory features. When the #4811, #4812, #4813, #9812, or #9813 is ordered, the configurator adds two #9726 base 512 MB server memory features to the order. The two #9726 features can be replaced with two #8546 optional base 1 GB server memory features. The following main storage cards provide memory for the #4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server: ► #9726 - Base 512 MB Server Memory (Initial order only) ► #8546 - Opt Base 1 GB Server Memory (Initial order only) ► #0446 - 512 MB DDR Server Memory (Upgrade only) ► #0447 - 1 GB DDR Server Memory (Upgrade only) The #4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server occupies two PCI slots and requires an IOP #9744, #9844 or #2844 to drive it. The configurator adds no charge feature #9744 Base PCI IOP to the order. However the #9744 can be removed from the order for PCI slot conservation. The IOP can be shared with other IOAs, but only one #4811/#4812/#4813/#9812/#9813 is permitted per IOP. Placement of the #4811 is limited to slot P1-C4 on the Model 520 or 525 system unit. The #4811 hangs over slot P1-C5 and occupies two PCI slots. The #4811 Integrated xSeries Server is mutually exclusive with #6594 - 4-Disk Slot Expansion, as the #6594 repositions the SCSI cable connector so that a long card can be placed in card slot 4 and forces card slot 5 to be a short card. Therefore, you cannot have #4811 PCI Integrated xSeries Server in the 520 or 525 system unit if you also have a #6594. Placement of the #4812/#9812 is limited to specific PCI slots within the 550, 595, 800, 810, 825, 870 and 890 system towers and in the various expansion towers. Placement of the #4813/#9813 is limited to specific PCI slots within the 570 system unit and #5790 PCI Expansion Drawer.

#4811 #4812 #4813 #9812 #9813 (contd.)	**#4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server** The #4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server includes two embedded 1000/100/10 Mbps UTP Ethernet LAN ports for attachment to IEEE standard 802.3Z high-speed (1 Gbps) Ethernet LANs. The Ethernet LAN ports can also be used to connect to existing 10 and 100 Mbps Ethernet LANs. The adapter supports UTP CAT 5 or higher media interface and TCP/IP. The #4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server ships with a standard keyboard/mouse splitter cable and supports either a standard or USB 1.1 keyboard or mouse. An SVGA video port is included to connect a display. The #4811/#4812/#4813/#9812/#9813 PCI-X Integrated xSeries Server runs Windows or Linux. ► The supported versions of Windows are: – Windows 2000 Server and 2000 Advanced Server – Windows Server 2003 Standard, Enterprise and Web Edition ► The supported versions of Linux are: – Red Hat Enterprise Linux ES 3 – Red Hat Enterprise Linux AS 3 For the latest information about Windows on iSeries and eServer i5, see: http://www.ibm.com/eserver/iseries/integratedxseries/ For the latest information about Linux on Series and eServer i5, see: http://www.ibm.com/eserver/iseries/integratedxseries/linux The following rules apply when ordering the PCI-X Integrated xSeries Server: ► The #0325 IPCS Extension Cable for Windows is the default (but can be removed). ► The #1700 IPCS Keyboard and Mouse for Windows is the default (in those countries or regions offering it). ► Requires a display and must be connected to the #4811/#4812/#4813/#9812/#9813 to support Windows 2000. ► A display is not required for Windows 3000. If no display is connected the Virtual system Console is used. For a non-U.S. keyboard, mouse and display, see: http://www.ibm.com/eserver/iseries/integratedxseries/ Restrictions: ► Native OS/400 functions and external host LAN are not supported. ► TCP/IP only supported on the Ethernet LAN ports. ► Not supported in system tower of Model 820, 830, 840 or earlier. Minimum operating system level: i5/OS V5R3 The #4811, #4812, #4813, #9812, and #9813 are Customer Install Features.
#4815	**#4815 PCI ATM 155 Mbps UTP OC3** The #4815 is a 155 Mbps ATM PCI card that allows the iSeries or AS/400e server to be attached to an ATM network using the Unshielded Twisted Pair (UTP-5) interface. This interface is intended for connection to both local area switches and direct connection to service provider equipment. The #4815 is typically used where 155 Mbps speeds are required over distances of less than 100m. Technical specifications and industry standards supported are available at the IP/MPLS Forum Web site at: http://www.ipmplsforum.org/index.shtml Minimum operating system level: OS/400 V4R5; not supported on i5/OS V5R3 and later releases Supported on Models 800, 810, 820, 825, 830, 840, 870, and 890. The #4815 is a Customer Install Feature.
#4816	**#4816 PCI ATM 155 Mbps MMF** The #4816 is a 155 Mbps ATM PCI card that allows the iSeries or AS/400e server to be attached into an ATM network using the MMF 62.5 µm interface. This interface is intended for connection to both local area switches and direct connection to service provider equipment. The #4816 is typically used where 155 Mbps speeds are required over distances of less than 2 km. Technical specifications and industry standards supported are available at the IP/MPLS Forum Web site at: http://www.ipmplsforum.org/index.shtml The #4816 is orderable for use in OS/400 V4R5 secondary partitions. For OS/400 V5R1 systems or partitions, order the #2817 PCI 155 Mbps MMF ATM IOA. Minimum operating system level: OS/400 V4R5; not supported with i5/OS V5R3 Supported on Models 800, 810, 820, 825, 830, 840, 870, and 890. The #4816 is a Customer Install Feature.

#4818	**#4818 PCI ATM 155 Mbps SMF OC3** The #4818 is a 155 Mbps ATM PCI card that allows the iSeries or AS/400e server to be attached to an ATM network using the Single-Mode Fiber (SMF) 9 µm interface. This interface is intended primarily for direct connection to service provider equipment. The #4818 is typically used where 155 Mbps speeds are required over distances of from 16 to 40 km. Technical specifications and industry standards supported are available at the IP/MPLS Forum Web site at: http://www.ipmplsforum.org/index.shtml Minimum operating system level: OS/400 V4R5; not supported with i5/OS V5R3 Supported on Models 800, 810, 820, 825, 830, 840, 870, and 890. The #4818 is a Customer Install Feature.
#4838	**#4838 PCI 100/10 Mbps Ethernet IOA** The #4838 PCI 100/10 Mbps Ethernet IOA feature allows the IB System i model to attach to standardized 100 Mbps high-speed Ethernet LANs and allows attachment to existing 10 Mbps Ethernet LANs. The adapter comes standard with an RJ45 connector for attachment to UTP-5 media. Cabling for 10 Mbps must be CAT-3 or CAT-5, and cabling for 100 Mbps must be CAT-5 that meets or exceeds Industry Standard EIA/TIA T568A or T568B. The maximum cable length is 100m. This Ethernet IEEE 802.3 IOA is capable of operating in half or duplex mode. If the #4838 is selected to run on the #2790 PCI Integrated Netfinity Server or #2791/#2799 PCI Integrated xSeries Server, then specify code #0224 is required for each #4838 selected to run on the #2790/ #2791/#2799. The #4838 can be directly attached to a Linux partition. When ordered as #0607 - Direct Attach #4838 PCI 100/10 Mbps Ethernet IOA, an IOP is not required. When directly attached to a Linux partition, the #4838 cannot be accessed by OS/400 partitions. Both SNA and TCP/IP protocols are directly supported. Supports LAN console. Minimum operating system level: OS/400 V4R5 Supported on Models 520 (9406 only), 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #4838 is a Customer Install Feature. **Notes**: ► The #4838 IOA requires a supporting IOP. ► The #2838 PCI 100/10 Mbps Ethernet Adapter and the #4838 are the same card; the #2838 was designated as IBM CE installed. ► The #2838 and #4838 were withdrawn from marketing as of 01 October 2004. A #5701 is the recommended replacement.
#4960	**#4960 Cryptographic Accelerator** The IBM e-business Cryptographic Accelerator is a short form factor PCI SSL hardware accelerator adapter. For Secure Web transaction, SSL operations is a key requirement. To do this, public-key cryptographic operations using SSL handshake protocol is employed. The IBM e-business Cryptographic Accelerator is a hardware cryptographic solution that off-loads this compute-intensive public-key cryptographic processing from the host. Minimum operating system level: AIX 5L for POWER V5.2 Supported for conversion only. Supported on Models 570, 570 (POWER6), and 595. The #4960 is a Customer Install Feature. The #4960 was withdrawn from marketing as of 01 December 2005.
#4963	**#4963 PCI Crypto Coprocessor** The #4963 is a 2/3 length PCI adapter that combines hardware and software to provide a wide variety of security services. The PCI Cryptographic Coprocessor (FIPS-4) is a second generation adapter of the Cryptographic Coprocessor family that provides high performance secure hardware engines for secure internet transactions such as transmitting data, verifying electronic signatures, bulk data encryption and decryption. In addition, the card is enclosed in a tamper-proof enclosure to restrict access to on card resources, designed to FIPS 140-1 Level 4 standards. Minimum operating system level: AIX 5L for POWER V5.2 The #4960 is a Customer Install Feature. The #4960 was withdrawn from marketing as of 15 October 2004.

#5700	**#5700 PCI 1 Gbps Ethernet IOA** The #5700 PCI 1 Gbps Ethernet IOA allows an iSeries server to attach to IEEE standard 802.3Z high-speed (1 Gbps) Ethernet LANs. It can also be used to connect to existing 10 Mbps or 100 Mbps Ethernet LANs by using switches with 10, 100, or 1000 Mbps ports. It cannot directly attach to 10 Mbps or 100 Mbps LANs. Crossover cables are not supported. The #5700 adapter supports a multimode fiber interface with a 62.5 µm or 50.0 µm cable requirement. The #5700 adapter has a duplex LC fiber optic connector for attachment to client-supplied cabling. The #5700 uses shortwave technology (around 500m maximum). The 5700 supports auto-negotiation but only negotiates to the gigabit fiber standard of 1000/full. The #5700 PCI 1 Gbps Ethernet IOA can be run under a #2792 PCI Integrated xSeries Server or #2892 PCI Integrated xSeries Server. If a #5700 is controlled by a #2x92 Integrated xSeries Server, then #0226 1 Gbps Ethernet Specify must be ordered. Order one #0226 for each #5700 PCI 1 Gbps Ethernet IOA controlled by an Integrated xSeries Server. When the #5700 is not installed in an Integrated xSeries Server, there is a maximum of one #5700 per Multi-adapter Bridge Boundary. Combinations of #5700s controlled by Integrated xSeries Server-controlled and controlled by PCI IOPs are allowed within a Multi-adapter Bridge Boundary. The #5700 can be directly attached to a Linux or AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. When ordered as #0620 - Direct Attach #5700 PCI 1 Gbps Ethernet IOA, an IOP is not required. When directly attached to a Linux partition, the #5700 cannot be accessed by OS/400 partitions. PCI card slots required: One 32-bit slot in the Model 830, 840, SB2, or SB3 system units, or in the #0578, #5074, #0574, #5075, #5078, #5079, #8079, #8093-002, #9074, #9079 PCI Expansion Towers. There are exceptions for 32-bit slot placement in the Model 270 and 810 system units. See the system unit schematics in 15.8, “9406 Model 810 system unit schematic” on page 576, and *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, or *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for backplane layout, PCI slot positions, and allowable #5700 slot plugging rules by model. The following rules do not apply when the #5700 is controlled by a #2790/#2890 PCI Integrated Netfinity Server or by a #2791/#2891, #2792/#2892, #4710/#4810, or #2799/#2899 PCI Integrated xSeries Server. ► Must be placed in a 64-bit slot in the Model 825, 870, 890 or in the #0588, #0595, #5094/#0694, #5088, #5095, #5294, #8094, and #9094 towers. ► Limit the quantity of one #5700 adapter per Multi-adapter Bridge boundary. ► Can be combined with a maximum of one other IOA on an IOP. Restrictions: ► SNA is supported using Enterprise Extenders starting with i5/OS V5R4. ► Does not support LAN console. ► IPX connections not supported. ► The 1000 Mbps speed is not supported in Half Duplex (HDX) mode. Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. Minimum operating system level: OS/400 V5R2 with PTF MF33086 or i5/OS V5R3 MF33087. The #5700 is a Customer Install Feature.

#5701	**#5701 PCI 1 Gbps Ethernet UTP IOA** The #5701 PCI 1 Gbps Ethernet UTP IOA allows a System i server to attach to IEEE standard 802.3z high-speed (1 Gbps) Ethernet LANs. The #5701 can directly connect to 10 Mbps or 100 Mbps Ethernet LANs, however, it does not run at gigabit speeds in this configuration. Crossover cables are not supported. The #5701 adapter supports a UTP CAT 5 media interface. A #5701 PCI 1 Gbps Ethernet UTP IOA can be run under a #2792 PCI Integrated xSeries Server or #2892 PCI Integrated xSeries Server. If a #5701 is controlled driven by a #27x2 Integrated xSeries Server, then #0226 1 Gbps Ethernet Specify must be ordered. Order one #0226 for each #5701 controlled by an Integrated xSeries Server. When the #5701 is not installed in an Integrated xSeries Server, there is a maximum of one #5701 per Multi-adapter Bridge Boundary. Combinations of Integrated xSeries Server controlled and PCI IOP controlled #5701s within an Multi-adapter Bridge Boundary are allowed. The #5701 supports auto-negotiation if configured as *Auto/*Auto for gigabit interfaces and negotiates to the highest capability of the link partner. This is usually 100/full or 1000/full. When the link partner is not capable of auto-negotiation then hard coded values can be entered (for example, 100/half, 1000/full). In this case, auto negotiation is turned off and the configured speed is used. The #5701 can be directly attached to a Linux partition. When ordered as #0621 - Direct Attach #5701 PCI 1 Gbps Ethernet UTP IOA, an IOP is not required. When directly attached to a Linux partition, the #5701 cannot be accessed by OS/400 partitions. PCI card slots required: One 32-bit slot in the Model 830, 840, SB2, or SB3 system units, or in the #0578, #5074, #0574, #5075, #5078, #5079, #8079, #8093-002, #9074, #9079 PCI Expansion Towers The following rules do not apply when the #5701 is controlled by a #2790/#2890 PCI Integrated Netfinity Server or by a #2791/#2891, #2792/#2892, #4710/#4810, or #2799/#2899 PCI Integrated xSeries Server. ► Must be placed in a 64-bit slot in the Model 825, 870, 890 or in the #0588, #0595, #5094/#0694, #5088, #5095, #5294, #8094, and #9094 towers. ► Limit the quantity of one #5701 adapter per Multi-adapter Bridge boundary. ► Can be combined with a maximum of one other IOA on an IOP. Restrictions: ► SNA is supported using Enterprise Extenders starting with i5/OS V5R4. ► IPX connections not supported. ► Does not support LAN console. ► The 1000 Mbps speed is not supported in Half Duplex (HDX) mode. Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. Minimum operating system level: OS/400 V5R2 with PTF MF33086 or i5/OS V5R3 MF33087. The #5701 is a Customer Install Feature.
#5706	**#5706 PCI-X 1 Gbps Ethernet-TX IOA** The #5706 PCI-X 1 Gbps Ethernet-TX IOA is a 2-port 1000/100/10 Mbps Base-TX Ethernet PCI-X Adapter. The #5706 is a full duplex, dual ported, Gigabit Ethernet adapter designed with highly integrated components. The #5706 adapter can be configured to run each port at 1000, 100, or 10 Mbps data rates. The #5706 interfaces to the system via a PCI or PCI-X bus and connects to a network using a 4-pair CAT-5 UTP cable for distances of up to 100m. The #5706 adapter conforms to the IEEE 802.3ab 1000 Base-T standard. Jumbo frames are supported when running at the 1000 Mbps speed. The #5706 can be directly attached to a Linux or AIX partition as supported with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. When ordered as #0643 - Direct Attach #5706 PCI-X Gbps Ethernet-TX IOA an IOP is not required. When directly attached to a Linux/AIX partition, the #5706 cannot be accessed by OS/400 partitions. The #5706 does not require (is not supported by) a PCI IOP, even in an OS/400 partition. For optimum performance, place the adapter in a 64 bit PCI-X card slot. Restrictions: ► SNA is supported using Enterprise Extenders starting with i5/OS V5R4. ► LAN console is supported with i5/OS V5R3 and Licensed Internal Code V5R3M5, i5/OS V5R4 and later releases. When the #5706 is used for LAN console, one port is dedicated to console function. ► The 1000 Mbps speed is not supported in Half Duplex (HDX) mode.

#5706 (contd.)	**#5706 PCI-X 1 Gbps Ethernet-TX IOA** The following functions are supported by AIX, but are not supported by i5/OS with the #5706 PCI-X 1 Gbps Ethernet-TX IOA: ► *Large Send*, sometimes known as *TCP Segmentation*, offloads the TCP segmentation operation from the IP layer to the adapter for outgoing (transmit side) TCP segments. ► *Checksum Offload* offloads the TCP/UDP Checksum Operation or workload from the CPU to the adapter. Checksum Offload is supported by Linux with the 2.6 kernel, for example SLES9xx. Minimum operating system level: i5/OS V5R3 with PTF MF33087 Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models and 9411-100. The #5706 is a Customer Install Feature.
#5707	**#5707 PCI-X 1 Gbps Ethernet-SX IOA** The #5707 PCI-X 1 Gbps Ethernet-SX IOA is a 2-port Gigabit Ethernet-SX PCI-X Adapter that provides two 1 Gbps (1000 Base-SX) full-duplex Ethernet LAN connections with throughput on a standard shortwave multimode optical cable that conforms to the IEEE 802.3z standard. The adapter supports distances of 260m for 62.5 µm MMF and 550m for 50.0 µm MMF. Jumbo frames are supported when running at the 1000 Mbps speed. The #5707 PCI-X 1 Gbps Ethernet-SX IOA supports Large Send (sometimes known as *TCP segmentation*). This function offloads the TCP segmentation operation from the IP layer to the adapter for outgoing (transmit side) TCP segments. The #5707 also supports Checksum Offload, which offloads the TCP/UDP Checksum Operation or workload from the CPU to the adapter. The #5707 does not require (is not supported by) a PCI IOP, even in an i5/OS partition. For optimum performance, the adapter should be placed in a 64 bit PCI-X card slot whenever possible. The 2-port IBM Gigabit Ethernet-SX PCI-X Adapter incorporates an LC type connector on the card. Restrictions: ► SNA is supported using Enterprise Extenders starting with i5/OS V5R4. ► LAN console is supported with i5/OS V5R3 and Licensed Internal Code V5R3M5, i5/OS V5R4 and later releases. When the #5707 is used for LAN console, one port is dedicated to console function. ► Half duplex (HDX) mode is not supported. The following functions are supported by AIX, but are not supported by i5/OS with the #5707 PCI-X 1 Gbps Ethernet-TX IOA: ► *Large Send*, sometimes known as *TCP Segmentation*, offloads the TCP segmentation operation from the IP layer to the adapter for outgoing (transmit side) TCP segments. ► *Checksum Off load* offloads the TCP/UDP Checksum Operation or workload from the CPU to the adapter. Checksum Offload is supported by Linux with the 2.6 kernel, for example SLES9xx. Minimum operating system level: i5/OS V5R3 with MF33087. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models and 9411-100. The #5707 is a Customer Install Feature.
#5718	**#5718 10 Gbps Ethernet Adapter (short reach)** The #5718 provides 10 Gigabit Ethernet PCI-X based server connections. Supports distances of up to 33m using 62.5um multimode fiber or 300m using 50 µm multimode fiber with 2000 MHz km minimum model bandwidth at 850 nanometer (nm). Adapter connector type is LC. Minimum operating system level: AIX 5L for Power V5.2S for IBM eServer or later Supported on Models 520, 525, 550, 570, 570 (POWER6), and 595. The #5718 was withdrawn from marketing as of 01 January 2006.
#5719	**#5719 10 Gbps Ethernet Adapter (long reach)** The 10 Gigabit Ethernet PCI-X-based server provides connections over a maximum of 10km of 1310 nm single-mode fiber optic cable. The adapter conforms to the IEEE 802.3ae standard. The adapter requires 9 µm single-mode fiber optic cables and uses an SC connector type for connecting into network infrastructure components like 10 Gigabit Ethernet switch or router with SC connectors. Minimum operating system level: AIX 5L for POWER V5.2S for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, SUSE Linux Enterprise Server 9 for POWER or later Supported on Models 520, 525, 550, 570, 570 (POWER6), and 595. The #5719 was withdrawn from marketing as of 01 January 2006.

#5721	**#5721 PCI-X 10Gbps Ethernet-SR IOA** The #5721 PCI-X 10Gbps Ethernet-SR IOA provides 10 Gbps Ethernet server connection using a PCI-X DDR IOA. Supports distances of up to 33m using 62.5um multimode fiber or 300m using 50um multimode fiber with 2000 MHz km minimum model bandwidth at 850nm. Adapter connector type is LC. The #5721 does not support SNA. The #5721 is a smart IOA and operates only in IOP-less mode, even when used by i5/OS. Minimum operating system level: i5/OS V5R4 or later, AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 4 or later, SUSE Linux Enterprise Server 9 for POWER or later Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models and 9411-100. Restriction: SNA supported with i5/OS AnyNet or starting with V5R4 Enterprise Extenders (EE) support.
#5722	**#5722 PCI-X 10Gbps Ethernet-LR IOA** The #5722 PCI-X 10Gbps Ethernet-LR IOA provides 10 Gbps Ethernet server connection using a PCI-X DDR IOA. Supports distances of up to 10 kilometers of 1310nm 9um single-mode fiber optic cable. The #5722 conforms to the IEEE 802.3ae standard. The #5722 requires 9um single-mode fiber optic cables and uses an SC connector type for connecting into network infrastructure components like 10 Gbps Ethernet switch/router with SC connectors. The #5722 does not support SNA. The #5722 is a smart IOA and operates only in IOP-less mode, even when used by i5/OS. Minimum operating system level: i5/OS V5R4 or later, AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 4 or later, SUSE Linux Enterprise Server 9 for POWER or later Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models and 9411-100. Restriction: SNA supported with i5/OS AnyNet or starting with V5R4 Enterprise Extenders (EE) support.
#5723	**#5723 2-Port Async EIA -232 PCI IOA** The #5723 provides connection for two asynchronous EIA-232 devices. Ports are programmable to support EIA-232 protocols at a line speed of 128 Kbps. Provides two asynchronous ports. Occupies one PCI slot. Minimum operating system level: AIX 5L for POWER, OS/400 V5R2 for iSeries Supported on all POWER5 and POWER6 models. The #5723 is a Customer Install Feature.
#5740	**#5740 1Gbps BaseT Ethernet (4-port)** The #5740 provides a 4-port 10/100/1000 Mbps Base Ethernet adapter, which supports four 1-Gigabit ports on a single adapter, delivering increased bandwidth for slot-constrained servers and providing high connectivity and reliability using two integrated, dual-port Gigabit Ethernet controllers. Characteristics include: ► Supports 64-bit Bus Mastering on the PCI-X bus ► Compliant with IEEE 802.3ab 1000Base-T, 803.u 100Base-TX, 802.3 10Base-T standards and supports 802.1q VLAN tagging ► Supports interrupt moderation ► TCP Segmentation off-load and encapsulation in hardware ► Checksum off-loading of IP, TCP, and UDP frame ► Remote Management Support ► Delivers increased connectivity while significantly reducing CPU Utilization ► Provides 10/100/1000 Mbps connectivity through four RJ-45 ports using CAT-5 cables ► Support for Boot ROM on two ports ► Supports advanced cable diagnostics Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer, Red Hat Enterprise Linux AS for POWER Version 4, SUSE Linux Enterprise Server 9 for POWER Supported on all POWER5 and POWER6 models

#5749	**#5749 4Gbps PCI-X Fibre Channel 2-Port** The 4 Gigabit Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single or dual initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote torage. The adapter will auto-negotiate for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps or 4 Gbps of which the device or switch is capable. Distances of up to 500 meters running at 1 Gbps data rate, up to 300 meters running at 2 Gbps data rate, and 4 Gbps data rate up to 150 meters are supported between the adapter and an attaching device or switch. When used with IBM Fibre Channel storage switches supporting long-wave optics, distances up to 10 kilometers are capable of running at either 1 Gbps, 2 Gbps, or 4 Gbps data rates. This adapter can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with SC type fiber connector(s), use of an LC-SC 50 Micron Fiber Converter Cable (#2456) or an LC-SC 62.5 Micron Fiber Converter Cable (#2459) is required. Minimum operating system levels: ► AIX direct support not available. ► LINUX direct support not available. ► IBM i (formerly i5/OS) 6.1 or later. This is a smart IOA (it can run with or without a supporting IOP). It supports IBM DS8000 attachment, multipath, and an IBM i load source disk. A supported tape device may be used for alternale IPL. Customers can mix tape and disk on the same Fibre Channel adapter, but there may be significant performance considerations with concurrent tape and disk operations. The tape libraries supported by IBM i 6.1 on this adapter include: ► 3592 with 3592 J1A / 3592 E05 drives ► 3584 (TS3500) with LTO 2 or LTO 3 drives ► 3583 with 3592 J1A / 3592 E05 drives ► 3494 with 3592 J1A / 3592 E05 Supported on POWER6 systems. The #5749 is a Customer Set Up feature. Additonal tape support is planned . Refer to the following IBM Web sites for the latest support information: ► IBM System Storage and TotalStorage® products at: http://www-03.ibm.com/systems/storage/product/index.html ► IBM Prerequisites at: http://www-912.ibm.com/e_dir/eServerPrereq.nsf/
#5767	**#5767 PCIe 1Gb Ethernet UTP 2Port** The #5767 IBM 2-Port 10/100/1000 Base-TX Ethernet PCI Express (PCIe) Adapter is a Full Duplex, dual ported, Gigabit Ethernet adapter. This adapter: ► Can be configured to run each port at 10, 100, or 1000 Mbps data rates. ► Interfaces to the system via a PCIe bus. (It is PCIe x4 capable and conforms to the PCIe 1.0a standard). ► Connects to a network using a 4-pair CAT-5 UTP cable for distances of up to 100m. ► Supports jumbo frames when running at the 1000 Mbps speed. ► The adapter conforms to the IEEE 802.3ab 1000Base-T standard. Maximum allowed Model 570 (POWER6): 15 (Initial order maximum: 15) Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5 or later, AIX 5.3 or AIX 6.1 or later, SUSE Linux Enterprise Server 9 for POWER Systems, SUSE Linux Enterprise Server 10 for POWER Systems or later, or Red Hat Enterprise Linux AS 4 for POWER or later Supported on Model 570 (POWER6). The #5767 is a Customer Install Feature.

#5768	**#5768 PCIe 1Gb Ethernet Fiber 2Port** The #5768 IBM 2-Port Gigabit Ethernet-SX PCI Express (PCIe) Adapter provides two 1 Gbps (1000Base-SX) full-duplex Ethernet LAN connections. This adapter offers the following features: ► Interfaces to the system via a PCIe bus. ► Is PCIe x4 capable and conforms to the PCIe 1.0a standard. ► Connects to a network using a standard shortwave multimode optical cable that conforms to the IEEE 802.3z standard. ► Supports distances of 260m for 62.5 µm MMF and 550m for 50.0 µm MMF. ► Supports jumbo frames when running at the 1000 Mbps speed. Maximum allowed Model 570 (POWER6): 15 (Initial order maximum: 15) Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5 or later, AIX 5.3 or AIX 6.1 or later; SUSE Linux Enterprise Server 9 for POWER Systems; SUSE Linux Enterprise Server 10 for POWER Systems or later; or Red Hat Enterprise Linux AS 4 for POWER or later Supported on Model 570 (POWER6). The #5768 is a Customer Install Feature.
#5773	**#5773 PCIe 4Gb Fibre Channel 1Port** The #5773 4 Gigabit Single Port Fibre Channel Adapter is a 64-bit address/ data, short form factor PCIe adapter with an LC type external fiber connector. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. The adapter auto-negotiates for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps or 4 Gbps of which the device or switch is capable. Distances up to 500 meters running at 1 Gbps data rate, up to 300 meters running at 2 Gbps data rate, and 4 Gbps data rate up to 150 meters are supported between the adapter and an attaching device or switch. When used with IBM Fibre Channel storage switches supporting long-wave optics, distances up to 10 kilometers are capable running at either 1 Gbps, 2 Gbps, or 4 Gbps data rates. The 4 Gigabit 1 PCIe Single Port Fibre Channel Adapter can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with a SC type fiber connector(s), use of an LC-SC 50 µm Fiber Converter Cable (#2456) or a LC-SC 62.5 Micron Fiber Converter Cable (#2459) is required. Refer to the following IBM Storage Subsystem Web page for additional supported server attachment information for IBM devices: http://www.ibm.com/servers/storage/product/products_pseries.html Consult with your IBM representative or Business Partner for additional information relative to any third party attachment. Maximum allowed: 8203-E4A: 3 8204-E8A: 3 9407-M15: 15 (Initial order maximum: 15) Minimum operating system levels: ► AIX 5.3 with the 5300-07 Technology Level or later. AIX 5.3 with the 5300-06 Technology Level with Service Pack 4 or later. AIX 6.1 or later. ► SUSE LINUX Enterprise Server 9 for POWER ► SUSE LINUX Enterprise Server 10 SP1 for POWER Systems, or later. ► Red Hat Enterprise Linux for POWER, Version 4.5 or later. Red Hat Enterprise Linux for POWER, Version 5.1 or later. Supported on POWER6 models. The #5773 is a Customer Set Up feature. Refer to the following IBM Web sites for the latest support information: IBM System Storage and TotalStorage products at: http://www.ibm.com/systems/storage/product/index.html IBM Prerequisites at: http://www-912.ibm.com/e_dir/eServerPrereq.nsf/

#5774	**#5774 PCIe 4Gb Fibre Channel 2-Port** The #5774 4 Gigabit Dual 1 Port Fibre Channel Adapter is a 64-bit address/ data, short form factor PCIe adapter with an LC type external fiber connector that provides single or dual initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. The adapter will auto-negotiate for the highest data rate be tween adapter and an attaching device at 1 Gbps, 2 Gbps, or 4 Gbps of which the device or switch is capable. Between the adapter and an attaching device or switch, the distances supported are up to: 500 meters running at 1 Gbps data rate, 300 meters running at 2 Gbps data rate, and 150 meters running at 4 Gbps data rate. When used with IBM Fibre Channel storage switches supporting long-wave optics, distances of up to 10 kilometers are capable running at either 1 Gbps, 2 Gbps, or 4 Gbps data rates. The 4 Gigabit PCIe Dual Port Fibre Channel Adapter can be used to attach devices either directly or by means of Fibre Channel Switches. If attaching a device or switch with a SC type fiber connector(s), use of an LC-SC 50 Micron Fiber Converter Cable (#2456) or a LC-SC 62.5 Micron Fiber Converter Cable (#2459) is required. Maximum allowed: 15 (Initial order maximum: 15) Minimum operating system levels: ► AIX 5.3 with the 5300-07 Technology Level or later. AIX 5.3 with the 5300-06 Technology Level with Service Pack 4 or later. AIX 6.1 or later. ► SUSE LINUX Enterprise Server 9 for POWER. ► SUSE LINUX Enterprise Server 10 SP1 for POWER Systems, or later. ► Red Hat Enterprise Linux for POWER, Version 4.5 or later. Red Hat Enterprise Linux for POWER, Version 5.1 or later. ► IBM i (formerly i5/OS) 6.1 or later. This is a smart IOA (can run with or without a supporting IOP). It supports IBM DS8000 attachment, multipath, and an IBM i load source disk. A supported tape device may be used for alternale IPL. Customers can mix tape and disk on the same Fibre Channel adapter, but there may be significant performance considerations with concurrent disk and tape operations. The tape libraries supported by IBM i 6.1 on this adapter include: ► 3592 with 3592 J1A / 3592 E05 drives ► 3584 (TS3500) with LTO 2 or LTO 3 drives ► 3583 with 3592 J1A / 3592 E05 drives ► 3494 with 3592 J1A / 3592 E05 Supported on POWER6 models. The #5774 is a Customer Set Up feature. Additonal tape support is planned . Refer to the following IBM Web sites for the latest support information: ► IBM System Storage and TotalStorage products at: http://www-03.ibm.com/systems/storage/product/index.html ► IBM Prerequisites at: http://www-912.ibm.com/e_dir/eServerPrereq.nsf/
#5783	**#5783 PCI-X iSCSI HBA Copper** The #5783 is a 1 Gbps copper iSCSI target host bus adapter (HBA), which is used to connect to the iSCSI initiator HBAs installed in selected System x models or IBM BladeCenter blade servers. It uses a RJ45 Gigabit Ethernet connector and provides 1000 Mbps of connectivity over standard CAT-5e or CAT6 cables to support communications up to a distance of 100m. It conforms to IEEE 802.3ab 1000Base-T standard. Minimum operating system level: V5R4 with V5R4M5 Machine Code, or later. Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models and 9411-100. **Note**: Your network might require specific IP switches to be used with iSCSI connections. You can find additional information on the Web at: http://www.ibm.com/systems/i/bladecenter/iscsi/switches.html You can also find additional information on the iSCSI Web page at: http://www.ibm.com/systems/i/bladecenter/iscsi This Web page includes a link, under Documentation, to “iSCSI install read me first” for planning information and a Library link to *System i integration with BladeCenter and System x: iSCSI Network Planning Guide*, which you can find directly at: http://www.ibm.com/systems/i/bladecenter/pdf/iscsi_planning.pdf

#5784	**#5784 PCI-X iSCSI HBA Fiber** The #5784 is a 1 Gbps fiber iSCSI target HBA, which is used to connect to the iSCSI initiator HBAs installed in selected System x models or IBM BladeCenter blade servers. It uses a small form factor LC type fiber optic connector and provides 1000 Mbps connectivity on a standard shortwave (850 nm) 50/62.5 µm multimode fiber optic cable. It supports distances up to 220m for 62.5u MMF and up to 500m for 50.0u MMF over a single port. It conforms to the IEEE 802.3z standard. Minimum operating system level: V5R4 with V5R4M5 Machine Code, or later. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models and 9411-100. **Note**: Your network might require specific IP switches to be used with iSCSI connections. You can find additional information on the Web at: http://www.ibm.com/systems/i/bladecenter/iscsi/switches.html You can also find additional information on the iSCSI Web page at: http://www.ibm.com/systems/i/bladecenter/iscsi This Web page includes a link, under Documentation, to "iSCSI install read me first" for planning information and a Library link to *System i integration with BladeCenter and System x: iSCSI Network Planning Guide*, which you can find directly at: http://www.ibm.com/systems/i/bladecenter/pdf/iscsi_planning.pdf
#6800	**#6800 PCI 1Gbps Ethernet IOA** The #6800 - PCI 1 Gbps Ethernet IOA provides a PCI-X IOA, which does not require an IOP and allows a system to attach to IEEE standard 802.3Z high speed (1 Gbps) Ethernet LANs. The #6800 adapter supports a multimode fiber interface with a 62.5 µm or 50.0 µm cable requirement. The adapter has a duplex LC fiber-optic connector for attachment to customer-supplied cabling. The #6800 only supports TCP/IP and requires an intervening switch, hub, or router when connected to 100 Mbps or 10 Mbps networks. The #6800, #0620, and #5700 are physically the same adapter card but have different feature numbers that denote to IBM configurator tools whether an IOP is required. See the description of the "#5700" on page 249 for information about the function provided by the #6800. Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595, and 9411-100. When running IOP-less, the following support applies: ► Restriction: SNA supported with i5/OS AnyNet or starting with V5R4 Enterprise Extenders (EE) support.
#6801	**#6801 PCI 1Gbps Ethernet UTP IOA** The #6801 - PCI 1 Gbps Ethernet UTP IOA provides a PCI-X IOA, which does not require an IOP and allows a system to attach to IEEE standard 802.3ab high speed (1 Gbps) Ethernet LANs. It can also be used to directly connect to existing 10 Mbps or 100 Mbps Ethernet LANs. However, it does not run at gigabit speeds in this configuration. Cross-over cables are not supported. The adapter supports a UTP CAT 5 media interface and has a RJ-45 connector. The #6801, #0621, and #5701 are physically the same adapter card but have different feature numbers that denote to IBM configurator tools whether an IOP is required. See "#5701" on page 250 for more information about the function provided by the #6801. Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595, and 9411-100. When running IOP-less, the following support applies: ► Restriction: SNA supported with i5/OS AnyNet or starting with V5R4 Enterprise Extenders (EE) support.

#6803 #9493	**#6803 PCI WAN for ECS** The #6803 is a WAN w/modem adapter which provides connectivity for IBM Electronic Customer Support (ECS) only. This feature is the non-CIM (Complex Impedance Matching) version offered in all countries except Australia and New Zealand. #6803 is functionally equivalent to #0614/#2793/#9793, but #6803 indicates to IBM configurator tools that the IOA is being used by i5/OS in an IOP-less mode. **When in IOP-less mode** the adapter function is restricted to communicating to IBM ECS on port 0 (modem port). Port 0 supports V.92 56K PPP, V.92 data modem and V.44 data compression. Port 0 does not provide synchronous modem capabilities (SDLC and Synchronous PPP). Select one of the following cables to attach to port 0 (modem port): ► #1010 Modem Cable - Austria ► #1011 Modem Cable - Belgium ► #1012 Modem Cable - Africa ► #1013 Modem Cable - Israel ► #1014 Modem Cable - Italy ► #1015 Modem Cable - France ► #1016 Modem Cable - Germany ► #1017 Modem Cable - UK ► #1018 Modem Cable - Iceland/Sweden ► #1020 Modem Cable - HK/NZ ► #1021 Modem Cable - Finland/Norway ► #1022 Modem Cable - Netherlands ► #1023 Modem Cable - Swiss ► #1024 Modem Cable - Denmark ► #1025 Modem Cable - US/Canada The #6803 does not support the remote ring indicate function. This feature has country- or region-specific usage. Minimum operating system level for IOP-less protocols support requires i5/OS V5R3 and LIC V5R3M5 for Model 520+. Minimum IOP-less protocols support on the following models requires i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases: Models 515, 520, 525, 550, 570, and 595, and 9411-100.
#6804 #9494 #9794	**#6804 PCI WAN for ECS (CIM)** The #6804 is a WAN w/modem adapter, which provides connectivity for IBM Electronic Customer Support (ECS) only. This feature is the CIM version offered in Australia and New Zealand. The #6804/#9494 is functionally equivalent to #0615/#2794/#9794. The #6804 /#9494 indicates that the IOA is being used by i5/OS in IOP-less mode. When in IOP-less mode, the adapter function is restricted to communicating to IBM ECS on port 0 (modem port). Port 0 supports V.92 56K PPP, V.92 data modem and V.44 data compression. Port 0 does not provide synchronous modem capabilities (SDLC and Synchronous PPP). Select one of the following cables to attach to port 0 (modem port): ► #1010 Modem Cable - Austria ► #1011 Modem Cable - Belgium ► #1012 Modem Cable - Africa ► #1013 Modem Cable - Israel ► #1014 Modem Cable - Italy ► #1015 Modem Cable - France ► #1016 Modem Cable - Germany ► #1017 Modem Cable - UK ► #1018 Modem Cable - Iceland/Sweden ► #1019 Modem Cable - Australia ► #1020 Modem Cable - HK/NZ ► #1021 Modem Cable - Finland/Norway ► #1022 Modem Cable - Netherlands ► #1023 Modem Cable - Swiss ► #1024 Modem Cable - Denmark ► #1025 Modem Cable - US/Canada ► #0348 - V.24/EIA232 20-ft PCI Cable The #6804/#9494 does not support the remote ring indicate function. This feature has country- or region-specific usage. Minimum operating system level for IOP-less protocols support requires i5/OS V5R3 and LIC V5R3M5 for Model 520+. Minimum IOP-less protocols support on the following models requires i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases: Models 515, 520, 525, 550, 570, and 595, and 9411-100.

#6805	**#6805 PCI 2-Line WAN IOA No IOP** The #6805 is a WAN IOA, which supports up to two multiple protocol communications (RVX) ports when one or two of the following cables are attached: ► #0348 V.24/EIA232 20-Ft PCI cable ► #0349 V.24/EIA232 50-Ft PCI Cable (support only, not orderable) ► #0353 V.35 20-Ft PCI cable ► #0354 V.35 50-Ft PCI cable ► #0355 V.35 80-Ft PCI Cable (support only, not orderable) ► #0356 V.36 20-Ft PCI cable ► #0358 V.36 80-Ft PCI Cable (support only, not orderable) ► #0359 X.21 20-Ft PCI cable ► #0360 X.21 50-Ft PCI cable ► #0365 V.24/EIA232 80-Ft PCI cable ► #0367 Operations Console PCI Cable The #0367 cable ships with a 25 pin to 9 pin adapter. Multiple #0367 cables can be ordered (but only one per #6805) to serve as consoles for secondary partitions when logical partitioning is used. When #6805 is selected to support ECS, one of following cables must be specified: ► #0348 V.24/EIA232 20-Ft PCI Cable ► #0349 V.24/EIA232 50-Ft PCI Cable (support only, not orderable) ► #0365 V.24/EIA232 80-Ft PCI Cable The #6805 does not make use of an IOP. Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595, and 9411-100. When running IOP-less, the following support applies: ► Async ► Bisync ► Fax ► PPP ► SNA communications through the i5/OS V5R4 Enterprise Extender function and later releases ► X.21 Restrictions: ► IOP-less X.25 is not supported. ► Remote power on via ring-indicator is not supported. The #6805 is a Customer Install Feature.
#6808	**#6808 PCI Quad Modem IOA No IOP** The #6808 is a four-line WAN modem adapter, with four RJ-11 ports. Connection to the V.92 ports is via telephone cable. The V.92 functions offer increased upload throughput, improved V.44 data compression, and shortened modem synchronization periods. The #6808 is non-CIM. The supported protocols are: ► V.92 56K Async SLIP/PPP. ► V.34 Fax applications at data rates up to 33.6K via integrated modems. ► SNA communications is supported through i5/OS V5R4 Enterprise Extender function and later releases. A minimum of one modem cable must be ordered for each #6808. All modem cables installed on a system must be the same feature number.

#6808 (contd.)	**#6808 PCI Quad Modem IOA No IOP** The supported modem cables are: ► #1010 Modem Cable-Austria ► #1011 Modem Cable-Belgium ► #1012 Modem Cable-Africa ► #1013 Modem Cable-Israel ► #1014 Modem Cable-Italy ► #1015 Modem Cable-France ► #1016 Modem Cable-Germany ► #1017 Modem Cable-United Kingdom ► #1018 Modem Cable-Iceland/ Sweden ► #1021 Modem Cable-Finland/Norway ► #1022 Modem Cable-Netherlands ► #1023 Modem Cable-Swiss ► #1024 Modem Cable-Denmark ► #1025 Modem Cable-U.S./Canada The feature is country-specific or region-specific. Contact your IBM representative or Business Partner for details on availability. Restrictions: ► The call waiting and modem on hold functions associated with V.92 is not supported. ► Remote power on via ring-indicator and SDLC are not supported. One PCI card slot is required. Minimum operating system level: IOP-less protocols are supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. Supported on Models 515, 520, 525, 550, 570, 570 (POWER6), 595 and 9411-100. The #6808 is a Customer Install Feature.
#6809	**#6809 PCI Quad Modem IOA No IOP CIM** The #6809 is a four-line WAN modem adapter, with four RJ-11 ports. Connection to the V.92 ports is via telephone cable. The V.92 functions offer increased upload throughput, improved V.44 data compression, and shortened modem synchronization periods. The #6809 has CIM. Supported protocols are: ► V.92 56K Async SLIP/PPP. ► V.34 Fax applications at data rates up to 33.6K via integrated modems. ► SNA communications is supported through i5/OS V5R4 Enterprise Extender function and later releases. A minimum of one modem cable must be ordered for each #6809. All modem cables installed on a system must be the same feature number. The supported modem cables are: ► #1019 - Modem Cable - Australia ► #1020 Modem Cable- China (Hong Kong S.A.R.)/New Zealand The feature is country-specific or region-specific. Contact your IBM representative or Business Partner for details on availability. Restrictions: ► The call waiting and modem on hold functions associated with V.92 is not supported. ► Remote power on via ring-indicator and SDLC are not supported. One PCI card slot is required. Minimum operating system level: IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. Supported on Models 515, 520, 525, 550, 570, 570 (POWER6), 595 and 9411-100. The #6809 is a Customer Install Feature.

#6833 #9933	**#6833 PCI 2-Line WAN w/Modem, No IOP** The #6833 is a two-line/port WAN w/modem adapter. This feature is the non-CIM version offered in all countries except Australia and New Zealand. The #6833/#9933 is physically the same card as #0614/#2793/#9793, but #6833/#9933 indicates to IBM configurator tools that the IOA is being used by i5/OS in an IOP-less mode. The #6833/#9933 is physically the same card as the IOP-less #6803/#9493, but with i5/OS V5R4 with License Internal Code V5R4M5 additional function is provided including the use of the 2nd communication port and a separate feature code is used to denote this. Port 0 is a RJ-11port. Connection to the V.92 port is via a telephone cable. The V.92 functions offer increased upload throughput and improved V.44 data compression. ► Supported protocols are: – V.92 56K Async SLIP/PP – V.92 56K Async SLIP/PPPV.92 56K Async SLIP/PPP – V.34 FAX modem and FAX functions, such as ECM and 2D/1D conversion ► Port 0 does not provide Sync modem capabilities for: – SDLC – Sync PPP – Bisync ► Select one of the following cables to attach to port 0 (modem port): – #1010 Modem Cable-Austria – #1011 Modem Cable-Belgium – #1012 Modem Cable-Africa – #1013 Modem Cable-Israel – #1014 Modem Cable-Italy – #1015 Modem Cable-France – #1016 Modem Cable-Germany – #1017 Modem Cable-United Kingdom – #1018 Modem Cable-Iceland/ Sweden – #1021 Modem Cable-Finland/Norway – #1022 Modem Cable-Netherlands – #1023 Modem Cable-Swiss – #1024 Modem Cable-Denmark – #1025 Modem Cable-U.S./Canada Port 1 is the RVX port and supports multiple communications protocols when one of the following cables is attached: ► #0348 V.24/EIA232 20-Ft PCI cable ► #0353 V.35 20-Ft PCI cable ► #0356 V.36 20-Ft PCI cable) ► #0359 X.21 20-Ft PCI cable ► #0367 - Operations Console PCI Cable (ships with a 25-pin to 9-pin adapter). ► Supported protocols are: – Async SLIP/PP – FAX – Bisync – SNA communications is supported through i5/OS AnyNet or i5/OS V5R4 Enterprise Extender function and later releases. If direct SNA is desired, choose a WAN adapter that requires an IOP. See the iSeries Information Center for information about how to configure AnyNet and EE support: http://publib.boulder.ibm.com/iseries/ CRTLINSDLC is not supported. ECS is supported from both the modem port, and the RVX port. ► Port 0 cable feature listed above. ► Port 1 cable #0348 V.24/EIA232 20-Ft PCI Cable. The #6833 does not use an IOP. Port 0 and 1 restriction summary: ► X.25 is not supported. ► Remote power on via ring-indicator is not supported. Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595. The #6833 is a Customer Install Feature.

#6834 #9934	**#6834 PCI 2-Ln WAN w/Mod, No IOP CIM** The #6834 is a two-line/port WAN w/modem adapter. This feature is the CIM version that is offered only in Australia and New Zealand. The #6834 is functionally equivalent to #0614/#2793/#9793, but #6834 indicates to IBM configurator tools that the IOA is being used by i5/OS in an IOP-less mode. The #6834/#9934 is physically the same card as #0614/#2794/#9794, but #6834/#9934 indicates to IBM configurator tools that the IOA is being used by i5/OS in an IOP-less mode. The #6834/#9934 is physically the same card as the IOP-less #6804/#9494, but with i5/OS V5R4 with License Internal Code V5R4M5, additional function is provided including the use of the second communication port and a separate feature code is used to denote this. Port 0 is a RJ-11port. Connection to the V.92 port is via a telephone cable. The V.92 functions offer increased upload throughput and improved V.44 data compression. ► Supported protocols are: – V.92 56K Async SLIP/PP. – V.92 56K Async SLIP/PPPV.92 56K Async SLIP/PPP. – V.34 FAX modem and FAX functions, such as ECM and 2D/1D conversion. ► Port 0 does not provide Sync modem capabilities – SDLC – Sync PPP – Bisync ► Select one of the following cables to attach to port 0 (modem port): – #1019 Modem Cable - Australia – #1020 Modem Cable- China (Hong Kong S.A.R.)/New Zealand Port 1 is the RVX port and supports multiple communications protocols when one of the following cables is attached: ► #0348 V.24/EIA232 20-Ft PCI cable ► #0353 V.35 20-Ft PCI cable ► #0356 V.36 20-Ft PCI cable ► #0359 X.21 20-Ft PCI cable ► #0367 - Operations Console PCI Cable (ships with a 25 pin to 9 pin adapter). ► Supported protocols are: – Async SLIP/PP – FAX – Bisync – SNA communications is supported through i5/OS AnyNet or i5/OS V5R4 Enterprise Extender function and later releases. If direct SNA is desired, choose a WAN adapter that requires an IOP. See the iSeries Information Center for information about how to configure AnyNet and EE support: http://publib.boulder.ibm.com/iseries/ CRTLINSDLC is not supported. ECS is supported from both the modem port and the RVX port: ► Port 0 cable feature listed above ► Port 1 cable #0348 V.24/EIA232 20-Ft PCI Cable The #6834 does not use an IOP. Restrictions: ► X.25 is not supported. ► Remote power on via ring-indicator is not supported. Minimum operating system level for IOP-less protocols supported with i5/OS V5R4 and Licensed Internal Code V5R4M5 and CUM C7282540 and prerequisite PTFs, or later releases. IOP-less supported on Models 515, 520, 525, 550, 570, and 595. The #6834 is a Customer Install Feature.

#9812	**#9812 PCI-X Integrated xSeries Server** The #9812 is a double-wide PCI card that contains a 2.0 GHz processor with 2 MB integrated L2 cache. It has two integrated 1000, 100, or 10 Mbps Ethernet ports, two USB 1.1 ports and traditional PC keyboard and mouse ports. A keyboard and mouse can either connect to the traditional ports or connect to the USB ports. There is an SVGA video port for connection of a display. The #9812 has two memory slots. These slots must always contain a pair of identical memory features. Available memory features are: ► #0446 - 512 MB DDR Server Memory (MES only) ► #0447 - 1 GB DDR Server Memory (MES only) ► #8546 - Opt Base 1 GB Server Memory (Initial order only) ► #9726 - Base 512 MB Server Memory (Initial order only) The #9812 requires a #2844, #9744, or #9844 IOP to drive it. The IOP can be shared, but only one #9812 is permitted per IOP. When #9812 is ordered, the configurator adds two #9726 Base 512 MB Server Memory features to the order. The two #9726 features can be replaced with two #8546 Optional Base 1 GB Server Memory features or the two server memory features can be removed from the order and two #0446 or two #0447 can be installed in the field. The configurator also adds a #9744 Base PCI IOP to drive the #9812. The #9744 can be removed from the order for PCI slot conservation. The two integrated 1000, 100, or 10 Mbps Ethernet LAN ports included on the #9812 provide attachment to IEEE standard 802.3ab high-speed (1 Gbps) Ethernet LANs. They can also be used to connect to existing 10 and 100 Mbps Ethernet networks. The adapter supports UTP CAT 5 or higher media interface and TCP/IP. The #9812 does not support any other LAN features and does not support native i5/OS functions. The following features are defaulted (where offered) and can be removed from the order: ► #0325 IPCS Extension Cable for Windows (for display, mouse and keyboard) ► #1700 IPCS Keyboard and Mouse for Windows The supported Windows versions are: ► Windows 2000 Server ► Windows 2000 Advanced Server ► Windows Server 2003 Standard Edition ► Windows Server 2003 Enterprise Edition ► Windows Server 2003 Web Edition A display for versions of Windows 2000 is required and must be connected to the #9812. A display is not required for versions of Windows 2003 but can be connected to the #9812 to support Windows. If no display is connected, the Virtual System Console is used. For Linux server products supported on the #9812, see: http://www.ibm.com/eserver/iseries/integratedxseries/linux An IOP and two 3.3V PCI card slots are required. The #9812 is functionally identical to #4812 but is included in the base with orders for Enterprise Editions on Models 550 and 595. Minimum operating system level: i5/OS V5R3 Supported on Models 550, 570 and 595.
#9813	**#9813 PCI-X Integrated xSeries Server** The #9813 is functionally identical to #4813 but is included in the base with orders for Enterprise Editions on system Model 570. See “#4811 #4812 #4813 #9812 #9813” on page 246

#9771	**#9771 Base PCI 2-Line WAN with integrated modem** The #9771 is a two-line WAN adapter. One port supports V.90 56K async data on PPP via an internal modem. The second port supports multiple protocol communications (WAN). Connection to the V.90 port uses a telephone cable. Connection to the WAN communication port is through one of the following cables: ► #0348 V.24/EIA232 20-ft (6 m) PCI cable ► #0349 V.24/EIA232 50-ft (15 m) PCI cable ► #0353 V.35 20-ft PCI cable ► #0354 V.35 50-ft PCI cable ► #0356 V.36 20-ft PCI cable ► #0359 X.21 20-ft PCI cable ► #0360 X.21 50-ft PCI cable ► #0365 V.24/EIA232 80-ft PCI cable ► #0367 Operations Console PCI Cable The #9771 supports the #0367 Operations Console PCI Cable on the WAN (RVX) port to directly connect the Operations Console for OS/400 V5R1 or later or with OS/400 V4R5 and PTF MF25397. Direct connection of the Operations Console is mutually exclusive with V.90 support of the *dial-in* Operations Console. The #9771 supports the #5544 System Console on Operations Console on the V.90 port for *dial-in* Operations Console with V5R1. An additional #4745 on OS/400 V4R5 systems is required for *dial-in* Operations Console support. The #9771 ships with a country- or region-specific telephone cable. A modem cable feature is not required on the order. ECS is supported over TCP/IP on the V.90 telephone cable port with V5R1, or with OS/400 V4R5 and PTF SF64124. Fax is supported on the V.90 port with V5R1, or with OS/400 V4R5 and PTFs MF25290 and SF64604. To support ECS on the WAN port of the #9771, specify one of the following cables: ► #0348 V.24/EIA232 20-ft (6 m) PCI cable (default) ► #0349 V.24/EIA232 50-ft (15 m) PCI cable ► #0365 V.24/EIA232 80-ft PCI cable ECS operates on the WAN port of the #9771 by changing the *RSRCNAME parameter of the QESLINE and QTILINE line descriptions to that of the WAN port on the #9771 card. Remote Power On is not supported. The #9771 does not support the remote ring indicate function. For further configuration information, see: http://www.iseries.ibm.com/tstudio/planning/esa/esa.htm See the “Soft rules: iSeries IOA requirements” topic in *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, or *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for OS/400 V5R2 and earlier releases, for additional restrictions. Minimum operating system level: OS/400 V4R5 with supporting PTFs The #9771 was withdrawn from marketing as of 01 October 2005.

4.10 Disk units

Disk units	
Disk model identifier	The system configuration list (rack configuration) shows the disk type and model in the format XXXX-YYY, where *XXXX* identifies the CCIN of the disk and *YYY* identifies the potential or actual disk protection and compression. Refer to Chapter 9, “Customer Card Identification Numbers cross-reference” on page 391, for a listing of the CCINs. The YYY identifiers are: **030**: Unprotected or mirrored unit attached to a non-RAID capable controller. **050**: Unprotected or mirrored unit attached to a RAID capable controller. **060**: Unprotected or mirrored unit attached to a RAID capable controller. Data compression is active. **070**: Non-parity member of a parity (RAID) set. Full capacity. Data compression is inactive. **071**: Parity member of a parity (RAID) set with sixteen parity members. Fifteen-sixteenths capacity. Data compression is inactive. **072**: Parity member of a parity (RAID) set with eight parity members. Seven-eighths capacity. Data compression is inactive. **074**: Parity member of a parity (RAID) set with four parity members. Three-fourths capacity. Data compression is inactive. **078**: Parity member of a parity (RAID) set with two parity members. Half capacity. Data compression is inactive. **080**: Non-parity member of a parity (RAID) set. Full capacity. Data compression is active. **082**: Parity member of a parity (RAID) set with eight parity members. Seven-eighths capacity. Data compression is active. **084**: Parity member of a parity (RAID) set with four parity members. Three-fourths capacity. Compression is active. **099**: Parity member of a parity (RAID) set. **090**: Non-parity member of a parity (RAID) set. Full capacity.
Disk data rate	IBM System i5 15K RPM disk drives from January 2006 onward support data rates up to 320 MB with the proper disk controller. Disk controllers that support disk data rates up to 320 MB (U320 or Ultra4 SCSI) include the #0647, #0648, #2780, #5580, #5736, #5737, #5766, #5775, and #5776. The data rate is not a significant performance factor compared to other specifications such as the cache size and the disk RPM.
#0040	**#0040 Mirrored System Disk Level Protection Capability** This code indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration. **For new systems**: Causes the order to fail if sufficient disk units are not ordered to support device-level mirrored protection. The #0040 causes all disk units to be placed into configurations capable of implementing mirrored pairs. **For upgrade orders**: The #0040 causes a warning message to be generated during implementation of mirroring if sufficient disk units are unavailable to provide mirror capability. The customer is responsible for starting mirroring on their system. Mirrored system disk level protection requires all disk units to be placed into mirrored pairs and mirroring be started. The load source must be controlled by the first disk controller on the first system bus and must be mirrored to a like disk unit also attached to the first disk controller on the first system bus. Refer to: http://publib.boulder.ibm.com/pubs/html/as400/infocenter.htm Logically partitioned systems require additional planning. The minimum number of disks allowed on a system is two.
#0041	**#0041 Device Parity Protection Capability** The #0041 Device Parity Protection Capability indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration. The #0041 is the default specify code for data protection capability. For new systems, the #0041 causes the order to fail if a disk unit or adapter is ordered that is not capable of implementing RAID protection. The #0041 causes all internal disk units to be placed into configurations capable of implementing RAID arrays using a RAID-capable disk controller. For upgrade orders, the #0041 causes the order to replace adapters that are not RAID-capable with RAID-capable adapters. A warning message is generated during RAID enablement if there are not enough disk units to support a minimum RAID configuration. It is the customer's responsibility to start RAID on their system. Device parity protection requires all disk units to be placed in sets large enough to turn on RAID protection, as well as be connected to a RAID-capable adapter. The rules for RAID can be found in the disk controller descriptions.

#0042	**#0042 Mirrored System IOP Level Protection Capability** The #0042 Mirrored System IOP Level Protection Capability indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration. For new systems, the #0042 causes the order to fail if sufficient disk units and IOPs are not included on the order to support IOP-level mirrored protection. The #0042 causes all disk units to be placed into configurations capable of IOP-level mirroring. Each disk unit and its mirrored pair must be on a different disk unit IOP. For upgrade orders, the #0042 causes a warning message to be generated during implementation of the upgrade if sufficient disk units, adapters, and IOPs are not available to provide the capability to enable IOP-level mirrored protection for all DASD. It is the customer's responsibility to start mirroring on their system. The load source disk unit in a new, preloaded system is device-level mirrored. (This is the same protection as provided with #0040.) This means that the load source is controlled by the first disk unit controller on the first system bus and is mirrored with a like disk unit that is also attached to the same first disk controller on the first system bus. The minimum number of disks allowed on a system is four.
#0043	**#0043 Mirrored System Bus Level Protection Capability** The #0043 Mirrored System Bus Level Protection Capability indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration. For new systems, the #0043 causes the order to fail if sufficient disk units, IOPs and expansion units are not included on the order to support bus-level mirrored protection for all disk units. The load source disk unit in a new, preloaded system is device-level mirrored. This means that the load source is controlled by the first disk controller on the first system bus and is mirrored with a like disk unit that is also attached to the same first disk controller on the first system bus. Bus-level mirroring of the Load Source disk unit can be achieved only by enabling Remote Load Source Mirroring before starting Mirrored Protection. For details about implementing Remote Load Source Mirroring, refer to the iSeries Information Center at: http://publib.boulder.ibm.com/iseries/ For upgrade orders, a warning message is generated during installation of the upgrade if sufficient disk units, IOPs, and expansion units are not available to provide the capability to enable bus-level mirrored protection for all disk units. It is the customer's responsibility to start mirroring on their system. Bus-level mirroring requires all disk units to be placed into mirrored pairs on separate busses. Refer to the iSeries Information Center for important Mirrored Protection and Remote Load Source Mirroring implementation details. Logically partitioned systems require additional planning. The minimum number of disks allowed on a system is four.
#0047	**#0047 Device Parity RAID-6 All** The #0047 code indicates the level of disk protection desired and helps ensure that adequate hardware is in the final ordered configuration. RAID-6 requires a storage adapter that supports RAID-6. CCINs 571B, 571E, & 571F support RAID-6. For new systems, the #0047 causes the order to fail if a disk unit or adapter is ordered that is not capable of implementing RAID-6 protection. The #0047 causes all internal disk units to be placed into configurations capable of implementing RAID-6 arrays using a RAID-6 capable disk controller. RAID-6 arrays require a minimum of four disk units per array. All disk units within an array must be of the exact same capacity. The exception to this configuration rule is that the disk drives inside the Model 520, 525, 550 and 570 system units support RAID-5 arrays since the integrated disk controllers are not capable of RAID-6. For upgrade orders, the #0047 causes the order to replace adapters that are not RAID-6 capable with RAID-6 capable adapters. A warning message is generated during RAID enablement if there are not enough disk units to support a minimum RAID configuration. It is the customer's responsibility to start RAID (5 or 6) on their system. Device parity protection requires all disk units to be placed in sets large enough to turn on RAID protection, as well as be connected to a RAID-capable adapter. The rules for RAID can be found in the disk controller descriptions. In general we recommend that you use more than four disk units in a RAID-6 parity set, because the capacity of two disk units is dedicated to storing parity data in a parity set.

#0347	**#0347 RAID Hot Spare Specify** The #0347 is a specify code that indicates to IBM configuration tools and to IBM Manufacturing that RAID-5 or RAID-6 disk arrays should be further protected using the i5/OS function of RAID hot spare. If specified, IBM will ship a configuration that has at least one stand-by disk drive for each disk controller in the system or designated partition. After the system is installed, the hot spare configuration can be altered by selecting different options. Specify codes #0041 or #0047 must be specified in addition to #0347. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models and 9411-100. Hot spare is supported also on Models 800, 810, 825, 870, and 890, although these cannot be ordered new. Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5 or later The #0347 RIAD Hot Spare Specify is supported with disk controllers having a write cache of 757 MB or larger (#2757/5581/5591, #2780/5580/5590, #5582/5583/5738/5777, #5739/5778/5799/5800/5781/5782), disk controllers with 40 MB (#5703/2782) and 90 MB (#5737/5776) write cache, and with the embedded disk controllers of the Models 515, 520, 525, 550, and 570 having a 16-40 MB write cache card (#5709/5726/9509/5727/5728/9510). This specify code tells IBM Manufacturing to set up one hot spare drive for all disk controllers supporting the function. If you are ordering an EXP24 disk enclosure, IBM Manufacturing assumes: ► One spare if 18 or fewer disks per the EXP24 ► Two spares if 19 or more disks per the EXP24 You configure a disk array with the hot spare option to enable this function.
0719	**#0719 No disk drives in the system unit** Use this to indicate that no disks will be placed within the 9406-MMA system unit. See #07xx and #08xx for load source specify codes.
#07xx	**#07xx Load Source Placement Specify Codes** In a 570 (POWER6), a load source can be placed outside of the system unit in an attached I/O tower/drawer. If the load source is not placed in the system unit, one of the following specify codes from #0720 to #0725 is selected depending on the desired I/O tower/drawer: ► #0720 Load Source in #0595/5095 ► #0721 Load Source in #5094/5294 ► #0725 Load Source in #5786/5787 You can use system disks within the system unit for normal applications and data. You can also optionally specify #0719 to order a system with no disks within the 9406-MMA system unit. Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5 or later. See also the #08xx for additional load source specify codes.

#08xx	**#08xx Load Source Specify Codes** Beginning with the V5R1 announcement, one of the following specify codes is required on all initial order for Model 800, 810, 820, 825, 830, 840, 870, and 890s. In addition, one of the following specify codes is required on all upgrades into this model range from previous models: ► #0826 - #4314 Load Source specify ► #0827 - #4324 Load Source specify ► #0828 - #4317 Load Source specify ► #0829 - #4318 Load Source specify ► #0830 - #4319 Load Source specify ► #0834 - #4326 Load Source specify ► #0835 - #4327 Load Source specify (valid only for 515) Manufacturing uses the #08xx specify to place a corresponding disk unit feature in the load source position. Initial orders and model upgrade orders into the Model 800, 810, 820, 825, 830, 840, 870, and 890 from previous models that contain a load source specify, but no corresponding disk unit feature, are invalid orders. The following specify codes can be changed on model upgrades or on MES orders. A Load Source specify code is required on each new or upgrade order into Models 515 (new only), 520, 525, 550, 570, 9406-MMA, and 595. These specify codes can be changed at any time. ► #0836 - #4328 Load Source specify If you specify storage area network (SAN) drives as load source drives, you must specify #0837. The #0837 requires #2847 PCI IOP with SAN Load Source and #2787 PCI-X Fibre Channel Disk Controller. ► #0837 - SAN Load Source specify Model 570 (POWER6) configurations support up to six SAS Disk Drives within the system unit and any additional processor enclosure (building block). If you specify SAS Disk Drives as load source drives, you must use one of the following specify codes depending on specify codes of SAS Disk Drives. The #0838 and #0839 are valid only for 570 (POWER6). ► #0838 - #3676 Load Source specify. Indicates that a #3676 Disk Unit is being used as the Load Source. ► #0839 - #3677 Load Source specify. Indicates that a #3677 Disk Unit is being used as the Load Source. Note that protection of the load source disk is also required on all new POWER5 and POWER6 system configurations. Therefore, if you specify a SAS disk as load source capable, mirrored protection is required. The #0826, #0827, #0828 and #0829 are withdrawn from marketing as of 01 June 2006.
#1266	**#1266 35.16GB 15k rpm Disk Unit** The #1266 35.16GB 15k rpm Disk Unit provides a 15k rpm disk unit with 35.16 GB capacity and a SCSI. The #1266 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1266 is physically identical to a #4326 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement Minimum operating system level: i5/OS V5R3 or later, AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1266 is a Customer Install Feature.
#1267	**#1267 70.56GB 15k rpm Disk Unit** The #1267 70.56GB 15k rpm Disk Unit provides a 15k rpm disk unit with 70.56 GB capacity and a SCSI. The #1267 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1267 is physically identical to a #4327 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement. Minimum operating system level: i5/OS V5R3 or later, AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1267 is a Customer Install Feature.

#1268	**#1268 141.12GB 15k rpm Disk Unit** The #1268 141.12GB 15k rpm Disk Unit provides a 15k rpm disk unit with 141.12 GB capacity and an Ultra320 SCSI. The #1268 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1268 is physically identical to a #4328 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement Minimum operating system level: i5/OS V5R3 or later, AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1268 is a Customer Install Feature.
#1269	**#1269 282.25GB 15k rpm Disk Unit** The #1269 282.25GB 15k rpm Disk Unit provides a 15k rpm disk unit with 282.25 GB of storage capacity and an Ultra320 SCSI speed of up to 320 MBps. The #1269 is for i5/OS and is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. Supported on POWER6 models. Not formally supported on POWER5 models and 9411-100. Contact your IBM representative if you require i5/OS support for disks larger than 141.12 GB disks. Minimum operating system level: i5/OS V5R4 or later (on 570 (POWER6) or i5/OS V5R4 with License Internal Code V5R4M5 required) Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower. Placement in the system unit, a #0595/5095, or #5094/5294 and use as an i5/OS load source device is not supported. The #1269 is a Customer Install Feature.
#1292	**#1292 300GB 15k rpm Disk Unit** The #1292 300GB 15k rpm Disk Unit provides a 15k rpm disk unit with 300 GB of storage capacity and an Ultra320 SCSI speed of up to 320 MBps. The #1292 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 4 with quarterly update 3 or later, or SUSE Linux Enterprise Server 9 for POWER with service pack 3 or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1269 and #1292 are the same disk drive, with #1292 formatted for AIX and Linux usage. The #1292 is a Customer Install Feature.
#1293	**#1293 36.4GB 10k rpm Disk Unit** The #1293 36.4GB 10k rpm Disk Unit provides a 10k rpm disk unit with 36.4 GB of storage capacity and an industry standard Ultra320 SCSI speed of up to 320 MBps. The #1293 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1293 is physically identical to a #1893 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later. Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1293 is a Customer Install Feature. The #1293 was withdrawn from marketing on 6 February 2007.
#1294	**#1294 73.4GB 10k rpm Disk Unit** The #1294 73.4GB 10k rpm Disk Unit provides a 10k rpm disk unit with 73.4 GB of storage capacity and an industry standard Ultra320 SCSI speed of up to 320 MBps. The #1294 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1294 is physically identical to a #1894 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later. Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1294 is a Customer Install Feature. The #1294 was withdrawn from marketing on 8 May 2007.

#1295	**#1295 146.8GB 10k rpm Disk Unit** The #1295 146.8GB 10k rpm Disk Unit provides a 10k rpm disk unit with 146.8 GB of storage capacity and an industry standard Ultra320 SCSI speed of up to 320 MBps. The #1295 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1295 is physically identical to a #1895 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1295 is a Customer Install Feature. The #1295 was withdrawn from marketing on 8 May 2007.
#1296	**#1296 36.4GB 15k rpm Disk Unit** The #1296 36.4GB 15k rpm Disk Unit provides a 15k rpm disk unit with 36.4 GB of storage capacity and an industry standard Ultra320 SCSI speed of up to 320 MBps. The #1296 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1296 is physically identical to a #1896 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1296 is a Customer Install Feature. The #1296 was withdrawn from marketing on 8 May 2007.
#1297	**#1297 73.4GB 15k rpm Disk Unit** The #1297 73.4GB 15k rpm Disk Unit provides a 15k rpm disk unit with 73.4 GB of storage capacity and an industry standard Ultra320 SCSI speed of up to 320 MBps. The #1297 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1297 is physically identical to a #1897 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1297 is a Customer Install Feature.
#1298	**#1298 146.8GB 15k rpm Disk Unit** The #1298 146.8GB 15k rpm Disk Unit provides a 15k rpm disk unit with 146.8 GB of storage capacity and an industry standard Ultra320 SCSI speed of up to 320 MBps. The #1298 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1298 is physically identical to a #1898 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1298 is a Customer Install Feature.
#1299	**#1299 300GB 10k rpm Disk Unit** The #1299 300GB 10k rpm Disk Unit provides a 10k rpm disk unit with 300 GB of storage capacity and an industry standard Ultra320 SCSI speed of up to 320 MBps. The #1299 is installed in a #5786 TotalStorage EXP24 Disk Drawer or a #5787 TotalStorage EXP24 Disk Tower. The #1299 is physically identical to a #3578 disk unit, but it has a different feature number to enable IBM configuration tools to better understand its placement. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 3 or later, or SUSE Linux Enterprise Server 9 for POWER or later Supported in Feature Code #5786 TotalStorage Expansion 24 Disk Drawer and #5787 TotalStorage Expansion 24 Disk Tower The #1299 is a Customer Install Feature.

#1893	**#1893 36.4GB 10k rpm Disk Unit** The #1893 provides a 10,000 RPM Disk Unit with 36.4 GB of storage capacity and an ULTRA320 SCSI. Supported only with AIX and Linux. Supported on all POWER5 and POWER6 models. Supported only during a model conversion on a Model 595. No additional quantities can be ordered for the Model 595. The #1893 is a Customer Install Feature. The #1893 was withdrawn from marketing 15 April 2005.
#1894	**#1894 73.4GB 10k rpm Disk Unit** The #1894 provides a 10,000 RPM Disk Unit with 73.4 GB of storage capacity and an ULTRA320 SCSI. Supported only with AIX and Linux. Supported on all POWER5 and POWER6 models. Supported only during a model conversion on a Model 595. No additional quantities can be ordered for the Model 595. The #1894 is a Customer Install Feature. The #1894 was withdrawn from marketing on 13 July 2007.
#1895	**#1895 146.8GB 10k rpm Disk Unit** The #1895 provides a 10,000 RPM Disk Unit with 146.8 GB of storage capacity and an ULTRA320 SCSI. Supported only with AIX or Linux. Supported on all POWER5 and POWER6 models. Supported only during a model conversion on a Model 595. No additional quantities can be ordered for the Model 595. The #1895 is a Customer Install Feature. The #1894 was withdrawn from marketing on 13 July 2007.
#1896	**#1896 36.4GB 15k rpm Disk Unit** The #1896 provides a 15,000 RPM Disk Unit with 36.4 GB of storage capacity and an ULTRA320 SCSI. Supported only with AIX or Linux. Supported on all POWER5 and POWER6 models. The #1896 is a Customer Install Feature.
#1897	**#1897 73.4GB 15k rpm Disk Unit** The #1897 provides a 15,000 RPM Disk Unit with 73.4 GB of storage capacity and an ULTRA320 SCSI. Supported only with AIX and Linux. Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models. The #1897 is a Customer Install Feature.
#1898	**#1898 146.8GB Disk Unit** The #1898 146.8GB Disk Unit provides a 15,000 rpm disk unit with 146.8 GB of storage capacity for AIX 5L and Linux partitions and an ULTRA320 SCSI. This disk drive requires attachment to a supported Ultra320 SCSI adapter in a system that supports an Ultra320 SCSI cable or backplane in order for the drive to run at 320 MBs. All other SCSI devices on the same SCSI bus must also be Ultra2, Ultra3, or Ultra320 SCSI devices in order for this disk drive to run at 320 MBs. Not supported by i5/OS. Supported only by AIX and Linux. Supported on all POWER5 and POWER6 models. The #1898 is a Customer Install Feature.
#3578	**#3578 - 300 GB 10K rpm Disk Unit** The #3578 provides a 10,000 RPM disk unit with 300 GB of storage capacity and an industry-standard Ultra3 SCSI speed of up to 160 MBps. Not supported by i5/OS. Supported only by AIX or Linux. Supported on all POWER5 and POWER6 models. Supported only during a model conversion on a Model 595. No additional quantities can be ordered for the Model 595.

#3646	**#3646 73.4GB 15k rpm SAS Disk Drive** The #3646 provides a 15,000 RPM, 3.5-inch Disk Unit with 73.4 GB capacity and a SAS interface. The #3646 is mounted in a carrier and hot swap is supported. Supported on Model 570 (POWER6). Not supported by i5/OS. Supported only by AIX or Linux. AIX: 5.2S or 5.3J or Later, Linux; for information about Linux support, see the following Web page: http://www.ibm.com/systems/p/hardware/factsfeatures.html Supported only on a SAS Disk Unit Controller. The #3646 is a Customer Install Feature
#3647	**#3647 146.8GB 15k rpm SAS Disk Drive** The #3647 provides a 15,000 RPM, 3.5-inch Disk Unit with 146.8 GB capacity and a SAS interface. The #3647 is mounted in a carrier and hot swap is supported. Supported on Model 570 (POWER6). Not supported by i5/OS. Supported only by AIX or Linux. AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 4 or later, SUSE Linux Enterprise Server 9 for POWER or later Supported only on a SAS Disk Unit Controller. The #3647 is a Customer Install Feature.
#3648	**#3648 300GB 15k rpm SAS Disk Drive** The #3648 provides a 15,000 RPM, 3.5-inch Disk Unit with 300 GB capacity and a SAS interface. The #3648 is mounted in a carrier and hot swap is supported. Supported on Model 570 (POWER6). Not supported by i5/OS. Supported only by AIX or Linux. AIX: 5.2S or 5.3J or Later, Linux; for information about Linux support, see the following Web page: http://www.ibm.com/systems/p/hardware/factsfeatures.html Supported only on a SAS Disk Unit Controller. The #3648 is a Customer Install Feature.
#3676	**#3676 69.7GB 15k rpm SAS Disk Drive** The #3676 provides a 15,000 RPM, 3.5-inch Disk Unit with 69.7 GB capacity and a SAS interface. The #3676 is mounted in a carrier and hot swap is supported. Supported on Model 570 (POWER6). Supported only on i5/OS V5R4 with License Internal Code V5R4M5 or later Supported only on a SAS Disk Unit Controller. The #3676 is a Customer Install Feature.
#3677	**#3677 139.5GB 15k rpm SAS Disk Drive** The #3677 provides a 15,000 RPM, 3.5-inch Disk Unit with 139.5 GB capacity and a SAS interface. The #3677 is mounted in a carrier and hot swap is supported. Supported on Model 570 (POWER6). Supported only on i5/OS V5R4 with License Internal Code V5R4M5 or later Supported only a SAS Disk Unit Controllers. The #3677 is a Customer Install Feature.
#3678	**#3678 283.7GB 15k rpm SAS Disk Drive** The #3678 provides a 15,000 RPM, 3.5-inch Disk Unit with 283.7 GB capacity and a SAS interface. The #3678 is mounted in a carrier and hot swap is supported. Supported on Model 570 (POWER6). Supported only on i5/OS V5R4 with License Internal Code V5R4M5 or later Supported only on a SAS Disk Unit Controller. The #3678 is a Customer Install Feature.
#4308	**#4308 4.19 GB Disk Unit** The #4308 provides an additional 4.19 GB single disk unit with 4.19 GB capacity (7200 RPM). Supported on Models 810, 820, 825, 830, 840, 870, and 890. The #4308 is a Customer Install Feature. The #4308 was withdrawn from marketing as of December 2000.

#4314	**#4314 8.58 GB Disk Unit (Ultra SCSI)** The #4314 provides an additional 3 ½-inch two-byte single disk unit with 8.58 GB capacity (7200 RPM). Minimum operating system level: OS/400 V4R4 Supported on Models 810, 820, 825, 830, 840, 870, and 890. The #4314 is a Customer Install Feature. The #4314 was withdrawn from marketing as of 31 January 2001.
#4317	**#4317 8.58 GB 10k RPM Disk Unit (Ultra2 SCSI)** The #4317 provides an additional 3 ½-inch single disk unit with 8.58 GB capacity. During MES upgrades, the #6717, #6817, #8617, and #8817 8.58 GB disk units can be converted to #4317s. The #4317 is also supported in Linux partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. Minimum operating system level: OS/400 V4R4 Supported on Models 800, 810, 820, 825, 830, 840, 870, and 890. Supported on all POWER5 and POWER6 Models 5xx except Model 515, and 9405 520. The #4317 is a Customer Install Feature. The #4317 was withdrawn from marketing for new orders on 03 December 2002. Feature conversions to the #4317 remain available.
#4318	**#4318 17.54 GB 10k RPM Disk Unit (Ultra2 SCSI)** The #4318 provides an additional 3 ½-inch single disk unit with 17.54 GB capacity. During MES upgrades, the #6718, #6818, #8618, and #8818 8.58 GB disk units can be converted to #4318s. The #4318 is also supported in Linux partitions. Minimum operating system level: OS/400 V4R4 Supported on Model 270, 9406 520, 550, 570, 595, 800, 810 820, 825, 830, 840, 870, 890, and 9411-100. The #4318 is a Customer Install Feature. The #4318 was withdrawn from marketing as of 01 June 2004 for new orders. Conversions to feature #4318 remain available.
#4319	**#4319 35.16 GB 10k RPM Disk Unit (Ultra2 SCSI)** The #4319 provides an additional 3 ½-inch single disk unit with 35.16 GB capacity. The #4319 is also supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. Minimum operating system level: OS/400 V5R1 with PTFs identified in Information APAR II13102 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. The #4319 cannot be mounted in a #5065 Storage/PCI Expansion Tower. The #4319 is a Customer Install Feature. The #4319 was withdrawn from marketing as of 12 April 2005.
#4324	**#4324 17.54 GB Disk Unit (Ultra SCSI)** The #4324 provides a 3 ½-inch single disk unit with 17.54 GB capacity for additional disk storage (7200 RPM). Minimum operating system level: OS/400 V4R4 Supported on Models 810, 820, 825, 830, 840, 870, and 890. The #4324 is a Customer Install Feature.
#4326	**#4326 35.16 GB 15k RPM Disk Unit (SCSI)** The #4326 provides a single 3 ½-inch disk unit for additional disk storage with 35.16 GB capacity (15000 RPM). Quantities of 150 of this feature can be ordered in the IBM marketing configurator as #7508 Quantity 150 of Feature #4326. Minimum operating system level: OS/400 V5R2 Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. Supported on Models 520, 525, 550, 570, 570 (POWER6), 800, 810, 825, 870, and 890 system units and base I/O towers, and in the base I/O towers, the #5094 PCI-X Expansion Tower, the #0595/#5095 PCI-X Expansion Tower, and the #5294 1.8m I/O Tower. The #4326 is a Customer Install Feature.

#4327	**#4327 70.56 GB 15k RPM Disk Unit (SCSI)** The #4327 provides a 3 ½-inch single disk unit for additional disk storage with 70.56 GB capacity (15000 RPM). Quantities of 150 of this feature can be ordered in the IBM marketing configurator as #7509 Quantity 150 of Feature #4327. Minimum operating system level: OS/400 V5R2 Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. Supported on Models 515, 520, 525, 550, 570, 570 (POWER6), 595, 800, 810, 825, 870, and 890 system unit and base I/O towers, the #5094 PCI-X Expansion Tower, the #0595/#5095 PCI-X Expansion Tower, and the #5294 1.8m I/O Tower. The #4327 is a Customer Install Feature.
#4328	**#4328 - 141.12 GB 15K rpm Disk Unit** The #4328 provides a 15,000 RPM disk unit with 141.12 GB of storage capacity and an Ultra320 SCSI. Quantities of 150 of this feature can be ordered in the IBM marketing configurator as #7510 Quantity 150 of Feature #4328. Supported on all POWER5 and POWER6 models.
#6585	**#6585 - DASD Locking Kit** Provides a locking mechanism that secures up to four disk units in the Model 515, 520, 520+, 525. Two #6585 kits are required to secure all eight available disk units in the Model 520. When #6585 is installed and secured with a user-provided padlock, the disk units cannot be removed easily. Supported on Model 515, 520, 520+, 525.
#7262	**#7262 Quantity 150 of #1292** The #7262 features cause 150 of the #1292 disk units to be shipped. The configurator can either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records. Supported on Models 550, 570, 595, and 570 (POWER6). Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or later, Red Hat Enterprise Linux AS for POWER Version 4, with quarterly update 3 or later, or SUSE Linux Enterprise Server 9 for POWER with service pack 3 or later
#75xx	**#75xx Quantity 150 of Feature #xxxx** The #75xx features cause 150 of the specified disk units to be shipped. When over 150 disk units are requested in the IBM marketing configurator, a #75xx feature is automatically added for each group of 150 specified. For example, if 180 #4314 8.58 GB Disk Units are requested, the IBM marketing configurator adds one #7500 and 30 #4314s to the order. The following features are supported on Models 810, 820, 825, 830, 840, 870, and 890: ► #7500 Quantity 150 of Feature #4314 ► #7501 Quantity 150 of Feature #4317 ► #7502 Quantity 150 of Feature #4318 ► #7503 Quantity 150 of Feature #4324 The configurator can either generate the following feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records. The following features are supported on all POWER5 and POWER6 models and Models 810, 820, 825, 830, 840, 870, and 890. The #7509 is not supported on Model 810 or 820. ► #7504 Quantity 150 of Feature #4319 (withdrawn from marketing as of 30 August 2005) ► #7508 Quantity 150 of Feature #4326 ► #7509 Quantity 150 of Feature #4327 The following feature is supported on all POWER5 and POWER6 models: ► #7510 Quantity of 150 of Feature #4328 The following features are supported on Models 570, 570 (POWER6), and 595: ► #7512 Quantity 150 of Feature #0300 ► #7513 Quantity 150 of Feature #0301 ► #7514 Quantity 150 of Feature #5741 ► #7515 Quantity 150 of Feature #5742 The following features are supported on all POWER5 and POWER6 models and 9411-100: ► #7516 Quantity 150 0f Feature #1269 ► #7520 Quantity 150 of Feature #1266 ► #7521 Quantity 150 of Feature #1267 ► #7522 Quantity 150 of Feature #1268

#75xx (contd.)	**#75xx Quantity 150 of Feature #xxxx** The following feature is supported on Models (including "+ models") 520 (9406 only), 525, 550, 570, 570 (POWER6), and 595: ► #7525 Quantity 150 of Feature #1294 The following features are supported on all POWER5 and POWER6 models: ► #7526 Quantity 150 of Feature #1295 ► #7527 Quantity 150 of Feature #1296 ► #7528 Quantity 150 of Feature #1297 ► #7529 Quantity 150 of Feature #1298
RPQ 847102	**RPQ 847102** ships the disk mounting hardware and instructions required to convert a #6717/#6817 to a #4317, and a #6718/#6818 to a #4318. One RPQ is required for each disk unit to be converted. This conversion allows the customer to move 8.5 GB 10K RPM and 17 GB 10K rpm files from current towers to the #5065, #5066, #5074/#9074, #5075, #5079/#9079 PCI Expansion Towers, the #5094, #5095, #5294 PCI-X Expansion Towers, iSeries Models 270, 800, 810, 820, 825, 830, 840, 870, 890, or eServer i5 Models 520, 550, 570, and 595. Confirm and that there is available space in the existing or on order system or tower for the converted disk units and that the required number of #2748 PCI RAID Disk Unit Controllers are available. After the conversion, process an RPO to add the appropriate number of #4317/#4318 and remove the appropriate number of #6717/#6818 features. RPQ 847102 is installed by an IBM Customer Service Representative.

4.11 Internal tape units and CD-ROM

Internal tape units and CD-ROM	
Supported media	See 8.3, "QIC tape specifications and compatibility for System i models" on page 383, and 8.4, "VXA, LTO, and DAT tape specifications and compatibility for System i models" on page 384, for the supported media for each tape device.
#1889 #9689	**#1889 80 GB VXA-2 Tape Device** The #1889 80 GB VXA-2 Tape Device is a 5.25-inch, half-high, Ultra2 LVD 16-bit tape drive, which provides a high capacity for save/restore and archive functions. This tape drive uses VXA tape data cartridges and is compression capable, providing a capacity of up to 160 GB. It uses a helical scan, rotating head technology and has a SCSI-2 (LVD/SE) asynchronous or synchronous interface. The tape operates in streaming mode. Refer to 8.4, "VXA, LTO, and DAT tape specifications and compatibility for System i models" on page 384, for additional characteristics. This tape device is supported on an IOP-less IOA. One 1.6-inch (41 mm) half-high media bay and one SCSI-2 internal 16-bit address is required. Minimum operating system level: i5/OS V5R3 Supported in Linux SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 the #1889 is supported as an IOP-less drive in the 9405 520, 9406 520, and Models 520+, 525, 550, and 550+ with a minimum operating system level of i5/OS V5R4 and i5/OS V5R3 with LIC V5R3M5 on Models 520 and 520+. The #1889 is a Customer Install Feature.
#2640	**#2640 DVD-ROM** The #2640 DVD-ROM is a Slimline IDE DVD-ROM drive. It uses an internal tray loading DVD-ROM drive. The #2640 provides up to 3600 KBps (CD-ROM) and 10.3 MBps (DVD-ROM) data transfer rates. Characteristics: ► Media Data Transfer Rate (maximum): CD-ROM=3600 KBps, DVD- ROM=10.3 MBps. ► Interface: IDE/ATAPI ► Average Random Access Time: CD-ROM=95ms (typical), DVD-ROM=150ms (typical) ► Buffer Memory: 256KB ► Media capacity: CD-ROM=650 MB, DVD-ROM= 4.7 GB (single sided)/9.4 GB (double-sided) ► Multi session capable (Reads CD/R and CD-R/W media) ► 12.7 mm Slimline form factor ► Operates in either vertical or horizontal positions ► Interface supports standard and extended XA formats ► Loading tray supports 12cm and 8cm disks ► DVD video is not supported

#2640 (contd.)	**#2640 DVD-ROM** Requires one Slimline media bay. Minimum operating system level: i5/OS V5R3 Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 Supported on Models 515, 520, 525, 550, and 570. The #2640 is a Customer Install Feature.
#4425 #4525 #4625	**#4425/#4525/#4625 CD-ROM** The #4425, #4525, or #4625 can be used for alternate IPL (IBM distributed CD-ROM media only) and program distribution. A CD-ROM, DVD-RAM or DVD-ROM is required for each system. Minimum operating system level for the #4525: OS/400 V4R5 Minimum operating system level for the #4425: OS/400 V4R4 Supported for migration in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 The #4425 CD-ROM device can be mounted in the base PCI enclosure of Models 830, 840, 870, and 890, in the #5074/#5079 PCI Expansion Towers, and in the #5094/#5294 Expansion Towers. The #4525 CD-ROM device can be mounted in the system unit of the Model 810 and 820. The #4625 CD-ROM replaces the #4425. The difference between the #4625 and the #4425 is in the mounting hardware. A #4625 can be placed everywhere that a #4425 can be placed, and can also be placed in a Model 825 system unit. The #4425 is not supported in a Model 820 or 825 system unit. The #4425, #4525, and #4625 are Customer Install Features. The #4425 was withdrawn from marketing as of 21 November 2003 for new orders. Conversion to feature #4425 remains available. The #4625 was withdrawn from marketing as of 15 July 2005.
#4430 #4530 #4630	**#4430/#4530/#4630 DVD-RAM** The #4430/#4530/#4630 reads and writes 4.7 GB on a single-sided media. For double-sided media, the media must be manually flipped. The #4430, #4530, or #4630 is capable of reading 640 MB CD-ROM disks. It can read CD-R, DVD-ROM and DVD-R media. The #4430, #4530, or #4630 can be used for alternate IPL, program distribution, and data interchange. It is not supported as an Alternate Installation Device (by selection via DST Boot Manager) with OS/400 V5R1. The #4430 DVD-RAM device can be mounted in the base PCI enclosure of Models 830 and 840, in the #5074/#5079 PCI Expansion Towers, in the #8093 Optional 1.8 M I/O Rack, and in the #9094 Base PCI I/O Enclosure of the Model 890. The #4530 DVD-RAM device can be mounted in the system unit of Models 800, 810, and 820. The #4630 CD-ROM replaces the #4430. The difference between the #4630 and the #4430 is in the mounting hardware. Minimum operating system level: OS/400 V4R5 with PTFs or OS/400 V5R1 Supported for migration in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L V5.2 A #4630 can be placed everywhere a #4430 can be placed, and can also be placed in a Model 825 system unit. The #4430 is not supported in a Model 825 system unit. The #4430, #4530, and #4630 DVD-RAM are 5.25-inch devices that install in a removable media device slot. A disk unit controller is required in the system unit or tower where the device is mounted. The #4430 is supported on Models 520 (9406 only), 525, 550, 570, 570 (POWER6), 595; Models 810, 820, 825, 830, 840, 870, and 890 models, as well as 9411-100. The #4530 is supported on Models 800, 810, and 820. The #4630 is supported on Models 520 (9406 only), 525, 550, 570, 570 (POWER6), and 595; Models 800, 810, 820, 825, 830, 840, 870, and 890, as well as 9411-100. The #4430, #4530, and #4630 are Customer Install Features. The #4430 was withdrawn from marketing as of 01 January 2004. A #4630 is the recommended replacement. The #4530 was withdrawn from marketing as of 01 October 2004. A #4533 is the recommended replacement. The #4630 was withdrawn from marketing as of 01 October 2004. A #4633 is the recommended replacement.

#4482 #4582 #4682	**#4482/#4582/#4682 4 GB ¼-inch Cartridge Tape Device** The #4482, #4582, or #4682 4 GB ¼-inch Cartridge Tape Device can be used for save/restore, alternate IPL, program distribution, migration, and ¼-inch cartridge tape exchange using the appropriate media and density. This tape unit is not compatible with System/36 ¼-inch cartridge tape units. An available removable media device slot and disk unit controller is required in the system unit or expansion tower in which the device is mounted. Minimum operating system level for the #4582 and #4682: OS/400 V4R5 Minimum operating system level for the #4482: OS/400 V4R4 Supported for migration in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 The #4482 is supported in the Model 520 (9406 only), 525, 550, 570, and 595. The #4482 can be mounted in the base PCI enclosure of Models 810, 820, 825, 830 and 840, in the #8093 Optional 1.8 M I/O Rack, and in the #9094 Base PCI I/O Enclosures of the Model 890. It is supported in the Model 870, the #5074/#5079 PCI Expansion Towers the #5094/#5294 Expansion Towers, the #8093 Optional 1.8 M I/O Rack, and the #9094 Base PCI I/O Enclosure of the Model 890. The #4582 can be mounted in the system unit of Models 800, 810, and 820. The #4682 can be mounted in the system unit of 800, 810, 820, 825, 830, 840, 870, and 890, in the #5074/#5079 PCI Expansion Towers, and in the #5094/#5294 Expansion Towers. The #4482, #4582, and #4682 are Customer Install Features. The #4482 was withdrawn from marketing as of 01 January 2004. The #4582 was withdrawn from marketing as of 01 October 2005. A #4584 is the recommended replacement. The #4682 was withdrawn from marketing as of 01 October 2005. A #4684 is the recommended replacement.
#4483 #4583 #4683	**#4483/#4583/#4683 16 GB ¼-inch Cartridge Tape Device** The #4483, #4583, and #4683 16 GB ¼-inch Cartridge Tape Device are 25 GB ¼-inch cartridge tape units that mount in a removable media device slot of a system unit or an expansion drawer or tower. The #4483, #4583, and #4683 16 GB ¼-inch Cartridge Tape Device can be used for save/restore, alternate IPL, migration, and ¼-inch cartridge tape exchange using the appropriate media and density. This tape unit is not compatible with System/36 ¼-inch cartridge tape units. Refer to 8.3, “QIC tape specifications and compatibility for System i models” on page 383, for additional characteristics. The #4483 can be mounted in the base PCI enclosure of Models 810, 820, 825, 830 and 840, in the #5074/#5079 PCI Expansion Towers, and is supported via upgrade in the Models 870 and 890. Supported in Models 520 (9406 only), 525, 550, 570, and 595. The #4583 can be mounted in the system unit of Models 810 and 820. The #4683 is supported in the Model 520 (9406 only), 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, and 890 for upgrades only. Supported for migration in Linux partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3 Minimum operating system level: for the #4483: OS/400 V4R4 Minimum operating system level: for the #4583 and #4683: OS/400 V4R5 The #4483/#4583/#4683 are Customer Install Features. The #4583 was withdrawn from marketing as of 3 December 2002.
#4486 #4586 #4686	**#4486/#4586/#4686 25 GB ¼-inch Cartridge Tape Device** The #4486, #4586, and #4686 25 GB ¼-inch Cartridge Tape Device is a 25 GB ¼-inch cartridge tape unit that mounts in a removable media device slot of a system unit or an expansion drawer/tower. The #4486, #4586, and #4686 25 GB ¼-inch Cartridge Tape Device can be used for save/restore, alternate IPL, program distribution, migration and ¼-inch cartridge tape exchange. This tape unit is not compatible with System/36 ¼-inch cartridge tape units. Refer to 8.3, “QIC tape specifications and compatibility for System i models” on page 383, for additional characteristics. Minimum operating system level: for the #4486: OS/400 V4R4 Minimum operating system level: for the #4586: OS/400 V4R5 Supported for migration in Linux partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3. The #4486 is supported by the Model 520 (9406 only), 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, and 890. The #4486 can be mounted in the base PCI enclosure of Models 830, 840, and 890, and in the #5074/#5079 PCI Expansion Towers.

#4486 #4586 #4686 (contd.)	**#4486/#4586/#4686 25 GB ¼-inch Cartridge Tape Device** The #4586 can be mounted in the system unit of Models 810 and 820. The #4686 can be mounted in the base PCI enclosure of Models 810, 825, 830, 840, 870, and 890, in the #5074/#5079 PCI Expansion Towers, in the #5094/#5294 Expansion Towers, in the #8093 Optional 1.8 M I/O Rack, and in the #9094 Base PCI I/O Enclosure of the Model 890. The #4686 is supported for upgrades only in the Model 520 (9406 only), 525, 550, 570, 590, 820, 830, and 840. The #4486, #4586, and #4686 are Customer Install Features. The #4586 was withdrawn from marketing as of 3 December 2002.
#4487 #4587 #4687 #8287	**#4487/#4587/#4687 50 GB ¼-inch Cartridge Tape Device** The #4487/#4587/#4687 50 GB ¼-inch Cartridge Tape Device can be used for save/restore, alternate IPL, program distribution, migration, and ¼-inch cartridge tape exchange using the appropriate media and density. These tape units are not compatible with System/36 ¼-inch cartridge tape units. The #8287 is an optional base 50 GB ¼-inch Cartridge Tape Unit for the Model 800 Standard and Advanced Editions. A disk unit controller in the system unit or tower is required where the device is mounted. Refer to 8.3, “QIC tape specifications and compatibility for System i models” on page 383, for additional characteristics. The #4487 can be mounted in the base PCI enclosure of the Models 830 and 840, in the #5074/#5079 PCI Expansion Towers, in the #8093 Optional 1.8 M I/O Rack, and in the #9094 Base PCI I/O Enclosure of the Model 890. The #4587 can be mounted in the system unit of Models 270, 800, 810, and 820. The #4687 can be mounted in the base PCI enclosure of Models 825, 870, and 890, in the #5074/#5079 PCI Expansion Towers, and in the #5094/#5294 Expansion Towers. The #8287 can be mounted in a removable media device slot in the Model 800 system unit or in the expansion tower. Supported for migration in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2. The #4487 is supported in Models 520 (9406 only), 525, 550, 570, 570 (POWER6), 595, 810, 820, 825, 830, 840, 870, and 890. Also supported on System p under #9411-100 The #4587 is supported in Models 800, 810, and 820. The #4687 is supported in Models 520, 525, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, and 890. The #8287 is supported in the Model 800. Minimum operating system level: OS/400 V5R1 (or earliest i5/OS release supporting the system model processor technology, when used with an IOP. The #4487 and #4687 are supported as an IOP-less drive in Models 520 (9406 only), 525, 550, 570, 570 (POWER6), 595. IOP-less support requires a minimum software level of i5/OS V5R4 and V5R3 and LIC V5R3M5 on Models 520 and 520+. For the latest prerequisite information, go to the Hardware tab of the IBM Prerequisite Web page at the following address: http://www-912.ibm.com/e_dir/eserverprereq.nsf The #4487, #4587, or #4687 are Customer Install Features. The #4487 was withdrawn from marketing as of 01 January 2004. The #4587 was withdrawn from marketing as of 01 June 2006. The #8287 was withdrawn from marketing as of 01 October 2005.

#4531 #4631	**#4531 DVD-ROM/#4631 DVD-ROM** The #4531/#4631 DVD-ROM is a 5 ¼-inch device that is mounted in a removable media device slot. The #4531/#4631 is capable of reading 640 MB CD-ROM media and 4.7 GB DVD-RAM media. It is an alternate IPL (IDE bus attach) device, so a SCSI/ATAPI converter card is required and is included with the device. The converter card requires its own power source, so a power flex cable is included. The #4531/#4631 can be used for Alternate IPL (IBM distributed CD-ROM media only) and program distribution. The #4531 can be mounted in the system unit of Models 800, 810, and 820. The #4631 can be mounted in the system unit of Models 820, 825, 830, 840, 870, 890, in the #5074/#5079 PCI Expansion Tower, and in the #5094/#5294 Expansion Towers. A disk unit controller is required in the system unit or tower where the device is mounted. A CD-ROM, DVD-RAM or DVD-ROM is required for each system. The #4531 is supported in the Models 270, 800, 810, and 820. The #4631 is supported in the Models 520, 525, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, 890, SB2, and SB3. Minimum operating system level: OS/400 V5R2 Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 The #4531 and #4631 are Customer Install Features. The #4531 was withdrawn from marketing as of 01 December 2005. The #4631 was withdrawn from marketing for new orders only on 01 December 2005.
#4584 #4684 #9284	**#4584 30 GB ¼-inch Cartridge Tape Device/#4684 30 GB ¼-inch Cartridge Tape Device** The #4584/#4684, #9284, 30 GB ¼-inch Cartridge Tape Device can be mounted in a removable media device slot of a system unit or an expansion tower. The #4584/#4684, and #9284 can be used for save/restore, alternate IPL, program distribution, migration, and ¼-inch cartridge tape exchange. The #9284 is a base 30 GB ¼-inch Cartridge Tape Unit for the Model 800 Standard and Advanced Editions. Refer to 8.3, “QIC tape specifications and compatibility for System i models” on page 383, for additional characteristics. The #4584 is supported in Models 800, 810, and 820. The #4684 is supported in Models 520, 525, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, and 890. Also supported on System p under #9411-100. The #9284 is supported in the Model 800. The #4584 can be mounted in the system unit of Models 800, 810, and 820. The #4684 can be mounted in the base PCI enclosure of Models 825, 830, 840, 870, and 890, in the #5074/#5079 PCI Expansion Towers, in the #5094/#5294 Expansion Towers, in the #8093 Optional 1.8 M I/O Rack, and in the #9094 Base PCI I/O Enclosure of the Model 890. The #9284 can be mounted in a removable media device slot in the Model 800 system unit or in the expansion tower. Minimum operating system level for the #4584 and #4684: OS/400 V4R5 or earliest release supporting the system processor technology when using an IOP. Minimum operating system level for the #4684 to function as an IOP-less drive: in Models 520 (9406 only), 525, 550, 570, 570 (POWER6), 595. IOP-less support requires a minimum software level of i5/OS V5R4 and V5R3 and LIC V5R3M5 on Models 520 and 520+. For the latest prerequisite information, go to the Hardware tab of the IBM Prerequisite Web page at the following address: http://www-912.ibm.com/e_dir/eserverprereq.nsf Minimum operating system level for the #9284: OS/400 V5R2. Supported for migration in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 The #4584 and #4684 are Customer Install Features. The #4584 was withdrawn from marketing as of 01 June 2006. The #9284 was withdrawn from marketing as of 01 October 2005.

#4585 #4685 #9285	**#4585 80 GB VXA-2 Tape Device/#4685 80 GB VXA-2 Tape Device** The #4585 and 4685 can be used for save and restore, alternate IPL, program distribution, and migration. The tape format is not compatible with other tape units currently offered on iSeries systems. The #9285 is a Base 80 GB VXA-2 Cartridge Tape Unit for the Model 800 Standard and Advanced Editions. Refer to 8.4, "VXA, LTO, and DAT tape specifications and compatibility for System i models" on page 384, for additional characteristics. The #4585 is supported by the #2757, #2763, #2780, #2782, #4748, #4778, #5705 (Model 800 and 810), and #9767. The #4685 is supported by the #2757, #2763, #2780, #2782, #4748, and #4778. The #4585 is supported in the Models 800, 810, and 820. The #4685 is supported in Models 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, and 890. The #4585 80 GB VXA-2 Tape Device can be mounted in a removable media device slot of a Model 800, 810, or 820 system unit. The #4685 80 GB VXA-2 Tape Device can be mounted in a removable media device slot of a Model 825, 830, 840, 870, or 890 system unit, or a #5065, #5066, #5074, #5079, #5094, #5294 expansion tower. The #9285 can be mounted in a removable media device slot in the system unit or expansion tower. Minimum operating system level: OS/400 V5R1 Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 The #4585 and #4685 are Customer Install Features. The #4585 was withdrawn from marketing as of 01 June 2006. The #9285 was withdrawn from marketing as of 01 October 2005.
#4633	**#4633 DVD-RAM** The #4633 DVD-RAM is a half high optical media device. The #4633 uses cartridgeless media only. This is different from the #4630 DVD-RAM, which can use cartridge media. The media can be removed from the cartridge to be used in the #4633. Media support is limited to writing DVD-RAM only and reading of CD-ROM, CD-R, DVD-ROM and DVD-RAM. Minimum operating system level: OS/400 V5R2 Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 Supported on Models 520, 525, 550, 570, 595, 570 (POWER6), 800, 810, 820, 825, 830, 840, 870, 890, and in #5074, #5079, #5094, #5294 and #9094 expansion towers. The Model 570 (POWER6) is not orderable within CEC enclosures. The #4633 is a Customer Install Feature.
#5746	**#5746 Half High 800GB/1.6TB LTO4 SAS Tape Drive** The #5746 SAS Tape Drive uses industry standard Ultrium media. The tape drive Write/Read Ultrium4 (LTO-4), Write/Read Ultrium3 (LTO-3), and Read Ultrium2 (LT02) formats. It has capacity of 800GB native or 1.6TB compressed. Key attributes include: ► Uses streaming I/O operations. ► Data Transfer Rate: 120 MB/sec with speed matching down to 31 MB/sec with LTO-4 media. ► Compatability: LTO4 (Read/Write), LTO3 (Read/Write) and LTO2 (Read). ► This feature includes one each of the following: HHLTO-4 SAS Tape Drive, LTO-4 Cleaning Cartridge, and LTO-4 Test Cartridge. ► Requires SAS cable group #3655 (SAS HH) or #3656 (SAS Y SFF). ► Can be used as a choice tape device for a system unit 1.6-inch (41mm) half-high media bay of a POWER6 Power 520 8203-E4A, 9407-M15, 9409-M35 and a POWER6 Power 550 8204-E8A, 9409-M15 machine types. ► System unit minimum / maximum: 0 / 1 Operating System levels required: ► IBM i 5.4 with PTF SInnnn or later ► IBM i 6.1 with PTF SInnnn or later ► AIX 6.1 with the 6100-01 Technology Level, or later ► AIX 5.3 with the 5300-08 Technology Level, or later ► AIX 5L for POWER version 5.3 with the 5300-06 Technology Level and Service Pack 7 ► AIX 5L for POWER version 5.3 with 5300-07 and Server Pack 4 ► AIX Version 6.1 with the 6100-00 Technology Level and Service Pack 5 ► SUSE Linux Enterprise Server 10 SP1 for POWER Systems, or later ► Red Hat Enterprise Linux for POWER version 4.5 or later ► Red Hat Enterprise Linux for POWER version 5.1 or later Initial Order/MES/Both/Supported: Both #5746 is a Customer Install Feature.

#5751	**#5751 DVD-RAM** The #5751 DVD-RAM is an IDE DVD slimline device with multiple DVD media read/write capability. Refer to 8.3, “QIC tape specifications and compatibility for System i models” on page 383, for additional characteristics. Minimum operating system level: i5/OS V5R3 Supported by i5/OS if placed in the top slimline bay. Supported in Linux and AIX partitions if placed in the bottom slimline bay. Supported in system unit of Models 520, 525, 550, and 570. The #5751 is a Customer Install Feature.
#5753 #9653	**#5753 30 GB ¼-inch Cartridge Tape Device/#9653 Base 30 GB ¼-inch Cartridge Tape Unit** The #5753/#9653 is a 30 GB ¼-inch Cartridge Tape Unit that can be mounted in a removable media device slot in the system unit. The #5753 can be used for save/restore, alternate IPL, program distribution, migration and ¼-inch Cartridge Tape exchange. The #9653 is a base 30 GB ¼-Inch Cartridge Tape Unit for System i5 Express Configurations. Refer to 8.3, “QIC tape specifications and compatibility for System i models” on page 383, for additional characteristics. The #5753 supports SLR60 and is supported as an IOP-less drive. Supported on Models 515, 520, 525, 550. The #5753 can be mounted in Models 9405 520, 520+, and 550+. The #9653 can be mounted in a removable media device slot of a 9405 520+ and 9406 520+ and 9407 515. Minimum operating system level: i5/OS V5R3 Minimum operating system level for the #5753, and #9653 to function as an IOP-less drive: i5/OS V5R4; or i5/OS V5R3 with LIC V5R3M5 on Models 520 and 520+. Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 The #5753 is a Customer Install Feature.
#5754 #8754	**#5754 50 GB ¼-inch Cartridge Tape Device/#8754 Optional Base 50 GB ¼-inch Cartridge Tape Unit** The #5754 is a 50 GB ¼-inch Cartridge Tape Unit that can be mounted in a removable media device slot of a system unit. The #5754 can be used for save/restore, alternate IPL, program distribution, migration and ¼-inch Cartridge Tape exchange. Refer to 8.3, “QIC tape specifications and compatibility for System i models” on page 383, for additional characteristics. Supported on Models 520, 525 and 550. The #5754 is supported as an IOP-less drive in the 520+, 525, 550+, 9405 520, 9406 520, 550. Minimum operating system level: i5/OS V5R3 Minimum operating system level for the #5754 to function as an IOP-less drive: i5/OS V5R4; or i5/OS V5R3 with LIC V5R3M5 on Models 520 and 520+. Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 The #5754 is a Customer Install Feature. The #8754 was withdrawn from marketing as of 15 October 2004.

#5755	**#5755 - 200 GB LTO-2 Tape Unit** The #5755 provides a 200 GB native capacity (400 GB compressed capacity) tape device that installs in a half-high removable media device slot in the system unit. The #5755 can read and write both LTO Gen-1 and LTO Gen-2 tape cartridges. The characteristics are: ► Capacity: 200 GB native ► Compression Mode: 400 GB ► Form factor: 5.25-inch, half-high ► Media: LTO Gen-1 or LTO Gen-2 Data Cartridge ► Technology: Linear Tape Open ► Data rate (compressed): 48 MBps ► Interface: SCSI-3 low LVD/single ended (SE) Refer to 8.4, “VXA, LTO, and DAT tape specifications and compatibility for System i models” on page 384, for additional characteristics. The half-high LTO-2 tape drive does not require an IOP. **Note:** The #5755 is used for Base Product Configuration, Express Configuration 2, or for any MES order. When ordering a new Express Configuration 1 or Express Configuration 3, use the #8755 when replacing the 4mm tape drive normally included in these packages. The #5755 is supported as an IOP-less drive on Models 515, 520, 520+, 525, 550, 550+ in the System Unit. Minimum operating system level: i5/OS V5R4 and V5R3 and LIC V5R3M5 on Models 520 and 520+. For the latest prerequisite information, go to the Hardware tab of the IBM Prerequisite Web page at the following address: http://www-912.ibm.com/e_dir/eserverprereq.nsf Minimum operating system level for other than i5/OS are AIX 5L for POWER V5.2 for IBM eServer, Red Hat Enterprise Linux AS for POWER Version 3, SUSE Linux Enterprise Server 9 for POWER The #5755 is a Customer Install Feature.
#5756	**#5756 DVD-ROM Drive IDE Slimline** The 8x/24x (max) Slimline IDE DVD-ROM is an internal tray loading DVD-ROM drive providing up to 3600 KB/sec (CD-ROM) and 10.3 MBps (DVD-ROM) data transfer rates. It is a 12.7mm slimline form factor multi-session capable, DVD-ROM drive that provides state-of-the-art performance and supports existing 650 MB CD-ROM, 4.7 GB DVD-ROM, and 9.4 GB DVD-ROM (double-sided) disks. This drive also reads Type II (removable from cartridge) DVD-RAM disks at DVD-ROM speeds. System boot and install functions are supported with CD-ROM and DVD-RAM media. The characteristics are: ► Media Data Transfer Rate: CD-ROM=3600 KB/sec (max): DVD-ROM=10.3 MBps (max) ► Interfaces: IDE/ATAPI ► Average Random Access Time: CD-ROM=95 ms (typical): DVD-ROM=150 ms (typical) ► Buffer Memory: 256 KB ► Media Capacity: CD-ROM=650 MB: DVD-ROM= 4.7 GB (single-sided); 9.4 GB (double-sided) ► Multisession capable (Reads CD/R and CD/RW media) ► 12.7 mm Slimline form factor ► Interface supports standard and extended XA formats ► Loading tray supports 12 cm and 8cm disks The limitations are: ► DVD video is not supported. ► DVD-ROM only reads CD-type formatted media with AIX 5.1 or later. Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5 or later Supported on Model 570 (POWER6).

#5757	**#5757 DVD-RAM Drive IDE Slimline** The IBM 4.7 GB IDE Slimline DVD-RAM Drive is an internal tray loading, multifunction storage device capable of reading and writing 4.7 GB DVD-ROM disks as well as reading other optical media disks. This drive also reads Type II (removable from cartridge) DVD-RAM disks. It is a 12.7mm high Slimline form factor, multi-session capable, DVD-RAM drive. System boot and install functions are supported with CD-ROM and DVD-RAM media. The characteristics are: ► Media Data Transfer Rate: 3600 KB/sec CD-ROM (24X) max at the outer diameter; 10.8 MBps read (8X DVD-ROM); 2.7MBps write (2X DVD-RAM) and 2.7MBps read (2X DVD-RAM) ► Interface: Parallel IDE ► Average Random Access Time: 150 ms CD-ROM; 180 ms DVD-ROM; 229 ms DVD-RAM ► Buffer memory: 2 MB ► High-speed burst rate of 16, 16, or 33 MBps for PIO/MDMA/UDMA transfers respectively ► Loading tray accommodates both 8 cm disks and 12 cm disks. ► Reads multi-session disks ► Reads CD-ROM, CD-R, CD-RW, DVD-ROM, and DVD-RAM disks. ► Reads 2.6GB DVD-RAM media; reads and writes 4.7 GB and 9.4 GB (double-sided) DVD-RAM media ► Supports all major CD-ROM formats including Mode 1, Mode 2, XA, CDDA and audio The limitations are that DVD video is not supported. Minimum operating system level: i5/OS V5R4 with License Internal Code V5R4M5 or later Supported on Model 570 (POWER6).
#6134	**#6134 60 GB 8 mm Tape Device** The #6134 is an 8 mm, 5.25-inch half-high, 16-bit, internal Auto-docking tape drive, usable with a Linux operating system only. The #6134 provides a high capacity tape drive for save/restore and archiving functions. This tape drive uses IBM 8 mm data cartridges and is compression capable, providing a capacity of up to 150 GB. The characteristics are: ► Capacity: 60 GB native mode ► Compression Mode, 150 GB (typical) ► Form factor: 5.25-inch Half-high ► Media: IBM 8 mm Data Cartridge with Smart Clean Technology ► Technology: Helical Scan, Rotating Head ► Operation: Streaming ► Data Transfer Rate: 12 MBps native mode, 30 MBps typical ► Interface: SCSI-2 16-bit LVD/Single-ended (SE) Asynchronous/Synchronous Minimum operating system level: SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3 Supported on Models 520, 525 and 550. The #6134 is a Customer Install Feature. The #6134 was withdrawn from marketing as of 24 June 2005. A #6120 or #6169 are the recommended replacements.
#6258 #9258	**#6258 36GB 4mm Tape Unit/#9258 36GB 4mm Tape Unit** The #6258 36GB 4mm Tape Unit/#9258 36GB 4mm Tape Unit can be mounted in a removable media device slot of a system unit. The #6258 can be used for save/restore, alternate IPL, program distribution, migration and 4 mm Cartridge Tape exchange. The characteristics are: ► Capacity: 36 GB native mode ► Compression Mode, 72 GB (typical) ► Form factor: 5.25-inch Half-high ► Media: IBM DAT72 Data Cartridge ► Technology: Helical Scan, Rotating Head ► Operation: Streaming ► Data Transfer Rate: 3 MBps native mode, 6 MBps typical ► Interface: SCSI-2 16-bit LVD/single Refer to 8.4, “VXA, LTO, and DAT tape specifications and compatibility for System i models” on page 384, for additional characteristics. Minimum operating system level: i5/OS V5R4, AIX 5L and Linux. Supported on Models 515, 520, 525, The #6258 is a Customer Install Feature.

#6279	**#6279 160 GB VXA-320 Tape Drive** The #6279 160 GB VXA-320 Tape drive is a 5.25-inch, half-high, Ultra2 SCSI tape drive, which provides a high capacity for save/restore and archive functions. This tape drive uses VXA tape data cartridges and is compression capable, providing a capacity of up to 320 GB. Characteristics: ► Form Factor: 5.25-inch, half-high ► Media: uses VXA tape data cartridges ► Technology: Helical scan, rotating head ► Operation: Streaming ► Interface: Ultra2 SCSI, 16-bit (wide), LVD and SE compatible Refer to 8.4, "VXA, LTO, and DAT tape specifications and compatibility for System i models" on page 384, for additional characteristics. The #6279 is driven by the embedded disk or tape controller depending upon configuration, either IOP based or IOP-less. Minimum operating system level: i5/OS V5R3, Red Hat Enterprise Linux AS for POWER Version 3, SUSE Linux Enterprise Server 9 for POWER, AIX 5L for POWER V5.2 for IBM eServer Supported in Models 520+, 525, 550+, 9405 and 9406 520, 550. The #6279 is a Customer Install Feature.
RPQ 847184	RPQ 847184 provides the mounting hardware to convert selected iSeries #63xx/#64xx tape features into #45xx equivalents for installation in iSeries systems. See the RPQ description for a complete list of applicable conversions.

4.12 Magnetic media controllers

Magnetic media controllers	
#0165	**#0165 VHDCI attachment** The #0165 VHDCI attachment is used to indicate that an external CD, DVD, or tape device is to be attached to a #5702 PCI-X Ultra Tape Controller, #5705 PCI-X Tape/DASD Controller, #5712 PCI-X Tape/DASD Controller, or #5715 PCI-X Tape/DASD Controller. Supported on Models 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, and 890.
#0618	**#0618 - Direct Attach #2757 PCI-X Ultra RAID Disk Controller**r The #0618 is the Linux direct attach feature for the #2757 PCI-X Ultra RAID Disk Controller. Supported on Models 800, 810, 820, 825, 830, 840, 870, and 890. The #0618 was withdrawn from marketing as of 01 June 2006. A #0627 - Direct Attach #2780 PCI-X Ultra4 RAID Disk Controller is the recommended replacement.
#0624	**#0624 - Direct Attach #5702 PCI-X Ultra Tape Controller** #0624 is the direct attach of the #5702 PCI-X Ultra Tape Controller to an AIX or Linux partition.
#0641	**(#0641) - Direct Attach #5590 PCI-X Ultra320 SCSI Disk Controller** The #0641 is the AIX or Linux direct attach for the #5590 that consists of the #2780 disk controller with 757 MB Write Cache Controller and 1.5 GB auxiliary write cache. The #0641 can support operating system-based or application-based mirroring protection or support controller-based RAID-5. Concurrent battery maintenance is not supported. The controller also supports internal tape units, CD-ROM units, and DVD units. The #0641 has four internal u320 SCSI buses. The #5590 and #0641 are physically the same disk controller and auxiliary write cache IOA pair of cards, but have different feature numbers to denote to IBM configurator tools which operating system is using them. The #0641 indicates no IOP is used and the card is directly controlled by an AIX 5L or Linux partition. Supported on POWER5 Models 520, 525, 550, 570, and 597. Not supported for direct attach on POWER6 models.

#0647	**#0647 PCI-X Disk/Tape Controller without IOP** The #0647 provides a PCI-X Disk/Tape SCSI Controller with zero write cache and without RAID support. The #0647 is the #0647 is the Linux direct attach feature for the #5736 PCI-X Disk/Tape Controller with IOP. A maximum of six disk drives is supported on the #0647. Removable media devices (tape, optical libraries, CD-ROM, DVD-ROM, and DVD-RAM) are also supported. The #0647 has two U320 buses each with a bus data rate of up to 320 MBs. Each SCSI bus can be either internal (using an internal port) or external (using an external port), but not both. There are four physical ports on the #0647, two internal and two external. Internal devices connect to the internal ports (1 or 2). External devices connect to the external ports (one or two) and use an LVD interface and VHDCI connectors. A #1850 VHDCI to P Converter Cable is available to connect to external devices with type P connectors. The #0647, #5736, #5766, and #5775 are physically the same adapter card. An #0647 indicates that the card is dedicated to an AIX 5L or Linux partition and an IOP is not being used. Supported on all (including "+ models") 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models.
#0648	**#0648 PCI-X Disk Controller 90MB without IOP** The #0648 is the Linux direct attach feature for the #5737 PCI-X Disk Controller 90MB with IOP. The #0648 has two U320 SCSI buses each with a bus data rate of up to 320 MBs. A maximum of 12 internal disk drives and up to two internal removable media devices (tape, CD-ROM, DVD-ROM or DVD-RAM) are supported on the #0648. A minimum of three disk drives are required for RAID-5, providing protection against a single drive failure in an array. A minimum of four disk drives are required for RAID-6, providing protection against up to two drives failing in an array. The #0648, #5737, and #5776 are physically the same adapter card. The #2780/#5580 and #2757/#5581 disk controllers with an effective 757 MB write cache provide greater disk performance and can have an auxiliary write cache IOA to protect the write cache contents. Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models. The #0648 was withdrawn from marketing on POWER6 models in October 2007.
#0649	**#0649 Direct Attach #5583 Controller with 1.5GB Auxiliary Write Cache** The #0649 is the Linux direct attach feature for the #5583 Controller with 1.5GB Auxiliary Write Cache without IOP. The #0649 was withdrawn from marketing on POWER5 and POWER6 models in October 2007.
#0650	**#5778 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP** The #0650 is the AIX or Linux direct attach feature for the #5778 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP. The #0650 was withdrawn from marketing on POWER5 and POWER6 models in October 2007.
#0651	**#5782 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP** The #0651 is the AIX or Linux direct attach feature for the #5782 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP. The #0651 was withdrawn from marketing on POWER5 and POWER6 models in October 2007.
#0654	**#5800 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP** The #0654 is the AIX or Linux direct attach feature for the #5800 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP. The #0654 was withdrawn from marketing on POWER5 models in October 2007.
#0705	**#0705 Forced #2749 Placement** The #0705 Forced #2749 Placement forces placement of a #2749 PCI Ultra Magnetic Media Controller in the first Multi-adapter Bridge Boundary of the system. With this configuration, using the Alternate Install Device Option via DST is not required. Any device attached to that #2749 is then the Alternate-IPL device. Supported on Models 800, 810, 870, 890. The #0705 was withdrawn from marketing as of 01 April 2005.
#0707	**#0707 Forced #2768 Placement** The #0707 Forced #2768 Placement forces placement of a #2768 PCI Magnetic Media Controller IOA in the first Multi-adapter Bridge Boundary of the system. With this configuration, using the Alternate Install Device Option via DST is not required. Any device attached to that #2768 is then the Alternate-IPL device. Supported on Models 810, 870, and 890. The #0707 was withdrawn from marketing as of 01 April 2005.

#0708	**#0708 Forced #5702 Placement** The #0708 Forced #5702 Placement forces placement of a #5702 PCI-X Ultra Tape Controller IOA in the first Multi-adapter Bridge Boundary of the system. With this configuration, using the Alternate Install Device Option via DST is not required. Any device attached to that #5702 is then the Alternate-IPL device. Supported on Models 800, 810, 870, 890.
#2749	**#2749 PCI Ultra Magnetic Media Controller** The #2749 is an Ultra SCSI IOA that provides attachment capability for external tape devices and external optical devices. The #2749 can attach one tape drive *or* one optical drive. The LTO, 3494, 3590, Optical and 8mm tape devices requiring External High Voltage Differential (HVD) connections can be attached. See the tables in 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. Use other tape attachment-capable controllers for tape devices or tape libraries that use LVD connections or fibre channel connections. Minimum operating system level: OS/400 V4R3 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller uses an IOP. The POWER6 model processor enclosures do not support IOP cards. The #2749 is a Customer Install Feature. The #2749 was withdrawn from marketing as of 03 March 2005.
#2757	**#2757 PCI-X Ultra RAID Disk Controller** The #2757 PCI-X Ultra RAID Disk Controller is an Ultra SCSI controller with a maximum write cache size of 235 MB (757 MB compressed) that provides RAID-5 protection for internal disks and also supports internal tape units, CD-ROM, and DVD units. The #2757 has four Ultra4 SCSI buses. In addition to providing RAID-5 protection for disks, the #2757 PCI-X Ultra RAID Disk Controller is designed to work as a high performance controller for disks protected by system mirroring or disks with no protection. The #2757 PCI-X Ultra RAID Disk Controller supports a maximum of 20 disk units. A minimum of three disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of six arrays is allowed per controller, with a maximum of 18 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across either 2, 4, 8, or 16 disk units in an array. If an array of three disk units is started, parity is spread across two disk units. If an array of four to seven disk units is started, parity is spread across four disk units. If an array of 8-15 disk units is started, parity is spread across eight disk units. If an array of 16-18 disk units is started, parity is spread across 16 disk units. *Availability* is the number of arrays and size of each array can be influenced by specifying an optimization of either *Balance*, *Performance*, or *Capacity* in iSeries Navigator when starting arrays. An optimization of *Balance* is used by default when starting arrays from DST or SST options. If disk units are included into an existing array, parity can be spread across less than the preferred number of disk units. In this case, the RAID function must be stopped and then started to redistribute the parity. The #2757 controls up to two removable media devices (internal tape, CD-ROM, and DVD). The #2757 does not support DASD compression. Due to system unit and system unit expansion disk unit cage SCSI bus designs, only the Models 800 and 810 have a suitable system configuration to allow 18 disk units to attach to a single #2757. All other system unit or tower disk configurations restrict the number of attaching disk units to 15 or less. Requires a #7137 DASD Concurrent Maintenance Cage for the Model 800. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #2757 is a Customer Install Feature. **Notes:** ► The #2757 was withdrawn from marketing as of 3 March 2007. ► The auxiliary write cache controller #5591with 1.5 GB write cache can be used with the #2757. There is no performance gain using the #5591. ► New order alternatives to the #2757 include #2780, #5738, or #5777 PCI disk controllers.

#2763	**#2763 PCI RAID Disk Unit Controller** The #2763 is an Ultra2 SCSI controller with a 10 MB write-cache that provides RAID-5 protection for internal disk units and supports up to two removable media devices (internal tape units and CD-ROM units). In addition to providing RAID-5 protection for disks, the #2763 is also designed to work as a high performance controller for disks protected by system mirroring or disks with no protection. The #2763 controller supports a maximum of 12 disk units and is only supported on the Model 820, #5075 PCI Expansion Tower, and supported on the #0595/#5095. A minimum of four disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of three arrays is allowed per controller, with a maximum of 10 disk units allowed per one array. All disk units in an array must be of the same capacity. Parity is spread across four disk units for arrays of four to 10. The #2763 does not support hardware disk compression. The #2763 does not support the #4331 1.6 GB Read Cache Device. The #2763 can be directly attached to a Linux partition. When ordered as #0604 - Direct Attach #2763 PCI RAID Disk Unit Controller, an IOP is not required. When directly attached to a Linux partition, the #2763 cannot be accessed by OS/400 partitions. When directly attached to a Linux partition, the #2763 does not support RAID or hardware disk compression. Requires a long PCI card slot. Minimum operating system level: OS/400 V4R5 Supported on Models 250, 270, 9406 520, 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #2763 is a Customer Install Feature. The #2763 was withdrawn from marketing as of 21 November 2003 for new orders. Conversions to feature #2763 remain available. A #5703 PCI-X RAID Disk Unit Controller is the recommended replacement.

#2765	**#2765 PCI Fibre Channel Tape Controller** The #2765 PCI Fibre Channel Tape Controller provides Fibre Channel attachment capability for external tape devices. The #2765 supports point-to-point and arbitrated loop topologies and has an LC type cable connector. Each #2765 is shipped with a wrap connector (P/N 05N6767). The devices supported for Fibre Channel attachment are: ► 3534-1RU SAN Fibre Channel Managed Hub (1 Gbps) ► Fibre Channel Switches: – 2031-224 McDATA Sphereon 4500 Fabric Switch – 2031-232 McDATA Sphereon 3232 Fabric Switch – 2109 S08/S16 (1 Gbps) – 2109 F16 (2 Gbps) – 3534 F08 (2 Gbps) ► SAN Fabric Directors: – 2032-064 McDATA Intrepid 6064 Enterprise Fibre Channel Director – 2032-140 McDATA Intrepid 6140 Director See the tables in 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. A #0163 Fibre Channel Attach Specify code is required for each device attaching to a System i server via a #2765. The following adapter kits are required when connecting SC-type cables to the #2765: ► #0371 - LC-SC Adapter Kit (50 µm) can be ordered on initial, model upgrade, and simple MES orders. This optional kit is used to attach SC- type Fibre (50 µm) cables to a #2765. This kit contains a 2m LC-ST cable and ST-SC adapter for 50 µm fibre. ► #0372 - LC-SC Adapter Kit (62.5 µm) can be ordered on initial, model upgrade, and simple MES orders. This optional kit is used to attach SC-type Fibre (62.5 µm) cables to a #2765. This kit contains a 2m LC-ST cable and ST- SC adapter for 62.5 µm fibre. The #2765 can be directly attached to a Linux or AIX partition. When ordered as #0611 - Direct Attach #2765 PCI Fibre Channel Tape Controller, an IOP is not required. When directly attached to a Linux/AIX partition, the #2765 cannot be accessed by i5/OS partitions. An optics cleaning kit (P/N 46G6844) and instruction sheet (P/N 21P6238, form number SY27-2604) are supplied, one per system, when a #2765/#2766 is ordered. Multitarget support with a maximum of 16 targets with OS/400 V5R2. i5/OS V5R3 or later required to support the TS3100/TS3200 Tape Library Express. The #2765 does not support the Alternate IPL device function. A D-mode IPL is required using CD-ROM, DVD-ROM, or another alternate IPL tape device. Then select a #2765 to complete the installation or recovery process. Minimum operating system level: OS/400 V5R1 Supported on Models 270, 9406 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #2765 is a Customer Install Feature. The #2765 was withdrawn from marketing as of 01 October 2004. A #5704 is the recommended replacement.

#2766	**#2766 PCI Fibre Channel Disk Controller** The #2766 provides Fibre Channel attachment capability for external disk devices. The #2766 supports point-to-point and arbitrated loop topologies and has an LC type cable connector. Each #2766 is shipped with a wrap connector (P/N 05N6767). The following devices are supported by the #2766: ► 2105-F10/F20/800 IBM TotalStorage Enterprise Storage Server® ► 3534-1RU SAN Fibre Channel Managed Hub (1 Gbps) ► Fibre Channel Switches: – 2031-224 McDATA Sphereon 4500 Fabric Switch – 2031-232 McDATA Sphereon 3232 Fabric Switch – 2109 S08/S16 (1 Gbps) – 2109 F16 (2 Gbps) – 3534 F08 (2 Gbps) ► SAN Fabric Directors: – 2032-064 McDATA Intrepid 6064 Enterprise Fibre Channel Director – 2032-140 McDATA Intrepid 6140 Director The following adapter kits are required when connecting SC type cables to the #2766: ► #0371 - LC-SC Adapter Kit (50 µm) optional kit is used to attach SC-type Fibre (50 µm) cables to a #2766. The #0371 kit contains a 2m LC-ST cable and ST-SC adapter for 50 µm fibre. ► #0372 - LC-SC Adapter Kit (62.5 µm) optional kit is used to attach SC-type Fibre (62.5 µm) cables to a #2766. The #0372 kit contains a 2m LC-ST cable and ST-SC adapter for 62.5 µm fibre. An optics cleaning kit (P/N 46G6844) and instruction sheet (P/N 21P6238, form number SY27-2604) are supplied, one per system, when a #2765/#2766 is present or ordered. The #2766 requires a dedicated IOP. No other IOA is allowed on an IOP with the #2766. The #2766 can be directly attached to a Linux partition. When ordered as #0612 - Direct Attach #2766 PCI Fibre Channel Disk Controller, an IOP is not required. When directly attached to a Linux partition, the #2766 cannot be accessed by OS/400 partitions. Clients must supply all Fibre Channel cables for the #2766. See the “Hard rules: iSeries IOA capabilities” topic in *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, or *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638, for OS/400 V5R2 or earlier releases, for additional restrictions. Multitarget support with a maximum of 32 targets is supported with OS/400 V5R2. Minimum operating system level: OS/400 V5R1 Supported on Models 270, 9406 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #2766 is a Customer Install Feature.
#2768	**#2768 PCI Magnetic Media Controller** The #2768 PCI Magnetic Media Controller provides Ultra SCSI attachment capability for an external tape or an external CD-ROM device that has a Single Ended SCSI. The #2768 has one HD68 connector/port. The #2768 supports a minimum of one of the following devices: ► 7206-VX2 80 GB VXA-2 External Tape Drive ► 7207-122 QIC-SLR Tape Bridge Box (4 GB External ¼-inch Cartridge Tape Drive) ► 7208-345 60 GB External 8 mm Tape Drive ► 7329-308 SLR100 ¼-inch Tape Autoloader ► 7210-020 CD-ROM Bridge Box ► 7210-025 DVD-RAM Drive See 8.6, “Device cabling rules for #5702, #5705, #5712, #5715, #5736, #2718, and #2768 PCI Magnetic Media Controller” on page 389, for additional information about connecting devices to the #2768, including daisy-chaining options. Minimum operating system level: to support the 7329-308 and 7208-345: OS/400 V4R5 Minimum operating system level: to support the 7206-VX2, 7210-020, and 7210-025: OS/400 V5R1 Supported on Models 810, 825, 870, and 890. The #2768 is a Customer Install Feature. The #2768 was withdrawn from marketing as of 01 October 2004. A #5712 PCI-X Tape/DASD Controller is the recommended replacement.

#2780	**#2780 PCI-X Ultra4 RAID Disk Controller** The #2780 PCI-X Ultra4 RAID Disk Controller is an Ultra4 (u320) SCSI controller with a maximum compressed write cache size of 757 MB and maximum compressed read cache of one GB. The #2780 provides RAID-5 protection for internal disks and also supports internal tape units, CD-ROM, and DVD units. The #2780 has four Ultra4 SCSI buses. In addition to providing RAID-5 protection for disks, the #2780 PCI-X Ultra4 RAID Disk Controller is designed to work as a high performance controller for disks protected by system mirroring or disks with no protection. The #2780 PCI-X Ultra4 RAID Disk Controller supports a maximum of 20 disk units. A minimum of three disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of six arrays is allowed per controller, with a maximum of 18 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across either two, four, eight, or 16 disk units in an array. If an array of three disk units is started, parity is spread across two disk units. If an array of four to seven disk units is started, parity is spread across four disk units. If an array of 8-15 disk units is started, parity is spread across eight disk units. If an array of 16-18 disk units is started, parity is spread across 16 disk units. The number of arrays and size of each array can be influenced by specifying an optimization of either *Balance*, *Performance*, or *Capacity* when starting arrays in iSeries Navigator. An optimization of *Balance* is used by default when starting arrays from DST or SST options. If disk units are included into an existing array, the number of parity drives does not increase, so parity can be spread across less than the preferred number of disk units. In this case, the RAID function must be stopped and then started in order to redistribute the parity. The #2780 controls up to two removable media devices (internal tape, CD-ROM, and DVD). The #2780 does not support DASD compression. The #2780 has a battery that provides concurrent maintenance and improved resiliency. The #2780 can be directly attached to a Linux or AIX partition. When ordered as #0627 - Direct Attach #2780 PCI-X Ultra4 RAID Disk Controller, an IOP is not required. When directly attached to a Linux or AIX partition, the #2780 cannot be accessed by OS/400 partitions. Requires one 3V long PCI slot. A #7137 DASD Concurrent Maintenance Cage is required for the Model 800. Placement rules: ► Not supported in Slot 1 of #5074, #5079, #5094, and #5294. ► Due to system unit and external tower disk unit cage SCSI bus designs, only the Models 270, 800 and 810 have a suitable system configuration to allow 18 disk units to attach to a single #2780. All other system unit or tower disk configurations restrict the number of attaching disk units to 15 or less. ► Further restrictions apply when a MES Conversion #0299 to add an Auxiliary Write Cache is made. The card providing the write cache attaches to a #2780 on one of the Ultra4 SCSI buses, thus reducing the available SCSI busses to attach disk drives by one. ► SCSI port 1 is used to connect to the removable media slots in the Model 825. ► SCSI port 1 can support LVD or single-ended devices. ► SCSI ports 0, 2 and 3 are LVD only. Minimum operating system level: SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3 or OS/400 V5R2 Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #2780 is a Customer Install Feature. Since July 2005, the #2780 can only be ordered if system has mirrored protection (#0040 prerequisite). Order #0299 MES Conversion to improve cache data redundancy when system has RAID protection. **Notes:** ► The auxiliary write cache controller #5590 with 1.5 GB write cache can be used with the #2780. There is no performance gain using the #5590. ► New order alternatives to the #2780 include #5738, or #5777 PCI disk controllers.

#2782	**#2782 PCI-X RAID Disk Unit Controller** The #2782 PCI-X RAID Disk Unit Controller is a PCI-X SCSI controller with a 40 MB cache that provides RAID-5 protection for internal disks and supports internal tape units, CD-ROM and DVD devices. The #2782 has two SCSI buses that support up to 12 disk units. Hardware data compression is not supported. In addition to providing RAID-5 protection for disks, #2782 also works as a high-performance controller for disks protected by system mirroring, or disks with no protection. In the RAID-5 configuration, disk unit protection is provided at less cost than mirroring, and with better performance than system checksums. A minimum of three disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of four arrays is allowed per controller, with a maximum of 12 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across either two, four, or eight disk units in an array. If an array of three disk units is started, parity is spread across two disk units. If an array of four to seven disk units is started, parity is spread across four disk units. If an array of eight to twelve disk units is started, parity is spread across eight disk units. The number of arrays and size of each array can be influenced by specifying an optimization of either Balance, Performance, or Capacity when starting arrays in iSeries Navigator. An optimization of Balance is used by default when starting arrays from the DST or SST options. If disk units are included into an existing array, parity can be spread across less than the preferred number of disk units. In this case the RAID function must be stopped and then started in order to redistribute the parity. The #2782 controls up to two removable media devices (internal tape, CD-ROM and DVD). The #2782 PCI-X RAID Disk Unit Controller does not support hardware data compression. The #2782 does not support the attachment of external devices. Minimum operating system level: OS/400 V5R2 Supported on Models 270, 9406 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890 and 9411-100. The #2782 is a Customer Install Feature. The #2782 was withdrawn from marketing as of 01 January 2004. A #5703 PCI-X RAID Disk Unit Controller is the recommended replacement.
#2787	**#2787 PCI-X Fibre Channel Disk Controller** The #2787 PCI-X Fibre Channel Disk Controller provides Fibre Channel attachment capability for external disk devices. The #2787 supports point-to-point and arbitrated loop topologies and has an LC-type cable connector. Each #2787 is shipped with a wrap connector (part number 05N6767). It supports 64-bit, 133 MHz PCI-X bus speeds. It is the PCI-X replacement card for the #2766 PCI Fibre Channel Disk Controller. The following adapter kits are required when connecting SC-type cables to the #2787: ► #0371 - LC-SC Adapter Kit (50um) can be ordered, both on initial, model upgrades, and simple MES orders. This optional kit is used to attach SC-type fibre (50 µm) cables to a #2787. The #0371 kit contains a 2m LC-ST cable and ST-SC adapter for 50 µm fiber cable. ► #0372 - LC-SC Adapter Kit (62.5um) can be ordered, both on initial, model upgrades, and simple MES orders. This optional kit is used to attach SC-type fiber (62.5 µm) cables to a #2787. The #0372 kit contains a 2m LC-ST cable and ST-SC adapter for 62.5 µm fiber cable. An optics cleaning kit (part number 46G6844) and instruction sheet (part number 21P6238, form number SY27-2604) is supplied, one per system, when a #2787 is ordered. When used as a direct attached adapter for Linux, the #0626 - Direct Attach #2787 PCI-X Fibre Channel Disk Controller should be ordered in place of the #2787. Maximum physical quantities are determined by requiring a dedicated IOP and limited to two per Multi-adapter Bridge boundary. All Fibre Channel cables required for the #2787 PCI-X Fibre Channel Disk Controller are supplied by the client. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #2787 is a Customer Install Feature.

#4748 #9748	**#4748 PCI RAID Disk Unit Controller** The #4748/#9748 is an Ultra2 SCSI controller with a 26 MB write-cache that provides RAID-5 protection and compression for internal disk units and supports internal tape units and CD-ROM units. The #4748/#9748 supports both compression and non-compression modes. The mode of operation is determined by a hardware jumper. The #4748/#9748 is shipped in non-compression mode. By moving the hardware jumper, the controller functions in compression mode. In addition to providing RAID-5 protection for disks, the #4748/#9748 is also designed to work as a high performance controller for disks protected by system mirroring or disks with no protection. The #4748 also supports #4331 1.6 GB Read Cache Device, which provides increased performance. The #4331 1.6 GB Read Cache Device is supported only when #4748/#9748 is *not* in compression mode. The #4748 does not support data compression on 35 GB or larger disk units. The #4748 controller supports a maximum of 15 disk units. The #9748 is the base disk controller for Models 830 and 840. A minimum of four disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of four arrays is allowed per controller, with a maximum of 10 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across four disk units for arrays of four to seven disk units. Parity can be spread across either four or eight disk units for arrays of 8 to 10 disk units. For systems started with 8 to 10 disk units in an array, the parity for that array is spread across eight disk units. For systems that are started with less than eight disk units in an array and later MES upgraded to 8, 9, or 10 disk units, the RAID function must be stopped and then started before the parity is spread across eight disk units. The #4748/#9748 controls up to two removable media devices (internal tape or CD-ROM). The #4748 can be directly attached to a Linux partition. When installed as #0605 - Direct Attach #4748 PCI RAID Disk Unit Controller, an IOP is not required. When directly attached to a Linux partition, the #4748 cannot be accessed by OS/400 partitions. When directly attached to a Linux partition, the #4748 does not support RAID or hardware disk compression. Requires a long PCI card slot. Minimum operating system level: OS/400 V4R5 Supported on Models 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890, and 9411-100. The #4748 and #9748 are Customer Install Features. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #4748 and #9748 are withdrawn from marketing as of 02 July 2002. A #2757 PCI-X Ultra RAID Disk Controller is the recommended replacement.
#4778 #9778	**#4778 PCI RAID Disk Unit Controller** The #4778/#9778 is an Ultra2 SCSI controller with a maximum compressed write cache size of 104 MB that provides RAID-5 protection and compression for internal disk units and supports internal tape units, CD-ROM and DVD-RAM units. The #4778 does not support data compression on 70 GB or larger disk units. The #4778/#9778 supports both disk compression and enhanced modes. The mode of operation is determined by a hardware jumper. The #4778/#9778 is shipped in enhanced mode, which enables compression of the write cache and Extended Adaptive Cache. A Read Cache Device is needed for Extended Adaptive Cache. By moving the hardware jumper, the controller functions in disk compression mode. Disk compression mode should only be used when disk compression is desired. In addition to providing RAID-5 protection for disks, #4778/#9778 is also designed to work as a high performance controller for disks protected by system mirroring or disks with no protection. In the RAID-5 configuration, disk unit protection is provided at less cost than mirroring, and with better performance than system checksum. The #4778/#9778 also supports the #4331 1.6 GB Read Cache Device, which is used by Extended Adaptive Cache to provide increased performance. The #4331 1.6 GB Read Cache Device is supported only when the #4778/#9778 is in enhanced mode. The #4778/#9778 controller supports a maximum of 18 disk units. A minimum of four disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of four arrays is allowed per controller, with a maximum of 10 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across 4 disk units for arrays of 4 to 7 disk units. Parity can be spread across either 4 or 8 disk units for arrays of 8 to 10 disk units. For systems started with 8 to 10 disk units in an array the parity, for that array, is spread across eight disk units. For systems that are started with less than eight disk units in an array and later MES upgraded to 8, 9, or 10 disk units, the RAID function must be stopped and then started before the parity is spread across eight disk units. The #4778/#9778 controls up to two removable media devices (internal tape, CD-ROM or DVD-RAM).

#4778 #9778 (contd.)	**#4778 PCI RAID Disk Unit Controller** Due to system unit and external tower disk unit cage SCSI bus designs, only the Model 800 and 810 have a suitable system configuration to allow 18 disk units to attach to a single #4778. All other system unit and tower disk unit configurations restrict the number of attaching disk units to 15 or less. The #4778 can be directly attached to a Linux partition. When ordered as #0606 - Direct Attach #4778 PCI RAID Disk Unit Controller, an IOP is not required. When directly attached to a Linux partition, the #4778 cannot be accessed by OS/400 partitions. When directly attached to a Linux partition, the #4778 does not support RAID or hardware disk compression. Minimum operating system level: OS/400 V5R1 The #4778 is a Customer Install Feature. The #4778 was withdrawn from marketing as of 19 November 2004. Conversions to the #4778 remain available.
#5580	**#5580 - 2780 Ctlr w/Aux Write Cache** The #5580 provides a disk controller with auxiliary write cache to improve cache data redundancy. The #5580 includes a #2780 PCI-X Ultra4 RAID Disk Controller and a secondary IOA with 757 MB of auxiliary maximum compressed write cache. The #2780 and the secondary IOA each require one PCI-X slot and must be installed together in the same system unit or I/O unit, drawer, or tower. The #2780 and the auxiliary write cache IOA are connected by a SCSI cable (provided). Feature #2780 does not appear on IBM ordering, shipping, or inventory documentation. The connecting SCSI cable is attached to port four of the #2780, reducing the number of SCSI buses that support disk drives from four to three. The reduction of SCSI buses can also reduce the number of disk drives supported by the #2780, depending on the system or I/O unit, drawer, or tower in which the #2780 is installed. No disk drives are driven by the auxiliary write cache IOA. Minimum operating system level: OS/400 V5R2 with CUM C5123520 and prerequisite PTFs, or i5/OS V5R3 with cumulative PTF package C5102530 and prerequisite PTFs. Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. **Note:** The #5580 was withdrawn from marketing as of 13 July 2007. It can be replaced by a #5590 #2780 Ctlr w/Aux Write Cache.
#5581	**#5581 - 2757 Ctlr w/Aux Write Cache** The #5581 provides a disk controller with auxiliary write cache to improve cache data redundancy. The #5581 includes a #2757 PCI-X Ultra4 RAID Disk Controller and a secondary IOA with 757 MB of auxiliary maximum compressed write cache. The #2757 and the secondary IOA each require one PCI-X slot and must be installed together in the same system unit or I/O unit, drawer, or tower. The #2757 and the auxiliary write cache IOA are connected by a SCSI cable (provided). Feature #2757 does not appear on IBM ordering, shipping, or inventory documentation. The connecting SCSI cable is attached to port four of the #2757, reducing the number of SCSI buses that support disk drives from four to three. The reduction of SCSI buses can also reduce the number of disk drives supported by the #5738, depending on the system unit or I/O unit, drawer, or tower in which the #5738 is installed. No disk drives are driven by the auxiliary write cache IOA. Minimum operating system level: OS/400 V5R2 with cumulative PTF package C5123520 and prerequisite PTFs, or i5/OS V5R3 with cumulative C5102530 and prerequisite PTFs. Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. **Note:** The #5581 was withdrawn from marketing as of 13 July 2007. It can be replaced with a #5591 - #2757 Ctlr w/Aux Write Cache.

#5582	**#5738 Controller with 1.5 GB Auxiliary Write Cache with IOP** The #5738 Controller with 1.5 GB Auxiliary Write Cache with IOP provides a disk controller with auxiliary write cache to improve cache data redundancy. The #5582 includes a #5738 PCI-X RAID disk controller and an auxiliary write cache IOA with a maximum compressed write cache of 1.5 GB. The #5738 and the auxiliary IOA each require one PCI-X slot and must be installed together in the same system unit or I/O unit, drawer, or tower. The #5738 and the auxiliary write cache IOA are connected by a SCSI cable (provided). Feature #5738 will not appear on IBM ordering, shipping, or inventory documentation. The connecting SCSI cable is attached to port four of the #5738, reducing the number of SCSI buses that support disk drives from four to three. The reduction of SCSI buses can also reduce the number of disk drives supported by the #5738, depending on the system or I/O unit, drawer, or tower in which the #5738 is installed. No disk drives are driven by the auxiliary write cache IOA. The #5582 and #5583 are physically the same adapter cards but have different feature numbers that denote to IBM configurator tools whether an IOP is required. The #5582 indicates an IOP is used. Minimum operating system level: i5/OS V5R3 or later Supported on all POWER5 and POWER6 models; Models 800, 810, 825, 870, and 890, as well as 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #5582 is a Customer Install Feature.
#5583	**#5583 Controller with 1.5GB Auxiliary Write Cache without IOP** The #5583 Controller with 1.5GB Auxiliary Write Cache without IOP provides a disk controller with auxiliary write cache to improve cache data redundancy. The #5583 includes a #5777 PCI-X disk controller and a secondary IOA with 1.5 GB of auxiliary maximum compressed write cache. The #5777 and the secondary IOA each require one PCI-X slot and must be installed together in the same system unit or I/O unit, drawer, or tower. The #5777 and the auxiliary write cache IOA are connected by a SCSI cable (provided). Feature #5777 will not appear on IBM ordering, shipping, or inventory documentation. The connecting SCSI cable is attached to port four of the #5777, reducing the number of SCSI buses that support disk drives from four to three. The reduction of SCSI buses can also reduce the number of disk drives supported by the #5777, depending on the system unit or I/O unit, drawer, or tower in which the #5777 is installed. No disk drives are driven by the auxiliary write cache IOA. The #5583 and #5582 are physically the same adapter cards but have different feature numbers that denote to IBM configurator tools whether an IOP is required. The #5583 does not require an IOP. Minimum operating system level: i5/OS V5R4. Supported on all POWER5 and POWER6 models and 9411-100. The #5583 is a Customer Install Feature.
#5590	**#2780 Controller with Auxiliary Write Cache** The #2780 Controller with Auxiliary Write Cache provides a disk controller with auxiliary write cache to improve cache data redundancy. The #5590 includes a #2780 PCI-X RAID Disk Controller with 757 MB of write cache and a secondary IOA with 1.5 GB of auxiliary maximum compressed write cache. The #2780 and the secondary IOA each require one PCI-X slot and must be installed together in the same system unit or I/O unit, drawer, or tower. The #2780 and the auxiliary write cache IOA are connected by the provided SCSI cable. Feature #2780 will not appear on IBM ordering, shipping, or inventory documentation. The connecting SCSI cable is attached to port four of the #2780, reducing the number of SCSI buses that support disk drives from four to three. The reduction of SCSI buses can also reduce the number of disk drives supported by the #2780, depending on the system unit or I/O unit, drawer, or tower in which the #2780 is installed. No disk drives are driven by the auxiliary write cache IOA. Minimum operating system level: i5/OS V5R3 or later Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #5590 is a Customer Install Feature.

#5591	**#2757 Controller with Auxiliary Write Cache** The #2757 Controller with Auxiliary Write Cache provides a disk controller with auxiliary write cache to improve cache data redundancy. The #5591 includes a #2757 PCI-X RAID Disk Controller with a 757 MB write cache and a secondary IOA with 1.5 GB of auxiliary maximum compressed write cache. The #2757 and the secondary IOA each require one PCI-X slot and must be installed together in the same system unit or I/O unit, drawer, or tower. The #2757 and the auxiliary write cache IOA are connected by a SCSI cable (provided). Feature #2757 will not appear on IBM ordering, shipping, or inventory documentation. The connecting SCSI cable is attached to port four of the #2757, reducing the number of SCSI buses that support disk drives from four to three. The reduction of SCSI buses can also reduce the number of disk drives supported by the #2757, depending on the system unit or I/O unit, drawer, or tower in which the #2757 is installed. No disk drives are driven by the auxiliary write cache IOA Minimum operating system level: i5/OS V5R3 or later Supported on all (including "+ models") 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #5591 is a Customer Install Feature.
5679	**#5679 SAS RAID Enablement with 175 MB write cache** This provides RAID capability and 175 MB protected write cache to augment the performance and function of the embedded SAS disk controller in the POWER6 system unit (processor enclosure). This provides daughter cards which contain the RAID function and the 175MB of write cache. The auxiliary daughter card plugs into a special slot on the planar and provides the battery power pack and redundant 175MB write cache memory for the daughter card. Concurrent maintenance of the RAID daughter card and the auxiliary daughter card is not supported. Concurrent maintenance of the battery pack is supported. The daughter cards are installed in their own specific internal slots on the system unit backplane and do not require a PCI slot. The #5679 adds RAID-5 and RAID-6 capability. A minimum of three disk units are required for a RAID-5 disk array, and a minimum of four disk units are required for a RAID-6 disk array. The two-core 9408-M25 and the 9409-M50 can use a SAS DASD/Media Backplane #8345 in combination with FC #5679 to provide one external RAID-enabled SAS port. One SAS EXP 12S disk drawer can be attached to this port and its disk drives controlled by the imbedded SAS disk controller. The one-core 9407-M15 does not support this attachment. Attributes provided: Write cache for performance and RAID Data Protection for system unit disk units. Attributes required: Available RAID Enabler Card slots on the system unit backplane.

#5702	**#5702 PCI-X Ultra Tape Controller (VHDCI)** The #5702 PCI-X Ultra Tape Controller provides a SCSI Ultra PCI attachment capability for external tape devices and removable media devices. The #5702 has two ports that can attach two external tape devices. Each port can support at a minimum one of the following devices: ► LTO, VXA-2, VXA-320, QIC-SLR External LVD Tape Devices See the tables in 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. ► 7210-020 External CD-ROM ► 7210-025 External DVD-RAM The #5702 can be directly attached to a Linux partition. When ordered as #0624 - Direct Attach #5702 PCI-X Ultra Tape Controller, an IOP is not required. When directly attached to a Linux partition, the #5702 cannot be accessed by OS/400 partitions. A #5702 running in an i5OS or OS/400 partition cannot drive internal disk units in any expansion tower, base I/O tower, or system unit enclosure. See 8.6, “Device cabling rules for #5702, #5705, #5712, #5715, #5736, #2718, and #2768 PCI Magnetic Media Controller” on page 389, for information about connecting devices to the #5702 including daisy-chaining options. Minimum operating system level: OS/400 V5R2. i5/OS V5R3 or later required to support the TS3100/TS3200 Tape Library Express. Supported on Models 520 (9406 only), 525, 550, 570, 570 (POWER6), 595, and 9411-100. The #5702 is a Customer Install Feature. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #5702 was withdrawn from marketing as of 01 June 2006. A #5712 PCI-X Tape/DASD Controller is the recommended replacement. Otherwise, a #5766 for IOP based tape attachment, or a #5736 IOP based with #0290 - External Tape Attached Placement Code are the recommended replacements. For IOP-less tape attachment, use a #5775 with #0290 - External Tape Attached Placement Code. Some supported tape drives might also be removed from marketing. See the Tape systems Web page for more details about tape support on all operating systems. From this Web page, click the link for the **tape system** you need, and on the next page, click the **Interoperability matrix** link. http://www.ibm.com/systems/storage/tape

#5703	**#5703 PCI-X RAID Disk Unit Controller** The #5703 PCI-X RAID Disk Unit Controller is an Ultra3 SCSI controller with a cache size of 40 MB that provides RAID-5 protection for internal disks and internal tape units, CD-ROM, DVD-RAM and DVD-ROM units. The #5703 has two Ultra3 SCSI buses. In addition to providing RAID-5 protection for disks, the #5703 is designed to work as a high performance controller for disks protected by system mirroring or disks with no protection. In the RAID-5 configuration, disk unit protection is provided at less cost than mirroring, and with better performance than system checksum. The #5703 controller supports a maximum of 12 disk units. When used in a Model 520 or 525, the #5703 controls disks in the #6584 4 Disk Slot Exp - PCI-X Controller. Due to a system unit and external tower disk unit cage SCSI bus designs, only the 270, 800 and 810 Models, and the #0595/#5095 PCI-X Expansion Tower have a suitable system configuration to allow 12 disk units to attach to a single #5703. All other system unit and tower disk configurations restrict the number of attaching disk units to 10 or less. A minimum of three disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of four arrays is allowed per controller, with a maximum of 12 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across either two, four, or eight disk units in an array. If an array of three disk units is started, parity is spread across two disk units. If an array of four to seven disk units is started, parity is spread across four disk units. If an array of 8-12 disk units is started, parity is spread across eight disk units. The number of arrays and size of each array can be influenced by specifying an optimization of either *Balance*, *Performance*, or *Capacity* in Operations Navigator when starting arrays. An optimization of *Balance* is used by default when starting arrays from the green screens. If disk units are included into an existing array, parity can be spread across fewer than the preferred number of disk units. In this case, the RAID function must be stopped and then started to redistribute the parity. The #5703 controls up to two removable media devices (internal tape, CD-ROM, DVD-RAM, DVD-ROM). The #5703 does not support the attachment of external devices. A #5703 is the recommended replacement for the #2782 PCI-X RAID Disk Unit Controller. When ordered as #0628 - Direct Attach #5703 PCI-X RAID Disk Unit Controller, an IOP is not required. When directly attached to a Linux/AIX partition, the #5703 cannot be accessed by OS/400 partitions. Minimum operating system level: OS/400 V5R2 later (or earliest release level supporting the system processor technology). Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. Also supported on the 270. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #5703 is a Customer Install Feature. A #5735 IOP-based disk attachment, #5776 IOP-less disk attachment, or #0648 are the recommended replacements.
#5704	**#5704 PCI-X Fibre Channel Tape Controller** The #5704 PCI-X Fibre Channel Tape Controller provides Fibre Channel attachment capability for external tape devices. The #5704 supports point-to-point and arbitrated loop topologies and has an LC-type cable connector. Each #5704 is shipped with a wrap connector (part number 05N6767). The #5704 supports 64-bit, 133 MHz PCI-X bus speeds. It is the PCI-X card replacement for the #2765 PCI Fibre Channel Tape Controller. All Fibre Channel cables required for the #5704 are supplied by the client. See the tables in 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. The #5704 does not support the Alternate IPL device function. A D-mode IPL is required using CD-ROM, DVD-ROM, or another alternate IPL tape device. Then select a #5704 to complete the installation or recovery process. Minimum operating system level: OS/400 V5R2 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #5704 is a Customer Install Feature. Some supported tape drives might also be removed from marketing. See the Tape systems Web page for more details about tape support on all operating systems. From this Web page, click the link for the **tape system** you need, and on the next page, click the **Interoperability matrix** link. http://www.ibm.com/systems/storage/tape

#5705	**#5705 PCI-X Tape/DASD Controller** The #5705 PCI-X Tape/DASD Controller provides SCSI Ultra4 PCI attachment capability for external tape devices, external removable media devices, and internal DASD devices. There are two SCSI buses on each #5705. Each SCSI bus has both an internal port and an external port for a total of four ports on the card. Each SCSI bus can have only one attachment, either internal or external. Attaching internal and external devices to the same SCSI bus causes the internal device to become disabled. The internal SCSI port supports up to six disk units, but does not support RAID. If two external SCSI ports are required, a #5702 should be ordered. The external port can support the following devices: ► LTO, VXA-2, VXA-320, QIC-SLR External LVD Tape Devices See the tables in 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. ► 7210-020 External CD-ROM ► 7210-025 External DVD-RAM See 8.6, “Device cabling rules for #5702, #5705, #5712, #5715, #5736, #2718, and #2768 PCI Magnetic Media Controller” on page 389, for information about connecting devices to the #5705 including daisy-chaining options. Minimum operating system level: OS/400 V5R2. i5/OS V5R3 or later required to support the TS3100/TS3200 Tape Library Express. Refer to Informational APAR II13440 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 Supported on Models 800 and 810. The #5705 is a Customer Install Feature. The #5705 was withdrawn from marketing as of 01 June 2006. A #5736 for IOP-based attachment or #5775 for IOP-less disk attachment are the recommended replacements.
#5709	**#5709 RAID Enabler Card** The #5709 RAID Enabler Card is an optional SCSI RAID controller with a 16 MB write cache. The #5709 supports up to eight disk unit positions in the Model 520 or 525 system unit and up to six disk unit positions in the Model 570 POWER5 system unit. The #5709 plugs into its own specific internal slot and does not require/use a PCI card slot. In the Model 520 or 525, the #5709 can be used with or without a #6574 - 4-Disk Slot Expansion Base Controller. When installed without a #6574 4-pack disk backplane, the #5709 allows disk units plugged into the base 4-pack disk backplane to be in a RAID array (minimum of three disk units for an array). For the Model 520 or when a #5709 is installed, the base integrated non-RAID SCSI disk controller is deactivated. For originally shipped Model 570 POWER5 system units, the #5709 was required. Newer Model 570 POWER5 system units use either a #5726 (POWER5) or a #5728 (POWER5+). The i5/OS operating system does not have the capability to interface directly to the embedded SCSI controller. The #5709 communicates solely with the embedded controller. An IOP must be present for the #5709 to communicate with the i5/OS operating system. Minimum operating system level: i5/OS V5R3 Supported in Linux and AIX partitions with SUSE Linux Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER Version 3, and AIX 5L for POWER V5.2 Supported on Models 520, 525, 550, and 570. The #5709 is a Customer Install Feature. The #5709 was withdrawn from marketing in 2005 for the Model 570. A #5726 is the recommended replacement for the Model 570. A #5728 is the recommended replacement when upgrading to Model 570+.
#5710	**#5710 PCI-X Dual Channel Ultra 320 SCSI Blind Swap Adapter (LVD)** Supported in a Linux partition. See the #5712 for supported devices.

#5712	**#5712 PCI-X Tape/DASD Controller** The #5712 PCI-X Tape/DASD Controller provides a SCSI Ultra PCI attachment capability for external tape devices and removable media devices. The #5712 has two ports that can attach two external tape devices. Each port can support, at a minimum, one of the following devices: ► LLTO, VXA-2, VXA-320, QIC-SLR External LVD Tape Devices See the tables in 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. ► 7210-020 External CD-ROM ► 7210-025 External DVD-RAM The #5712 can be directly attached to a Linux or AIX 5 partition. When ordered as #0645 - Direct Attach #5712 PCI-X Tape/DASD Controller, an IOP is not required. When directly attached to a Linux/AIX partition, the #5712 cannot be accessed by OS/400 partitions. See 8.6, “Device cabling rules for #5702, #5705, #5712, #5715, #5736, #2718, and #2768 PCI Magnetic Media Controller” on page 389, for information about connecting devices to the #5712 including daisy-chaining options. A #5712 running in an i5/OS or OS/400 partition cannot drive internal disk units in any expansion tower, base I/O tower, or system unit enclosure. Minimum operating system level: i5/OS V5R3. Supported on all POWER5 and POWER6 models and 9411-100.This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #5712 is a Customer Install Feature. A #5766 PCI-X Tape Controller for IOP based tape attachment on System i models, or #5736 IOP based with #0290 - External Tape Attached Placement Code are the recommended replacements. For IOP-less tape attachment, use the #5775 with a #0290 - External Tape Attached Placement Code.
#5713	**#5713 PCI-X 1Gbps iSCSI TOE-Copper** The #5713 PCI-X 1Gbps iSCSI TOE-Copper adapter encapsulates SCSI Commands and data into TCP and transports the commands over the Ethernet via IP packets. The #5713 adapter operates as an iSCSI TOE. The offload of the host eliminates protocol processing and reduces CPU interrupts. The #5713 iSCSI adapter uses an RJ45 1 Gbps Ethernet connector. The #5713 adapter can be used to initiate requests to external storage devices from AIX 5L and Linux partitions. An available PCI-X slot is required. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer, SUSE Linux Enterprise Server 9 for POWER Supported on Models 570 (POWER6), 520+, 525, 550+, 570+, 595 1.9 GHz, 520, 550, 570, 595, and 9411-100. The #5713 is a Customer Install Feature.
#5714	**#5714 PCI-X 1Gbps iSCSI TOE - Optic** The #5714 PCI-X 1Gbps iSCSI TOE - Optic adapter encapsulates SCSI commands and data into TCP and transports the commands over Ethernet via IP packets. The #5714 adapter operates as an iSCSI TOE. The offload of the host eliminates protocol processing and reduces CPU interrupts. The #5714 iSCSI adapter uses a small form factor LC type fiber optic connector. The #5714 adapter can be used to initiate requests to external storage devices from AIX 5L and Linux partitions. A PCI-X slot is required. Minimum operating system level: AIX 5L for POWER V5.2 for IBM eServer or SUSE Linux Enterprise Server 9 for POWER Supported on Models 570 (POWER6), 520+, 525, 550+, 570+, 595 1.9 GHz, 520, 550, 570, 595, and 9411-100. The #5714 is a Customer Install Feature.

#5715	**#5715 PCI-X Tape/DASD Controller** The #5715 PCI-X Tape/DASD Controller provides SCSI Ultra4 PCI attachment capability for external tape devices, external removable media devices, and internal DASD devices. There are two SCSI buses on each #5715. Each SCSI bus has both an internal port and an external port for a total of four ports on the card. Each SCSI bus can have only one attachment, either internal or external. Attaching internal and external devices to the same SCSI bus causes the internal device to become disabled. The internal SCSI port supports up to six disk units, but does not support RAID. If two external SCSI ports are required, a #5712 PCI-X Tape/DASD Controller should be ordered. When used in a Model 520 or 525, the #5715 controls disks in the #6584 4 Disk Slot Exp - PCI-X Controller. The external port can support the following devices: ► LTO, VXA-2, VXA-320, QIC-SLR External LVD Tape Devices See the tables in 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. ► 7210-020 External CD-ROM ► 7210-025 External DVD-RAM See 8.6, “Device cabling rules for #5702, #5705, #5712, #5715, #5736, #2718, and #2768 PCI Magnetic Media Controller” on page 389, for information about connecting devices to the #5715 including daisy-chaining options. Minimum operating system level: i5/OS V5R3. Supported on all POWER5 and POWER6 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. The #5715 is a Customer Install Feature. A #5736 for IOP-based disk attachment or #5775 for IOP-less disk attachment are the recommended replacements.
#5726	**#5726 - RAID Enabler Card** The #5726 provides a SCSI RAID controller that is installed into its own specific internal slot of a system unit and does not require a PCI slot. It functionally replaces the base integrated disk controller, adding RAID-5 capability and 40 MB disk controller write cache. The Model 570 originally used feature #5709 to describe this card. There is a slightly different enclosure kit for the card, and the #5726 is now used to identify the card and enclosure kit. A minimum of three disk units are required for a RAID disk array. Minimum operating system level: i5/OS V5R3 Supported on Model 570.
#5727	**#5727 Integrated Cache 40MB** The #5727 provides a SCSI RAID controller that is installed into its own specific internal slot of a system unit and does not require a PCI slot. It functionally replaces the base integrated disk controller, adding RAID-5 capability and 40 MB disk controller write cache and is capable of running in an IOP-less mode. A minimum of three disk units is required for a RAID disk array. The #9510 is a no-charge feature for Express Configurations with RAID. Minimum operating system level: i5/OS V5R3 and LIC V5R3M0 when running in dedicated mode (IOP required) Minimum operating system level: i5/OS V5R3 and LIC V5R3M5 when running in dual-mode (IOP-less) Supported on Models 515, 520+, 525 and 550+
#5728	**#5728 Integrated Cache 40MB** The #5728 provides a SCSI RAID controller that is installed into its own specific internal slot of a system unit and does not require a PCI slot. It functionally replaces the base integrated disk controller, adding RAID-5 capability and 40 MB disk controller write cache and is capable of running in IOP-less mode. A minimum of three disk units are required for a RAID disk array. The # 5728 is a required feature on the Model 570+ if more than three disk are used in the processor enclosure. Minimum operating system level: i5/OS V5R3 and LIC V5R3M0, when running in dedicated mode (IOP required) i5/OS V5R4, when running in dual mode (IOP-less). Supported on Model 570+.

#5736	**#5736 PCI-X Disk/Tape Controller with IOP** The #5736 PCI-X Disk/Tape Controller with IOP provides a PCI-X Disk/Tape SCSI Controller with zero write cache and without RAID support. Disk mirroring support is supported through i5/OS. A maximum of six disk drives is supported on the #5736. Removable media devices (tape, optical libraries, CD-ROM, DVD-ROM, or DVD-RAM) are also supported on the #5736. The #5736 has two U320 buses each with a bus data rate of up to 320 MBs. The 5736 runs at U160 for tape attachment. Each SCSI bus can be either internal (using an internal port) or external (using an external port), but not both. There are four physical ports on the #5736, two internal and two external. Internal devices connect to the internal ports (one or two). External devices connect to the external ports (one or two) and use an LVD interface and VHDCI connectors. An #1850 VHDCI to P Converter Cable is available to connect to external devices with type P connectors. The external ports can support the following tape and optical devices: ► LTO, VXA-2, VXA-320, QIC-SLR External LVD, DAT72 Tape Devices See the tables in 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. ► 7210-020 External CD-ROM ► 7210-025 External DVD-RAM An #0290 - External Tape Attached via #5736 Placement Code indicates that one external port of a #5736 is used to control an external tape device. The #0647, #5736, #5766 and #5775 are physically the same adapter card. The #5736 should be the choice over the #5702 and #5712 PCI-X Tape/DASD Controller or the #5705 and #5715 controllers for systems running i5/OS V5R3. Minimum operating system level: i5/OS V5R3. Supported on all (including “+ models”) 515, 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. Note: #0300 is used to indicate that the external port of a #5736/#5775 will be connected to one 6-pack of disk slots on a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. A #5736/#5775 connected to a #5786/#5787 is not capable of attaching/driving any additional internal disk units. Some supported tape drives may also be removed from marketing. See the Tape systems Web page for more details about tape support on all operating systems. From this Web page, click the link for the **tape system** you need, and on the next page, click the **Interoperability matrix** link. http://www.ibm.com/systems/storage/tape
#5737	**#5737 PCI-X Disk Controller 90MB with IOP** The #5737 PCI-X Disk Controller 90MB with IOP provides a PCI-X SCSI disk controller that has a 90 MB write cache and can provide RAID-5 or RAID-6 protection of disk units. The #5737 has two U320 SCSI buses each with a bus data rate of up to 320 MBs. A maximum of 12 internal disk drives and up to two internal removable media devices (tape, CD-ROM, DVD-ROM, or DVD-RAM) are supported on the #5737. A minimum of three disk drives are required for RAID-5, providing protection against a single drive failure in an array. A minimum of four disk drives are required for RAID-6, providing protection against up to two drives failing in an array. The #0648, #5737, and #5776 are physically the same adapter card. The #2780/#5580 and #2757/#5581 disk controllers with an effective 757 MB write cache provide greater disk performance and can have an auxiliary write cache IOA to protect the write cache contents. Minimum operating system level: i5/OS V5R3 Supported on all (including “+ models”) 520, 525, 550, 570, 570 (POWER6), 595 models; 800, 810, 820, 825, 830, 840, 870, 890 models and 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards. Note: #0301 is used to indicate that one external port of a #5737/#5776 will be connected to one or two 6-packs of disk slots on a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. Both external ports of a #5737/#5776 can be connected to #5786s/#5787s. Both ports of a #5737/#5776 can connect to the same #5786/#5787 or to different 5786s/#5787s. With both ports connected to #5786s/#5787s, a #5737/#5776 is not capable of attaching/driving any additional internal disk units and/or internal tape/optical devices.

#5738	**#5738 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches with IOP** The #5738 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches with IOP provides a high-performance PCI-X Ultra320 SCSI disk controller with a maximum compressed write cache of 1.5 GB and read cache of 1.6 GB. The #5738 supports i5/OS mirroring protection for internal disk drives using its write cache but will not start RAID-5 or RAID-6 unless an auxiliary write cache IOA is attached. When an auxiliary write cache IOA is attached, the pair of cards is denoted by feature code #5582. Concurrent battery maintenance is supported. The controller also supports internal tape units, CD-ROM units, and DVD units. The #5738 has four internal Ultra320 SCSI buses. The #5738 and #5777 are physically the same adapter card but have different feature numbers to denote to IBM configurator tools whether an IOP is required. The #5738 indicates an IOP is used. Minimum operating system level: i5/OS V5R3 The #5738 is a Customer Install Feature. Supported on System i 520, 525, 550, 570 processor enclosures, 595 system units, and supported I/O enclosures except #5790. Supported on IBM System i Models 800, 810, 825, 870, and 890. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards.
#5739	**#5739 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP** The #5739 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP provides an EXP24 disk controller with PCI-X DDR technology, a maximum of 1.5 GB compressed write cache, and a maximum 1.6 GB compressed read cache. The controller supports RAID-5 and RAID-6 and mirroring is supported via i5/OS. Embedded auxiliary 1.5 GB write cache and concurrent battery maintenance are provided. The controller is implemented using two physical cards that are firmly connected and requires two adjacent PCI slots. It provides three Ultra320 SCSI ports/buses for the attachment of disk drives located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. The #5739 and #5778 are physically the same adapter cards but have different feature numbers to denote to IBM configuration tools whether an IOP is required. The #5739 indicates an IOP is used. The #5781/#5782 and #5799/#5800 are also the same adapter cards, but the #5781/#5782 indicates the adapter is placed in a double-wide blind swap cassette and #5799/#5800 indicates the adapter is placed in a Model 520 or 525 system unit and has a light pipe inserted into the feature. Minimum operating system level: i5/OS V5R3 The #5739 is a Customer Install Feature. Supported on System i 520, 525, 570 processor enclosures 595 system units, and supported I/O enclosures except #5790. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards.Supported on IBM System i Models 800, 810, 825, 870, and 890. Note; #0310 is used to indicate that one port of a #5739/#5778/#5781/#5782/#5799/#5800 will be connected to one or two 6-packs of disk slots of a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. All three external ports of a #5739/#5778/#5781/#5782/#5799/#5800 can be connected to #5786s/#5787s. All three ports of a #5739/#5778/#5781/#5782/#5799/#5800 can connect to the same #5786/#5787 or to different 5786s/#5787s.
#5741	**#5741 Expansion 24 6 Disk Slot Enabler** The #5741 Expansion 24 6 Disk Slot Enabler provides a SCSI card (repeater) located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. The #5741 receives and sends Ultra320 SCSI signals from an external port of a SCSI disk controller such as a #5736/#5775, #5737/#5776, or #5739/#5778/#5781/#5782/#5799/#5800 via a SCSI cable. It then sends and receives the signals to the DASD backplane in the #5786/#5787. A #5741 can enable up to six disk units in a #5786/#5787. One to four #5741s are supported in a #5786/#5787. Minimum operating system level: i5/OS V5R3 The #5741 is a Customer Install Feature. Supported on 5786 and 5787.

#5742	**#5742 Expansion 24 6/12 Disk Slot Enabler** The #5742 Expansion 24 6/12 Disk Slot Enabler provides a SCSI card (repeater) located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. The #5742 receives and sends Ultra320 SCSI signals from an external port of a SCSI disk controller such as a #5736/#5775, #5737/#5776, or #5739, #5778, #5781, #5782, #5799, or #5800 via a SCSI cable. It then sends and receives the signals to the DASD backplane in the #5786/#5787. A single #5742 can enable up to six disk units in a #5786/#5787. Two #5742s can be cabled so that up to 12 disk units can be driven by a single SCSI disk controller port with a single SCSI cable. Also a #5742 and a #5741 can be cabled so that up to 12 disk units can be driven by a single SCSI disk controller port with a single SCSI cable. One to four #5742s are supported in a #5786/#5787. Minimum operating system level: i5/OS V5R3 The #5742 is a Customer Install Feature. Supported on 5786 and 5787.
#5749	**#5749 4Gbps PCI-X Fibre Channel 2-Port** The 4 Gigabit Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single or dual initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. The adapter will auto-negotiate for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps, or 4 Gbps of which the device or switch is capable. Distances of up to 500 meters running at 1 Gbps data rate, up to 300 meters running at 2 Gbps data rate, and 4 Gbps data rate up to 150 meters are supported between the adapter and an attaching device or switch. When used with IBM Fibre Channel storage switches supporting long-wave optics, distances up to 10 kilometers are capable of running at either 1 Gbps, 2 Gbps, or 4 Gbps data rates. The adapter can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with SC type fiber connector(s), use of an LC-SC 50 Micron Fiber Converter Cable (#2456) or an LC-SC 62.5 Micron Fiber Converter Cable (#2459) is required. Specific IBM System Storage tape or disk devices are supported. Each port can connect either tape or disks. Each port can be active with either disks or tapes concurrently. However, for maximum performance reasons, we do not recommend tape and disks be attached to the same physical fibre channel controller and run concurrently. If dual path is requested, you must use at least 2 cards. Disk support includes IBM DS8000 attachment, multipath, SAN load source. Tape support includes alternate IPL. Through May 2008, specific disk and tape support is as follows: Disk: IBM DS8000 Tape: ► 3592: 3592 J1A and 3592 E05 rack mounted drive ► 3584 (TS3500): LTO 2 / 3 3592 J1A, 3592 E05 ► 3494: 3592 J1A, 3592 E05 Expanded disk and tape connectivity are planned over time. Refer to the following IBM Web site for full support details: http://www-03.ibm.com/systems/storage/index.html

#5758	**#5758 PCI-X 4Gbps Fibre Channel 1-Port** The #5758 provides a 4 Gbps Single Port Fibre Channel PCI-X 2.0 Adapter, which is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. The #5758 will auto-negotiate for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps or 4 Gbps of which the device or switch is capable. Distances of up to 500 meters running at 1Gbps data rate and up to 300 meters running at 2Gbps data rate and 4Gbps data rate up to 150 meters are supported between the adapter and an attaching device or switch. When used with IBM supported Fibre Channel storage switches supporting long-wave optics, distances of up to 10 kilometers are capable of running at either 1, 2, or 4 Gbps data rates. The #5758 can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with an SC type fiber connector, use of an LC-SC 50 Micron Fiber Converter Cable (#0371) or an LC-SC 62.5 Micron Fiber Converter Cable (#0372) is required. Features #5758 and #5761 are physically the same card, but have different feature numbers that denote to IBM configurator tools whether an IOP is required. The #5758 does not require a PCI IOP. Refer to 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. For information about additional supported system attachment for IBM devices, refer to the following Web page: http://www.ibm.com/servers/storage/product/products_pseries.html Contact your IBM representative or Business Partner for additional information about any third-party attachment. Supported on all POWER5 and POWER6 models. Minimum operating system level: Red Hat Enterprise Linux AS for POWER Version 4 or later, SUSE Linux Enterprise Server 9 for POWER or later, or AIX V5.2 or later. The #5758 is a Customer Install Feature. The #5758 was withdrawn from marketing as of 01 October 2006.
#5759	**#5759 4Gbps Fibre Channel 2-Port** The #5759 provides a 4Gbps Dual-Port Fibre Channel PCI-X 2.0 Adapter, which is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single or dual initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. The #5759 will auto-negotiate for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps, or 4 Gbps of which the device or switch is capable. Distances of up to 500 meters running at 1 Gbps data rate, up to 300 meters running at 2 Gbps data rate, and 4 Gbps data rate up to 150 meters are supported between the adapter and an attaching device or switch. When used with IBM Fibre Channel storage switches supporting long-wave optics, distances up to 10 kilometers are capable running at either 1 Gbps, 2 Gbps, or 4 Gbps data rates. The #5759 can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with an SC type fiber connector(s), use of an LC-SC 50 Micron Fiber Converter Cable (#0371) or an LC-SC 62.5 Micron Fiber Converter Cable (#0372) is required. For additional information about supported server attachment information for IBM devices, visit: http://www.ibm.com/servers/storage/product/products_pseries.html Contact your IBM representative or Business Partner for additional information about any third-party attachment. Minimum operating system level: Red Hat Enterprise Linux AS for POWER Version 4 or later, SUSE Linux Enterprise Server 9 for POWER or later, or AIX V5.2 or later. Supported on all POWER5 and POWER6 models. The #5759 is a Customer Install Feature.

#5760	**#5760 PCI-X Fibre Channel Disk Controller** The #5760 PCI-X Fibre Channel Disk Controller provides a 4 Gbps Single Port Fibre Channel PCI-X 2.0 Adapter that attaches external DASD devices. The #5760 is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. The #5760 auto-negotiates for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps or 4 Gbps of which the device or switch is capable. Distances of up to 500m running at 1 Gbps data rate and up to 300m running at 2 Gbps data rate and 4 Gbps data rate up to 150m are supported between the adapter and an attaching device or switch. When used with IBM supported Fibre Channel storage switches supporting long-wave optics, distances of up to 10km are capable running at either 1 Gbps or 2 Gbps or 4 Gbps data rates. The #5760 can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with an SC type fiber connector, use of a #0371 LC-SC Adapter Kit (50 µm) or a #0372 LC-SC Adapter Kit (62.5 µm) is required. The #5760 requires a dedicated PCI IOP. Refer to the IBM storage subsystem Web page for additional supported server attachment information for IBM devices. http://www.ibm.com/servers/storage/product/products_iseries.html Consult with your IBM representative or Business Partner for additional information relative to any third party attachment. Minimum operating system level: i5/OS V5R3 Supported on all POWER5 and POWER6 models: Models 800, 810, 825, 870, and 890, as well as 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards.
#5761	**#5761 PCI-X Fibre Channel Tape Controller** The #5761 PCI-X Fibre Channel Tape Controller provides a 4 Gbps Single Port Fibre Channel PCI-X 2.0 adapter that attaches external tape devices. The #5761 is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, the #5761 adapter provides the capability for a network of high-speed local and remote located storage. The #5761 auto-negotiates for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps or 4 Gbps of which the device or switch is capable. Distances of up to 500m running at 1 Gbps data rate and up to 300m running at 2 Gbps data rate and 4 Gbps data rate up to 150m are supported between the adapter and an attaching device or switch. When used with IBM supported Fibre Channel storage switches supporting long-wave optics, distances of up to 10km are capable running at either 1 Gbps or 2 Gbps or 4 Gbps data rates. The #5761 can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with an SC type fiber connector, use of a #0371 LC-SC Adapter Kit (50um) or a #0372 LC-SC Adapter Kit (62.5um) is required. Two #5761 adapters can be under the same IOP. The #5758 and #5761 are physically the same adapter. A #5761 indicates an IOP is used. Refer to 8.1, “External tape for System i family of models” on page 360, for a complete listing of compatible tape devices. Refer to the IBM storage subsystem Web page for additional supported server attachment information for IBM devices: http://www.ibm.com/servers/storage/product/products_iseries.html Consult with your IBM representative or Business Partner for additional information relative to any third party attachment. Minimum operating system level: i5/OS V5R3 Supported on all POWER5 and POWER6 models: Models 800, 810, 825, 870, 890, as well as 9411-100. This controller can use an IOP. The POWER6 model processor enclosures do not support IOP cards.
#5766	**#5766 PCI-X Tape Controller** The #5766 PCI-X Tape Controller provides a PCI-X tape controller with two U320 SCSI buses for attachment of external removable media devices, either tape or optical. The two external ports have an LVD interface and VHDCI connectors and are driven at the U320 SCSI bus date rate of 320 MBs. A #1850 VHDCI to P Converter Cable is available to connect to external devices with type P connectors. The #0647, #5736, #5766 and #5775 are physically the same adapter card. A #5766 indicates an IOP is being used. Minimum operating system level: i5/OS V5R3 Supported on Models 270, 800, 810, 825, 870, 890, 820, 830, and 840.

#5775	**#5775 PCI-X Disk/Tape Controller without IOP** The #5775 PCI-X Disk/Tape Controller without IOP provides a PCI-X Disk/Tape SCSI Controller with zero write cache and without RAID support. Disk mirroring is supported through i5/OS. A maximum of six disk drives is supported on the #5775. Removable media devices (tape, optical libraries, DVD-ROM, or DVD-RAM) are also supported on the #5775. The #5775 has two U320 buses each with a bus data rate of up to 320 MBs. Each SCSI bus can be either internal (using an internal port) or external (using an external port), but not both. There are four physical ports on the #5775, two internal and two external. Internal devices connect to the internal ports (one or two). External devices connect to the external ports (one or two) and use an LVD interface and VHDCI connectors. A #1850 VHDCI to P Converter Cable is available to connect to external devices with type P connectors. The #0647, #5736, #5766 and #5775 are physically the same adapter card. The #5775 should be the choice over #0645 (#5702 and #5712 IOP-less equivalent) or #5705/#5715 controllers for systems running i5/OS V5R3 or later when attaching devices that do not require an IOP - IOA combination. Tape devices supported in an IOP-less environment include: ► SLR60 30GB QIC: 5753, 7207 330, 7212 w/FC1107 ► SLR100 50GB QIC: 5754, 7212 w/FC1108 ► VXA-2 80GB: 1889, 7206 VX2, 7212 w/FC1104 ► VXA-320 160GB: 6279, 4688, 7206 VX3, 7212 w/FC1114 ► HH LTO-2 200GB: 5755, 7212 w/FC1109 ► DAT72 36GB: 6258, 7206 336, 7212 w/FC1108 Optical devices supported in an IOP-less environment include: ► 4.7GB DVD-RAM: 6330, 6333, 7210-025(6330), 7210-030(6333), 7212-102 w/FC1103(6333), 7212-102 with FC1102(6330) ► 4.7GB SLIM DVD-RAM: 6331 ► DVD-ROM: 6336, 7212 102 w/FC1106(6336) ► SLIM DVD-ROM: 6337 ► OPTICAL LIBRARIES: 399F, 3996 (V5R4M0 + PTFs) The #5775 does not support 8mm, 3573, 358x, or 359x tape devices. The older technology QIC and 8mm tape devices are not supported by this IOP-less controller. Use a #5702, #5705, #5712, #5715, #5736 or #5766 (IOP-based) controller to attach a 3573, 358x, or 359x. The older 3995 Optical Library is supported using the older IOP-based HVD SCSI #2749 controller. Note: #0300 is used to indicate that the external port of a #5736/#5775 will be connected to one 6-pack of disk slots on a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. A #5736/#5775 connected to a #5786/#5787 is not capable of attaching/driving any additional internal devices. Supported on POWER5+ and POWER6 models under IBM i (formerly i5/OS) as follows: ► Model 520 POWER5+ via IBM i 5.3 and LIC 5.3.5 (processor enclosure only) ► All POWER5 and POWER5+, 9411-100, and POWER6 models in processor enclosure and supported I/O enclosures via IBM i 5.4, 6.1, or later

#5776	**#5776 PCI-X Disk Controller 90MB without IOP** The #5776 PCI-X Disk Controller 90MB without IOP provides a PCI-X SCSI disk controller that has a 90 MB write cache. In addition to providing RAID-5 or RAID-6 protection for disks, the #5776 is designed to work as a high performance controller for disks protected by system mirroring or disks with no protection. The #5776 has two U320 SCSI buses each with a bus data rate of up to 320 MBs. A maximum of 12 internal disk drives and up to two internal removable media devices (tape, DVD-ROM, or DVD-RAM) are supported on the #5776. A minimum of three disk drives are required for RAID-5, providing protection against a single drive failure in an array. A minimum of four disk drives are required for RAID-6, providing protection against up to two drives failing in an array. The #0648, #5737, and #5776 are physically the same adapter card. The #2780/#5580 and #2757/#5581 disk controllers with an effective 757 MB write cache provide greater disk performance and can have an auxiliary write cache IOA to protect the write cache contents. Minimum operating system level: i5/OS V5R4; or i5/OS V5R3 with LIC V5R3M5 on Model 520+. Supported on all POWER5 and POWER6 models and 9411-100; or attached I/O tower/drawers #0595, #5095, #5094, #5294, #8294, #9194, #5074, and #5079. Note; #0301 is used to indicate that one external port of a #5737/#5776 will be connected to one or two 6-packs of disk slots on a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. Both external ports of a #5737/#5776 can be connected to #5786s/#5787s. Both ports of a #5737/#5776 can connect to the same #5786/#5787 or to different 5786s/#5787s. With both ports connected to #5786s/#5787s, a #5737/#5776 is not capable of attaching/driving any additional internal disk units and/or internal tape/optical devices.
#5777	**#5777 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches without IOP** The #5777 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches without IOP provides a high-performance PCI-X Ultra320 SCSI disk controller with a maximum compressed write cache of 1.5GB and read cache of 1.6 GB. The #5777 supports i5/OS mirroring protection for internal disk drives using its write cache but will not start RAID-5 or RAID-6 unless an auxiliary write cache IOA is attached. When an auxiliary write cache IOA is attached, the pair of cards is denoted by feature code #5582. Concurrent battery maintenance is supported. The controller also supports internal tape units, CD-ROM units, and DVD units. The #5738 has four internal Ultra320 SCSI buses. The #5738 and #5777 are physically the same adapter card but have different feature numbers to denote to IBM configurator tools whether an IOP is required. The #5777 indicates no IOP is used. Minimum operating system level: i5/OS V5R4. The #5777 is a Customer Install Feature. Supported on all POWER5 and POWER6 models, and supported I/O enclosures except #5790.

#5778	**#5778 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP** The #5778 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP provides an EXP24 disk controller with PCI-X DDR technology, a maximum of 1.5 GB compressed write cache and a maximum 1.6 GB compressed read cache. The controller supports RAID-5 and RAID-6 and mirroring is supported via i5/OS. Embedded auxiliary 1.5 GB write cache and concurrent battery maintenance are provided. The controller is implemented using two physical cards that are firmly connected and requires two adjacent PCI slots. It provides three Ultra320 SCSI ports/buses for the attachment of disk drives located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. The #5778 and #5739 are physically the same adapter cards but have different feature numbers to denote to IBM configuration tools whether an IOP is required. The #5778 indicates an IOP is not used. The #5781/#5782 and #5799/#5800 are also the same adapter cards, but the #5781/#5782 indicates the adapter is placed in a double-wide blind swap cassette and #5799/#5800 indicates the adapter is placed in a Model 520 or 525 system unit and has a light pipe inserted into the feature. Minimum operating system level: i5/OS V5R4. The #5778 is a Customer Install Feature. Supported on all POWER5 and POWER6 models, and supported I/O enclosures except #5790. Also supported under 9411-100. Note: #0310 is used to indicate that one port of a #5739/#5778/#5781/#5782/#5799/#5800 will be connected to one or two 6-packs of disk slots of a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. All three external ports of a #5739/#5778/#5781/#5782/#5799/#5800 can be connected to #5786s/#5787s. All three ports of a #5739/#5778/#5781/#5782/#5799/#5800 can connect to the same #5786/#5787 or to different 5786s/#5787s.
#5781	**#5781 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP** The #5781 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP provides an EXP24 disk controller with PCI-X DDR technology, a maximum of 1.5 GB compressed write cache and a maximum 1.6 GB compressed read cache. The controller supports RAID-5 and RAID-6 and mirroring is supported via i5/OS. Embedded 1.5 GB auxiliary write cache and concurrent battery maintenance are provided. The controller is implemented using two physical cards that are firmly connected and requires two adjacent PCI slots. It provides three Ultra320 SCSI ports/buses for the attachment of disk drives located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. This feature includes a double-wide blind swap cassette in which the disk controller is placed. The cassette is required to locate the disk controller in a 570 system unit or #5790 I/O drawer. The #5781 and #5782 are physically the same adapter card but have different feature numbers to denote to IBM configuration tools whether an IOP is required. The #5781 indicates an IOP is used. The #5739/#5778 and #5799/#5800 are also the same adapter cards, but the #5781/#5782 indicates the adapter is placed in a double-wide blind swap cassette and #5799/#5800 indicates the adapter is placed in a Model 520 or 525 system unit and has a light pipe inserted into the feature. Minimum operating system level: i5/OS V5R3 The #5781 is a Customer Install Feature. Supported in System i 570 (POWER5 only) processor enclosures and #5790. Also supported under 9411-100.
#5782	**#5782 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP** The #5782 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP provides an EXP24 disk controller with PCI-X DDR technology, a maximum of 1.5 GB compressed write cache and a maximum 1.6 GB compressed read cache. The controller supports RAID-5 and RAID-6 and mirroring is supported via i5/OS. Embedded 1.5 GB auxiliary write cache and concurrent battery maintenance are provided. The controller is implemented using two physical cards that are firmly connected and requires two adjacent PCI slots. It provides three Ultra320 SCSI ports/buses for the attachment of disk drives located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. This feature includes a double-wide blind swap cassette in which the disk controller is placed. The cassette is required to locate the disk controller in a 570 system unit or #5790 I/O drawer. The #5782 and #5781 are physically the same adapter card but have different feature numbers to denote to IBM configuration tools whether an IOP is required. The #5782 indicates an IOP is not used. The #5739/#5778 and #5799/#5800 are also the same adapter cards, but the #5781/#5782 indicates the adapter is placed in a double-wide blind swap cassette and #5799/#5800 indicates the adapter is placed in a Model 520 or 525 system unit and has a light pipe inserted into the feature. Minimum operating system level: i5/OS V5R4. The #5782 is a Customer Install Feature. Supported in System i 570 (including POWER6) processor enclosures and #5790. Also supported under 9411-100.

#5799	**#5799 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP** The #5799 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP provides an EXP24 disk controller with PCI-X DDR technology, a maximum of 1.5 GB compressed write cache and a maximum 1.6 GB compressed read cache. The controller supports RAID-5 and RAID-6 and mirroring is supported via i5/OS. Embedded 1.5 GB auxiliary write cache and concurrent battery maintenance are provided. The controller is implemented using two physical cards that are firmly connected and requires two adjacent PCI slots. It provides three Ultra320 SCSI ports/buses for the attachment of disk drives located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. This feature includes an attached “light pipe” for viewing system status LEDs and can only be placed in the Model 520 or 525 system unit enclosure. The #5799 and #5800 are physically the same adapter card but have different feature numbers to denote to IBM configuration tools whether an IOP is required. The #5799 indicates an IOP is used. The #5739/#5778 and #5781/#5782 are also the same adapter cards, but the #5781/#5782 indicates the adapter is placed in a double-wide blind swap cassette and #5799/#5800 indicates the adapter has a light pipe inserted into the feature. Minimum operating system level: i5/OS V5R3 The #5799 is a Customer Install Feature. Supported on all Models 520 and 525.
#5800	**#5800 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP** The #5800 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP provides an EXP24 disk controller with PCI-X DDR technology, a maximum of 1.5 GB compressed write cache and a maximum 1.6 GB compressed read cache. The controller supports RAID-5 and RAID-6 and mirroring is supported via i5/OS. Embedded 1.5 GB auxiliary write cache and concurrent battery maintenance are provided. The controller is implemented using two physical cards that are firmly connected and requires two adjacent PCI slots. It provides three Ultra320 SCSI ports/buses for the attachment of disk drives located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower. This feature includes an attached “light pipe” for viewing system status LEDs and can only be placed in the Model 520 or 525 system unit enclosure. The #5800 and #5799 are physically the same adapter card but have different feature numbers to denote to IBM configuration tools whether an IOP is required. The #5800 indicates an IOP not is used. The #5739/#5778 and #5781/#5782 are also the same adapter cards, but the #5781/#5782 indicates the adapter is placed in a double-wide blind swap cassette and #5799/#5800 indicates the adapter has a light pipe inserted into the feature. Minimum operating system level: i5/OS V5R4 The #5800 is a Customer Install Feature. Supported on all Models 520 and 525.

4.13 Summary: System i direct attach disks, disk controller features, CCINs

The following tables are provided for reference purposes. They summarize key disk device (arm) and disk controller identification numbers, RAID-level support, and performance-related information. The following table summarizes the supported disk devices.

CCIN codes	Approx. size (GB)	Rev per minute (RPM)	Seek time (ms)		Latency (ms)	Maximum drive interface speed (MBps) when mounted in a given enclosure			
			Read	Write		5074/ 5079	5094/ 5294	5786/ 5787	570 (POWER6) processor enclosure
6718	18	10 K	4.9	5.9	3	80	80	Not supported	Not supported
6719	35	10 K	4.7	5.3	3	80	160	Not supported	Not supported
4326	35	15 K	3.6	4.0	2	Not supported	160	320	Not supported
4327	70	15 K	3.6	4.0	2	Not supported	160	320	Not supported
4328	140	15 K	3.6	4.0	2	Not supported	160	320	Not supported
433B	69.7	15 K	3.5	4.0	2	Not supported	Not supported	Not supported	-
433C	139.5	15 K	3.5	4.0	2	Not supported	Not supported	Not supported	-
433D	283.7	15 K	3.5	4.0	2	Not supported	Not supported	Not supported	-

Note: The *actual drive interface speed* (MBps) is the minimum value of the maximum supported speeds of the drive, the enclosure and the disk controller (IOA).

The following table summarizes the supported disk controllers (IOAs).

CCIN	Orderable Feature Codes	Cache size non-compressed/ up to compressed	Min./max. number of disks in a RAID set [a]	Max. disk interface speed supported (MBps)	Suggested ops per second guideline 10K/15K RPM [b]
5702	5705, 5712, 5715	Not applicable	Not applicable	160	46/69
5703	5703	40 MB	3/18	320	75/115
2757	2757, 5581, 5591[c]	► 235 MB write/up to 757 MB ► 390 MB write/up to 1.5 GB aux write cache as #5591	3/18	160	84/127
2780	2780, 5580, 5590[c]	► 235 MB write/up to 757 MB ► 390 MB write/up to 1.5 GB aux write cache as #5590 ► 256 MB read/up to 1 GB	3/18	160	89/134
5709 with built-in IOA write cache	5709, 5725, 9509	40 MB (16 MB on originally shipped controllers)	3/8	NA	75/115

CCIN	Orderable Feature Codes	Cache size non-compressed/ up to compressed	Min./max. number of disks in a RAID set [a]	Max. disk interface speed supported (MBps)	Suggested ops per second guideline 10K/15K RPM [b]
573D with built-in IOA write cache	5727 (dual mode), 5728 (dual mode), 9510	40 MB	3/8	NA	75/115
571A	5736 (IOP), 5775 (no IOP), 0647	NA	NA	320	50/76
571B	5737 (IOP), 5776 (no IOP), 0648	90 MB	3/18 for RAID-5 4/18 for RAID-6	320	83/127
571E, 574F (aux write cache)	5738 (IOP), 5777 (no IOP), 5582 (IOP), 5583 (no IOP)	► 390 MB write/up to 1.5 GB ► 390 MB write/up to 1.5 GB aux write cache as #5582, #5583 ► 415 MB read/up to 1.6 GB	3/18 for RAID-5 4/18 for RAID-6	320	108/163
571F, 575B (auxiliary write cache) Support attachment of the EXP24 Disk Enclosure	5739 (IOP), 5778 (no IOP), 5781 (570 IOP), 5782 (570 no IOP), 5799 (520 IOP), 5800 (520 no IOP)	► 390 MB write/up to 1.5 GB ► 390 MB write/up to 1.5 GB aux write cache as #5581, #5582 ► 415 MB read/up to 1.6 GB	3/18 for RAID-5 4/18 for RAID-6	320	110/165

a. Not all disk enclosures support the maximum disks in a RAID set.

b. The suggested input and output operations per second values are shown here for each controller with all disk drives up to 18 (usually 15 maximum) attached or lower per the maximum supported by the disk controller and all disks running at either 10K or 15K Revolutions Per Minute (RPM). The guideline values are taken from the IBM Systems Workload Estimator for System i, Disk Attachment Types help text information that is available from the System i user options.

The values are based upon assumptions of an average arm percent busy value of 40%, specific ratio of read and write percentages using RAID-5, and read or write cache hit percentages. The attached disk controller can also have a maximum “good performance” operations per second guideline value that is less when larger-than-assumed blocks of data are exchanged. Alternatively you might achieve excellent performance when the measured metric indicates an above guideline value. An example of this is when there is a high percentage of write cache hits. Some sizing experts advocate using a lower percentage of average disk arm busy, such as 25% or even 15%. Therefore there is a conservative-to-aggressive range of disk operations per second values that depend upon your workload environment. Guidelines are good “starting places” for any sizing effort. Use real-world experience if statistics are available. For detailed information about using the Workload Estimator for System i, go to: http://www.ibm.com/eserver/iseries/support/estimator

c. Attaching the larger auxiliary write cache controller to the #2757 (#5991) or to the #2780 (#5590) does not improve write performance compared to attaching the smaller #2757 auxiliary write cache (#5581) or compared to the smaller #2780 auxiliary write cache (#5580). You attach the #5591 or #5591 if you are considering replacing the #2757 or #2780 later with a #5738 or #5777 disk controller.

Important: Place the advanced technology disk controllers #5582, #5583, #5738, #5739, #5746, #5777, #5778, #5781, #5782, #5799, and #5800 in a recommended card location within a supporting system unit, processor enclosure, or I/O tower. See *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011, for details.

4.13.1 System i POWER6 model 570 I/O enhancements

In this section, we summarize the new I/O loop attachment capabilities that are introduced with the POWER6 technology.

New I/O loop 12X I/O architecture support

The System i POWER6 model 570 can attach I/O in multiple ways, allowing large, flexible growth options. A new option available on the System i POWER6 model 570 system is a 12X loop and an associated 12X I/O enclosure. This is also called a *12X channel*.

12X is a channel-based serial exchange I/O architecture that does not depend on the type of computers or connecting devices. It is designed to satisfy rapid interconnect in a large system environment. This architecture is used to connect computers to storages, network devices, and so on. 12X consist of 12 connections (wires), and the bandwidth of each connection is 2.5 Gbps. Therefore the bandwidth of 12X is 30 Gbps. 12X supports a full-duplex communication.

Many HSL loop and HSL I/O enclosures that were previously supported on POWER5 systems are supported on the System i POWER6 model 570.

Each System i POWER6 model 570 processor enclosure can attach up to two GX adapters. An HSL-2 GX adapter #1800 allows a loop to attach up to six HSL I/O enclosures. A 12X Channel CEC GX Adapter #1802 allows a loop to attach up to four 12X I/O enclosures. Each System i POWER6 model 570 processor enclosure can have up to one of the following adapters:

- Two HSL-2 GX adapters
- Two 12X GX adapters
- One HSL-2 GX adapter and one 12X GX adapter

HSL I/O enclosures must be attached to an HSL loop. 12X I/O enclosures must be attached to a 12X loop. HSL and 12X enclosures cannot be mixed on the same loop. HSL and 12X cables are not compatible.

12X I/O drawers cannot be switched between two POWER6 570 systems.

The System i POWER6 model 570 supports a new #5796 PCI-DDR 12X Expansion Drawer, which contains six full-length PCI-X DDR high-speed slots. Two #5796 features require only 4U or 4 EIA of 19-inch rack space. Each #5796 takes half the 19-inch rack width. Up to two #5796 features can be placed in a #7314 Dual 5796 Unit Enclosure each can be cabled to different 12X loops. The #5796 has a 12X Channel adapter with two ports.

The key characteristics of the #5796 include:

- Six high-speed, PCI-X DDR slots
- Dual mode or IOP-less IOAs only (no IOP support)

The #5796 is similar to the HSL #5790. The key differences include:

- The #5796 can support higher I/O workload levels.
- The #5790 has six PCI-X slots that can support IOPs.

The #5786 EXP24 Disk Drawer, introduced in February 2007, is supported in both an HSL I/O enclosure and a 12X I/O enclosure. Note that the #5796 is supported on IBM System i Models 800, 810, 825, 870, 890 and 520, 550, 570, 595 as well as POWER6 570.

Each #5796 takes one of four possible positions per 12X loop. The #5796 attaches to the 12X loop using one of two #5796 12X adapters, one for shorter distances or one for longer

distances. The short run (SR) adapter #6446/9533 can be used with 12X loops on which all units are contained in the same rack. The long run (LR) adapter #6457/8532 can be used for units spread across multiple racks. Short run and long run adapters can be mixed on the same loop.

In the following table, *Yes* indicates that the 12X cable identified in that column can be used to connect the configuration identified in the first column. In this table, *No* means it cannot be used in the configuration.

Configuration	0.6M (#1829)[a]	1.5M (#1830)	3.0M (#1840)[b]	8.0M (#1834)[c]
#5796 to #5796 with Short Run adapter (#6446) in both drawers	Yes	Yes	No	No
#5796 with Short Run adapter (#6446) to #5796 with Long Run adapter (#6457)	Yes	Yes	Yes	No
#5796 to #5796 with Long Run adapter (#6457)in both drawers	Yes	Yes	Yes	Yes
#5796 with Short Run adapter (#6446) to 12X Channel CEC adapter (#1802)	No	Yes	Yes	No
#5796 with Long Run adapter (#6457) to 12X Channel CEC adapter (#1802)	No	Yes	Yes	Yes

a. The 0.6M 12X cable (#1829) cannot be used to connect to a processor enclosure because of its short length. It is intended for use between two #5796s mounted side by side in the same #7314 enclosure or to be used to connect between two #5796s located one beneath the other in a rack.

b. It is possible in some limited configurations to use the 3.0 M 12X cable (#1840) to locate #5796 drawers in adjacent racks. The cable length requires careful management of each drawer location within the rack. The best choice for connecting a #5796 drawer in an adjacent rack is the 8.0 M 12X cable (#1834).

c. The 12X cable (#1834) is intended for use when connecting between two modules that are located in adjacent racks. This cable cannot be connected to the 12X Short Run adapter (#6446).

The following figure shows the front view of the #5796 PCI-DDR 12X Expansion Drawer. Note that #5796 does not have disk slots.

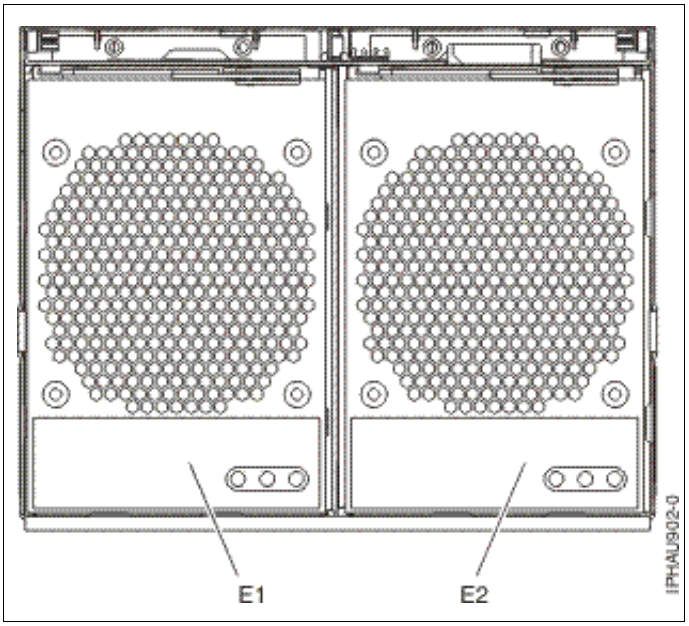
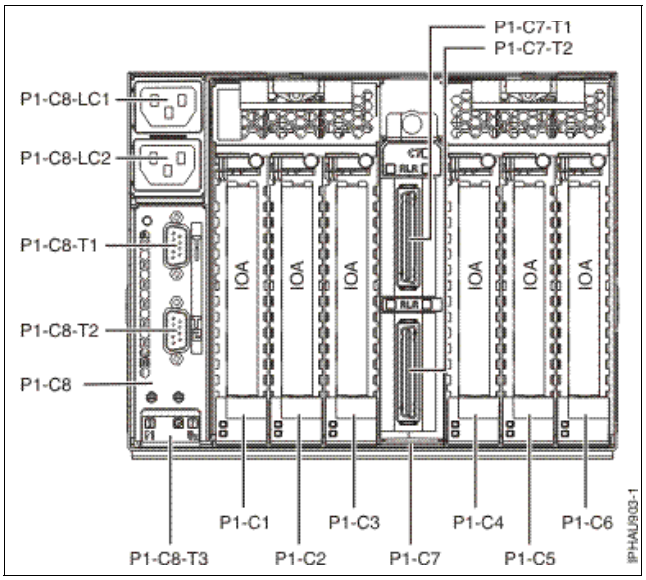


Figure 4-1 Front view of #5796 PCI-DDR 12X Expansion Drawer

The following figure shows the back view of the #5796 PCI-DDR 12X Expansion Drawer. P1-C7-T1 and P1-C7-T2 in the figure are 12X ports. The #5796 supports only IOAs that can run without an IOP. Therefore it does not support IOAs that requires an IOP.

The #5796 includes redundant concurrently maintainable power and cooling. The blind swap PCI mechanism allows for PCI card servicing without removing the I/O expansion drawer. All of the #5796 six I/O slots are PCI-X 2.0 (64-bit, 266MHz) slots.

For more information about PCI placement rules, see *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011.



The System i POWER6 model 570 supports a number of HSL I/O enclosures providing PCI-X slots and potentially disk slots. These enclosures have been previously announced on POWER5 systems. The PCI slots provided are PCI-X slots, which support IOPs, not PCI-X DDR slots. These enclosures are:

- #0595/5095 (7 PCI-X slots and 12 SCSI disk slots)
- #5094/5294 (14 PCI-X slots and 15-45 SCSI disk slots)
- #5096/5296 (14 PCI-X slots and 0 disk slots)
- #0588/5088 (14 PCI-X slots and 0 disk slots)
- #5790 (6 PCI-X slots and 0 disk slots)

All of these HSL I/O enclosures are attached to the System i POWER6 model 570 via HSL-2 physical ports and run over an HSL-2 interface. I/O units that were attached to earlier systems using the HSL-1interface (#9877, #9886, #9887, #2886, #2887) must be upgraded before being attached to the System i POWER6 model 570. This includes the #0588/5088, which previously had supported the HSL-2 interface only with an RPQ on POWER5 and POWER5+ systems. You can order the HSL-2 interface as #6417 (MES) or #9517 (from factory with new I/O tower/drawer).

The #5786/5787 Disk Enclosure is supported. This I/O enclosure holds up to 24 internal 15k rpm SCSI disk drives, which are run by a disk controller in a PCI slot located in the System i POWER6 model 570 processor, 12X, or HSL enclosure.

4.13.2 System i POWER6 model 570 and V5R4 with License Internal Code V5R4M5 storage enhancements

Serial attached SCSI support

The System i POWER6 model 570 processor enclosure/system unit includes an IBM SAS controller, which supports up to six SAS disk drives. SAS architecture defines a serial device interconnection and transportation protocol that defines the rules for information exchange between devices. SAS is an evolution of the parallel SCSI device interface into a serial point-to-point interface.

SAS physical links (*phys*) are a set of four wires used as two differential signal pairs. One differential signal transmits in one direction while the other differential signal transmits in the opposite direction. Data can be transmitted in both directions simultaneously.

Phys are contained in ports. A *port* contains one or more phys. A port is a wide port if there is more than one phy in the port. A port is a narrow port if there is only one phy in the port. A port is identified by a unique SAS world- wide name (also called *SAS address*). A SAS controller contains one or more SAS ports.

A *path* is a logical point-to-point link between a SAS initiator port in the controller and a SAS target port in the I/O device (that is, a disk). A *connection* is a temporary association between a controller and an I/O device through a path. A connection enables communication to a device. The controller can communicate to the I/O device over this connection using either the SCSI command set or the Advanced Technology Attachment (ATA)/ Advanced Technology Attachment Packet Interface (ATAPI) command set depending on the device type.

An *expander* facilitates connections between a controller port and multiple I/O device ports. An expander routes connections between the expander ports. There can exist only a single connection through an expander at any given time. Using expanders creates more nodes in the path from the controller to the I/O device. If an I/O device supports multiple ports, it is possible for more than one path to the device when there are expander devices on the path.

SAS fabric refers to the summation of all paths between all controller ports and all I/O device ports in the SAS subsystem.

The benefits of IBM SAS controllers include:

- A robust SAS expandable architecture that incorporates fibre channel like functionality (that is, dual path)
- An improved signal quality because of a point-to-point connection between device and adapter, and or expander
- Improved availability and redundancy, with dual paths to each drive
- Reduced potential customer problems with point-to-point:
  - There is no contention when accessing a drive.
  - They minimize command time-outs.
- Performance growth capability
- An improved disk/adapter ratio, providing more addressability: parallel SCSI up to 36 and SAS up to 60
- Utilization of SCSI commands, providing:
  - Minimal impacts to operating systems
  - Compatibility for high-speed software (applications)
- Quick detection of failing devices

The IBM SAS controllers are optimized for SAS disk configuration that use dual paths through dual expanders for redundancy and reliability. They offer the following features:

- A PCI-X 266 MHz system interface or PCI Express system interface
- A physical link speed of 3 Gb per second supporting transfer rates of 300 MBps
- Support of SAS devices and non-disk Serial Advanced Technology Attachment (SATA) devices
- Manage path redundancy and path switching for multiported SAS devices

As stated previously, the System i POWER6 model 570 processor enclosure has six disk slots (driven by the embedded SAS disk controller). Up to six SAS 15k rpm SAS disk drives are supported in a System i POWER6 model 570 processor enclosure. They are available for i5/OS in the following three capabilities:

- 69.7 GB (#3676)
- 139.5 GB (#3677)
- 283.7 GB (#3678)

The following options are available for Linux or AIX partitions that own their own disk drives:

- 73.4 GB (#3646)
- 146.8 GB (#3647)
- 300 GB (#3648)

Important: Use care when proposing the SAS disk drives in the System i POWER6 model 570. You must be confident that you clearly understand the disk performance implications. The embedded System i POWER6 model 570 SAS disk controller that supports these drives has zero write cache. Where disk and disk controller performance is a consideration, use a SCSI disk with a SCSI disk controller with write cache.

The System i POWER6 model 570 processor enclosure supports only the new SAS DASD hard disks internally. The older SCSI disk drives can be attached to the System i POWER6 model 570 but must be located in a remote I/O drawer.

SAS and SCSI drives can mirror each other, given similar capacities. The smaller capacity is used by both drives, for example 69.7 GB to 70.56 GB.

SATA devices support

Since disk controllers of System i POWER6 model 570 processor enclosure are SAS disk controllers and Integrated Drive Electronics devices cannot be attached directly to these controllers, the conversion mechanism between the SATA and Integrated Drive Electronics devices is supported within the System i POWER6 model 570 processor enclosure.

SATA is the interface specification that offers increased data rate performance over Parallel Advanced Technology Attachment (PATA). Developed by a group of leading technology vendors, SATA was designed to overcome the performance barriers of PATA technologies, while maintaining the benefits and cost-efficiency of PATA technology.

New features and benefits introduced with SATA include:

- Lower voltage

  SATA operates at 250 millivolts, and PATA is based on 5-volt signaling. This low voltage is compatible with upcoming circuitry, and the resulting low power consumption, meaning lower cooling needs, makes SATA attractive for multi-drive RAID arrays.

- Data transfer rates

  Parallel ATA is limited to data transfer rates of 133 MBps; Serial ATA has a data transfer rate of 150 MBps initially. This might look like a disappointing improvement and is still less than SCSI and Fibre Channel, but as mentioned earlier, the SATA road map calls for 300, and then 600 MBps data transfer capability.

- Point-to-point connectivity

  The master/slave shared connectivity approach is replaced with a point-to-point connection scheme supporting only one device per cable. This allows each drive to communicate directly with the system at anytime. Because there is no sharing on the bus, performance scales linearly: adding a disk on a SATA system gives you the additional maximum throughput of the added disk.

- Serial transmission

  Serial transmission is used in many recent technologies including Gigabit Ethernet, USB 2.0, IEEE 1394, and Fibre Channel. In fact, serial is used for most of the fastest data transfer technology and will enable SATA to rival SCSI and Fibre Channel in speed.

- Cyclic redundancy checking (CRC)

  CRC provides improved data protection and integrity over PATA and confers to SATA another feature already found in SCSI.

- Improved performance with hot-swappable drives

  SATA features greater performance and hot-swappable drives. This enables you to swap out a drive without taking the system offline or rebooting. This is an essential characteristic of SATA that makes it viable for enterprise solutions were system down time is usually not an option.

- Improved cabling and connector

  A simplified cabling scheme offers a narrow serial cable with compact connectors for improved connectivity and ventilation, facilitating improved product design and hardware

assembly. Practically, the connector size is reduced from 40 pins with PATA to 7 pins with SATA. PATA uses 16 separate wires to send 16-bits of data and thus must use a bulky flat cable, which is the cause of electromagnetic interference that compromises data integrity.

- Backward compatibility with older ATA storage devices

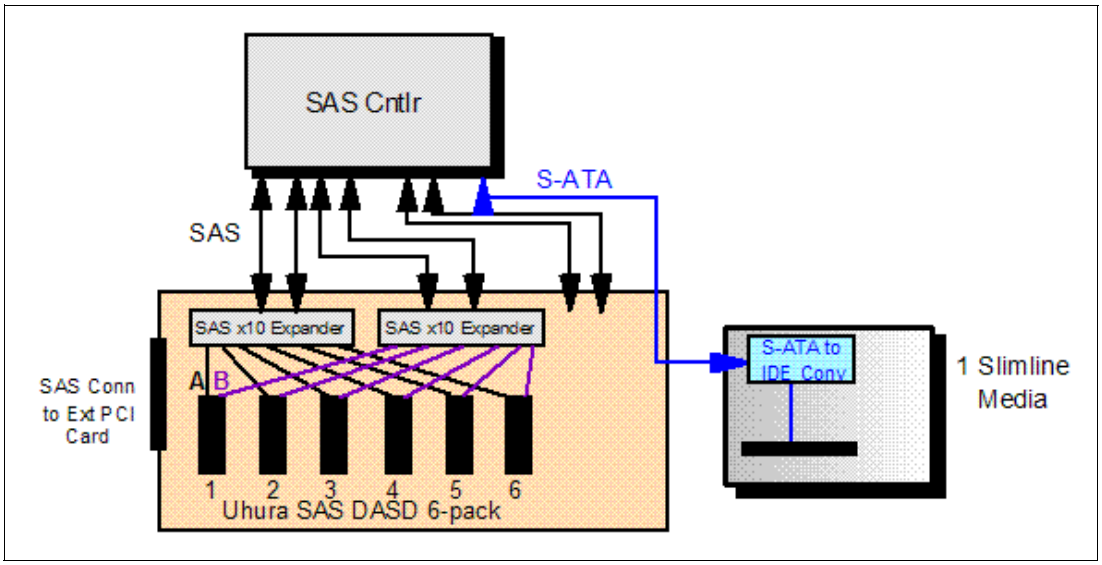
  SATA is designed to be backward compatible with previous PATA devices. To system software, SATA is not different from PATA.

- Compatibility with SAS connector

  SATA is designed to be compatible with SAS. A SATA devices can connect to a SAS connector.

System i POWER6 model 570 supports the #5756 DVD-ROM Drive IDE Slimline and the #5757 DVD-RAM Drive IDE Slimline. This drive can be attached to the System i POWER6 model 570 processor enclosure. In the System i POWER6 model 570 processor enclosure, these drives are attached to the embedded SAS Disk Controller, which preforms the conversion mechanism.

The following figure shows a logical representation of the connection between an embedded SAS Disk Controller and an IDE DVD Drive via a SATA-IDE converter.



System i POWER6 model 570 enhanced disk storage configuration rules

System i POWER6 model 570 implements enhanced disk storage configuration rules. IBM configuration tools and IBM technical support personnel do not support configurations unless they can protect against possible single-disk-drive failure and protect disk-controller-write cache.

Internal and integrated disk drives must be protected by either mirroring or using RAID-5 or RAID-6 arrays. Disk controllers with write cache must protect the cache by either mirroring the disk controller (IOA-level mirroring or higher) or using an auxiliary write cache IOA. This is true for all partitions of all types running on the System i platform, including i5/OS, AIX, and Linux.

External drives attached via Fibre Channel adapters are supported for both database and integrated file system. The IBM System Storage DS6000™, DS8000 and Enterprise Storage Server (ESS) products are supported. External drives can also be attached via Ethernet LAN adapters and used by the i5/OS integrated file system, but not the i5/OS database. The same

System i POWER6 model 570 protection rules apply here as for internal and integrated disk storage. Drives must be protected against a single drive failure, and write cache must be protected.

As an additional disk storage enhancement, load source drives can now be placed outside of the System i POWER6 model 570 processor enclosure. In addition to the SAN load source option, you can specify the i5/OS load source drives to be placed in an attached I/O tower or drawer. The choices include #0595/5095, #5094/5294, or #5786/5787.

4.13.3 RAID hot spare

You can order one or more hot spare disk devices to be available for automated use (inclusion) in a defined RAID-5 or RAID-6 disk array set. This hot spare capability requires i5/OS V5R4 with V5R4 with License Internal Code V5R4M5 running on the following models:

- 515, 520, 525, 550, 570, POWER6 570, and 595
- 800, 810, 825, 870, 890

Hot spare is supported on the following disk controllers with write cache:

- 1.5 GB controllers: #5739, #5778, #5799, #5800, #5781, or #5782 and #5582, #5583, #5738, or #5777
- 757 MB controllers: #2757, #5581, or #5591 and #2780, #5580, or #5590
- 90 MB controllers: #5737 or #5776
- 40 MB controllers: #5703 or #2782
- Embedded disk controllers of the Models 515, 520, 525, 550, and 570, having a 16 MB through 40 MB write cache card: #5709, #5726, #9509, #5727, #5728, or #9510

You configure the RAID array with one or more hot spare disks using the normal i5/OS interfaces to set up RAID-5 or RAID-6 protection as discussed later in this section.

Prior to hot spare, if a disk fails in a RAID-5 array, the array is not protected against a second disk failure until the failed disk is physically replaced and the data contents are rebuilt on the replacement disk. Similarly, if two disk drives fail on a RAID-6 array, the array is not protected against a third disk failure in the array.

With RAID hot spare, in the event of a disk drive failure, a spare disk is dynamically assigned to take over the failed disk's role, and the rebuilding operation is started. The time between problem occurrence and the time in which protection is re-established is reduced. The time reduction is the time it takes for the operator to recognize the error and for someone to respond and physically replace the failed drive.

Using the hot spare disk drive, disk drive failure is now handled in parallel to the automatic system response. With the system's existing hot plug or concurrent maintenance capability, the failed drive can be replaced without taking the system down. The replacement drive then takes over the role of standing by as the hot spare.

The RAID hot spare disk drive is plugged into the system and does not contain any data until it takes over for a failed disk drive. Therefore, it requires a disk slot. The hot spare disk drive is associated with a specific controller. Assuming all drives are the same capacity, one hot spare disk drive can stand by, protecting all the arrays managed by the disk controller.

Depending on the level of protection that is desired, you can have more than one hot spare disk drive per disk controller. This protects against the combined sequential failures of more than two (RAID-5) or three (RAID-6) disk failures. It does not protect against non-sequential

failures where multiple drives fail at one time or if another failure occurs when the hot spare drive rebuilding was not yet completed in a RAID-5 array.

When ordering a new system from IBM, you can request that RAID hot spare be implemented by IBM manufacturing by specifying feature code #0347. This feature is assumed by IBM to be system-wide, unless you are defining protection by partition. One hot spare disk drive is assigned per disk controller except in the EXP24 Disk Enclosure. The EXP24 1.5 GB Disk Controller (#5739, #5778, #5799, #5800, #5781, # or 5782 or CCIN 571F) has one hot spare disk if there are 18 or fewer drives in the EXP24 or two hot spare disk drives if there are 19-24 drives.

#0347: The #0347 cannot be ordered for the Models 800, 810, 825, 870, and 890 because IBM no longer manufactures these models as new systems. The hot spare function is supported on these models with i5/OS V5R4 with License Internal Code V5R4M5.

You can control the use of hot spare drives with more granularity than what the #0347 hot spare specify indicates. You can assign as many hot spare drives as desired to each specific IOA or controller. This can be useful if you have separate auxiliary storage pools (ASPs) for which you desire different levels of protection.

It is important to do proper planning for use of a hot spare disk. Here is an overview of how to set up hot spare disk units on your system:

- To start device parity protection with hot spare protection using IBM Systems Director Navigator for i5/OS:
  a. From the IBM Systems Director Navigator for i5/OS window, select **Configuration** and **Service**.
  b. Select **Show All Configuration** and **Service Tasks**.
  c. Select **Start Parity**.
  d. In the Hot Spare Protection list, select **Yes**.
- To start device parity protection with hot spare protection using System i Navigator:
  a. In System i Navigator, expand **My Connections** → ***your System i*** → **Configuration and Service** → **Hardware** → **Disk Units**.
  b. Right-click **Parity Sets** and select **Start Parity**.
  c. In the Hot Spare Protection list, select **Yes**.
- To start device parity protection with hot spare protection using a command line:
  a. Start System Service Tools (STRSST), and specify the user name and password.
  b. On the System Service Tools (SST) display, select **Work with disk units**.
  c. On the Work with Disk Units display, select **Work with disk configuration**.
  d. On the Work with Disk Configuration display, select **Work with device parity protection**.
  e. On the Work with Device Parity Protection display, select **Start device parity protection - RAID 5 with Hot Spare Protection** or **Start device parity protection - RAID 6 with Hot Spare Protection** depending on the level of parity protection that is desired.

For more information about the specification of this feature, see the #0347 in 4.10, “Disk units” on page 264.

4.13.4 Clustering considerations among Models 8xx and 5xx

In this section, we summarize the clustering and switching of I/O devices among IBM System i model configurations:

- The 8xx and 5xx systems can be clustered. However, switching I/O towers between 8xx and POWER6 570 systems is not supported.
- The 5xx systems (POWER5 and POWER6) can be clustered, and HSL-attached I/O units can be switched. This requires all I/O enclosures to have the faster HSL-2 adapters as indicated by #6417 and #9517.
- The HSL-attached I/O drawers of a Models 800, 810, 820, 830, 840, 870, or 890 are not switchable with I/O drawers of a POWER6 570.
  - The #5094/#5294, #0595/#5095, and #0588/#5088 on 8xx models run at a slower HSL-1 speed even though the physical copper ports or cables are HSL-2 capable, as indicated by the #9887 or #2887.
  - When HSL I/O is attached to a Model 520, 525, 550, 570, or 595, the model uses the faster HSL-2 speed interface, as indicated by the #6417 or the #9517.
  - POWER5/POWER5+ systems can run a limited number of I/O towers or drawers at HSL-1 speed and the rest at HSL-2 speed. However, all POWER6 570 models run all of these I/O towers or drawers at HSL-2 speed.

  Therefore, you cannot use switchable I/O towers because there is no “common denominator” I/O.
- The POWER6 570 does not support the long distance (but slow) optical HSL connections. The higher speed copper HSL technology is used.
- At this time, 12X I/O drawers cannot be switched between two POWER6 570 systems.

DataMirror iCluster and high availability solutions: During 2007, IBM completed the acquisition of DataMirror and announced the IBM DataMirror iCluster product as part of the System i high availability solution portfolio.

IBM will offer iCluster on all System i products as an option for high availability and disaster recovery deployment, in addition to other current System i disk-replication solutions, including cross-site mirroring, Metro Mirror, and Global Mirror. This entire enhanced set of offerings increases System i competitiveness by enabling IBM to provide a complete resiliency solution for clients who want an end-to-end high availability solution from a single vendor.

Other high availability solutions in the System i marketplace include the well-established product portfolio of Vision Solutions, one of most important IBM Premier Business Partners. IBM continues work in close cooperation with Vision Solutions, as well as other solutions providers such as Maximum Availability and QSL Group.

All of this cooperation and set of high availability solutions can be used with System i Capacity BackUp Edition offerings. Customers must evaluate each solution offering and determine which is best for their working environment.

5

EXP24 Disk Enclosures

In this chapter, we provide information about the #5786 TotalStorage Expansion 24 Disk Drawer and the #5787 TotalStorage Expansion 24 Disk Tower. We include diagrams that show the disk slots and addressing and provide recommendations forSmall Computer System Interface (SCSI) repeater placement and cabling.

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5.1 #5786 TotalStorage Expansion 24 Disk Drawer overview

The #5786 TotalStorage Expansion 24 Disk Drawer provides disk slots for up to 24 disk units in a 19-inch, 4 EIA high rack drawer. The #5787 TotalStorage Expansion 24 Disk Tower Provides disk slots for up to 24 disk units in a stand-alone disk tower. They both provide redundant power, redundant cooling, and Ultra 320 SCSI connections for up to 24 Ultra 320 SCSI disk units. These disk units can be packaged in up to four independent groups of six disk units. Each group of six disk units is referred to as a *6-pack*.

Each 6-pack with one or more disks is enabled by either a #5741 Expansion 24 6 Disk Slot Enabler or a #5742 Expansion 24 6/12 Disk Slot Enabler. Each six pack must be driven by a port on a supporting SCSI disk controller located outside the #5786/#5787.

Disk slot enable and SCSI repeater: Each *disk slot enabler* is also referred to as a *SCSI repeater* in IBM documentation. User documentation uses the terms repeater and enabler interchangeably. One repeater is required for each 6-pack regardless of the type of repeater.

The port on the disk controller is connected to either a #5741 or a #5742 via a SCSI cable. One to four disk slot enablers (repeaters) are required, depending on the number of 6-packs that are populated with disk units.

The #5741 Expansion 24 6 Disk Slot Enabler is termed a *single SCSI repeater* and the #5742 Expansion 24 6/12 Disk Slot Enabler is termed a *dual SCSI repeater*. The #5742 can support a single 6-pack or up to two 6-packs (up to 12 disks), when functioning as a dual repeater.

When functioning as a dual repeater, a #5742 must be connected to the supported disk controller port. It then can be daisy-chain connected, via a SCSI cable, to either another #5741 or #5742 (the second 6-pack). This “second” repeater must not be connected to any other repeater or disk controller port.

Notes:

- The #5786 and #5787 do not use HSL cables and do not have SPCN connections.
- When the EXP is connected to a single input/output adapter (IOA) through its enabler, then up to 36 DASD can be attached to each IOA. Minimum drives in a RAID-5 set is 4 and the maximum is 18. Therefore a minimum of two RAID sets with 36 drives are attached to the IOA. We recommend that you configure up to 24 disks within a single EXP24 from a best performance viewpoint.

The disk controller features supporting attachment of either a #5786 TotalStorage Expansion 24 Disk Drawer or a #5787 TotalStorage Expansion 24 Disk Tower include the #5736, #5737, #5739, #5775, #5776, #5778, #5781, #5782, #5799, or #5800.

Specific disk unit feature numbers are used to identify disk units that will be placed in the #5786/#5787. These disk units are physically the same disk units as used in other System i system units and I/O towers or drawers. Using separate feature codes allows IBM configuration tools to better understand their placement. Feature code numbers of #5786/#5787 disk units include the #1266, #1267, #1268, #1293, #1294, #1295, #1296, #1297, #1298, and #1299.

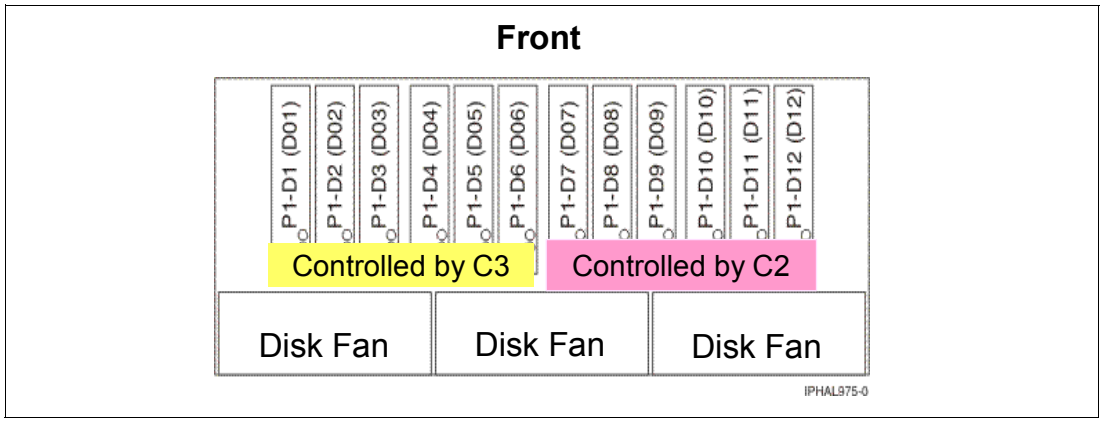
#5786/#5787 EXP24 disk configuration: The #5786/#5787 EXP24 disk configurations can support a larger number of disk drives with fewer disk controllers (IOAs) and therefore use fewer PCI slots than was previously required with older disk controllers. From an attachment standpoint, a single disk controller (IOA) and a single EXP24 allow up to 24 disks to be physically attached.

When one and a half EXP24 enclosures are attached to a single controller (three SCSI buses), up to 36 disks can be attached. However for performance reasons, 24 disks per high-speed controller are usually the practical limit and are inferred as the maximum in most EXP24-based documentation. By comparison, the previous maximum per disk controller was 20 disk drives (in a mirroring environment, where four SCSI buses could be used) or 15 to 18 disk drives in a RAID-5 environment with auxiliary write cache support.

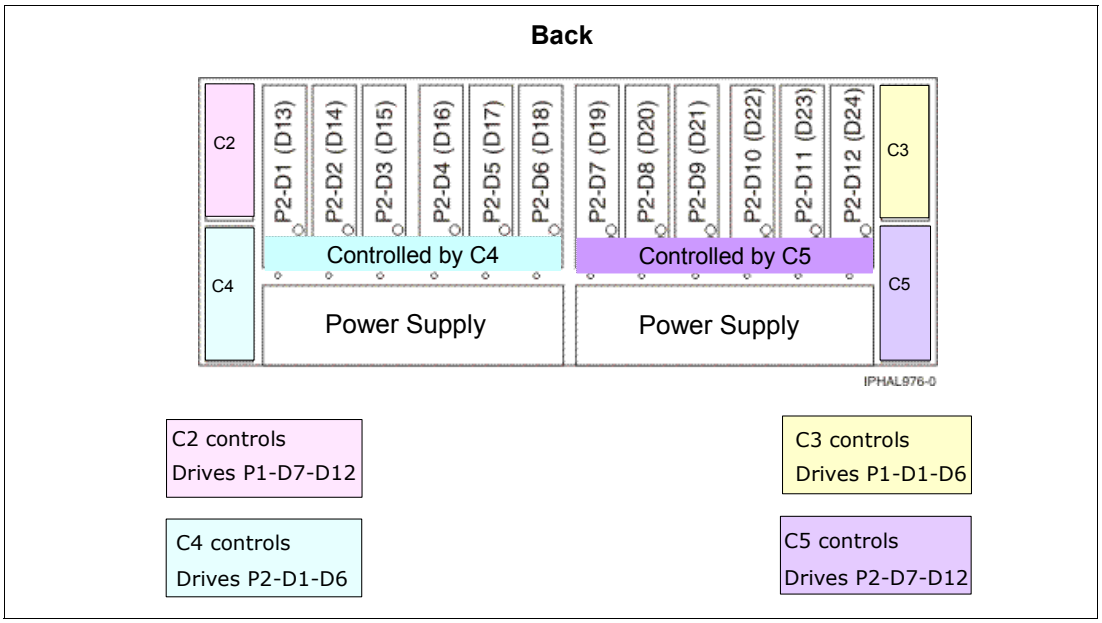
Because the EXP24 enclosure is organized into four sets of up to six drives, each set of six disks can be attached to the same or a different disk controller IOAs. This flexibility can be of significant value when configuring small logical partitions (LPARs).

5.2 #5786 front and rear views

The following diagram shows the front view of the #5786 TotalStorage Expansion 24 Disk Drawer.



The following diagram shows the back view of the #5786 TotalStorage Expansion 24 Disk Drawer. In the back view, C2, C3, C4 and C5 are slots for the #5741/#5742 SCSI repeaters.



Note: On tower models (#5787), the locations C3 and C5 are located on the top, and C2 and C4 are located on the bottom. This makes C3 the top left and C5 the top right, and it makes C2 the bottom left and C4 the bottom right when viewed from the rear. Follow the location codes when placing repeater cards.

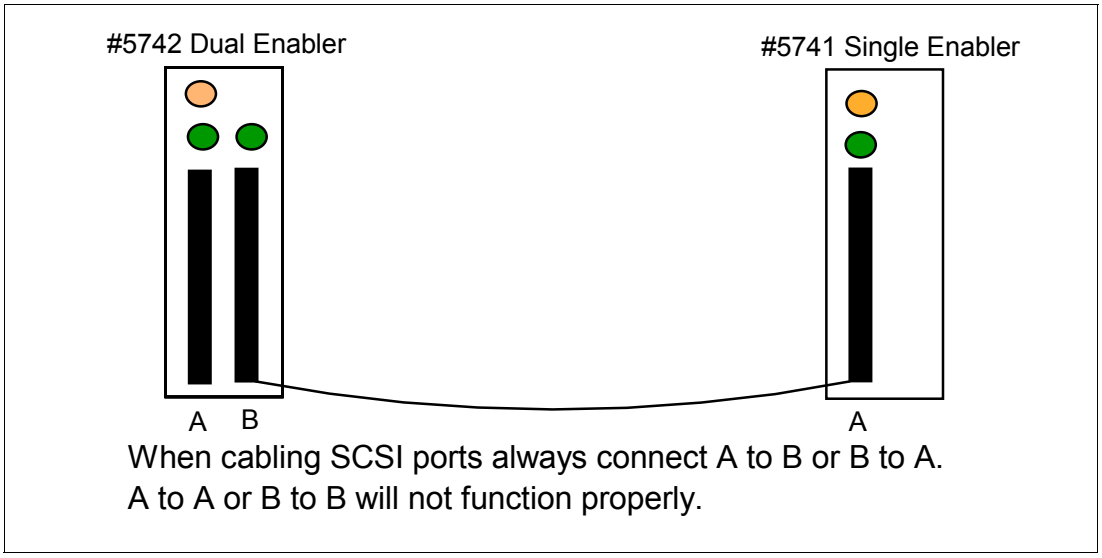
5.2.1 #5741/#5742 Disk Slot Enabler placement and cabling recommendations

A repeater (also referred to as an *enabler*) is required whenever there are disk drives in the slots that are controlled by that repeater. The repeater slots may be populated in several ways:

- All #5741 single repeaters (allow up to six disks per disk controller port).
- All #5742 dual repeaters (not recommended as more expensive and unnecessary).
- For greatest flexibility, use two #5741 single repeaters and two #5742 dual repeaters.

  The #5741/#5742 placement affects the disk device SCSI addressing and the number of potential LPAR load source disk units.
- A combination of #5741 single and #5742 dual repeaters (allows up to 12 disks per controller port).
  - When using a combination of #5742 dual and #5741 single repeaters, we recommend that you place the #5742 dual repeaters in C3 and C4. This placement keeps the disk device SCSI addressing consistent without change but limits the available LPAR load source disk units to two.
  - When connecting (daisy-chaining) repeaters, the SCSI cabling should go from the disk controller port to a #5742 dual repeater and then to a #5741 single repeater.
  - The repeaters should be connected (daisy-chained) so that a pair of repeaters controls the disk slots in either the front or rear half of the #5786/#5787 (C3 to C2 and C4 to C5).

The SCSI ports on the #5741/#5742 repeaters are *not* labelled. The following figure shows a representation of the repeaters as viewed from the rear. It shows only the cabling between SCSI repeaters. A complete working configuration for controlling up to twelve disks also requires a SCSI cable connection from a SCSI port on a disk controller to a port on the #5742 dual repeater. In this example, that port on the #5742 is labelled A.



5.2.2 Load source drive considerations in #5786/#5787 for logical partitions

Each i5/OS LPAR requires a load source disk unit. The server uses the load source to start the LPAR. Each LPAR has specific supported slot placements for its load source disk depending on the type of system unit or expansion unit where the load source is installed. A specific connection to a disk IOA is then required to control the load source disk unit for each LPAR.

System Planning Tool (SPT): The information provided here does not replace the System Planning Tool. Use this information as a resource with the SPT output. Its purpose is to assist you in the load source placement for your i5/OS LPARs.

The load source drive requires a SCSI device address of 1, 2, 3, or 4 and must be connected to SCSI port 0 of a disk controller. Under certain circumstances, the SCSI device addresses in the EXP24 are A, B, C, D, E and F. Therefore, care is needed to ensure addressing is correct when attempting to have more than two load sources contained in a single EXP24.

The following figure shows the SCSI device addressing and the effect of using a #5742 dual repeater or a #5741 single repeater and the effects of cabling between repeaters.

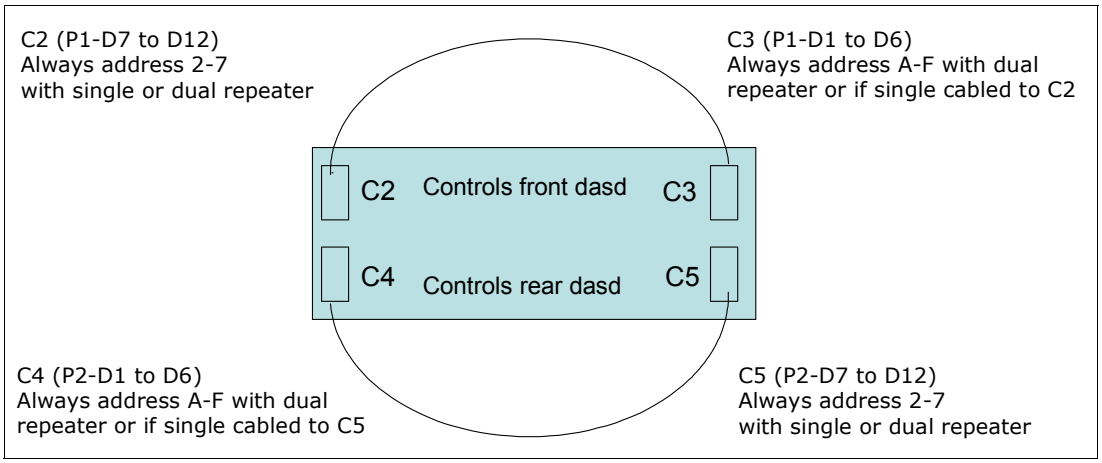


Figure 5-1 Card slot device addressing rules using #5741 single and #5742 dual repeaters

The SCSI addressing for DASD positions P1-D7 to P1-D12 and P2-D7 to P2-D12 does not change. The positions are always SCSI address 2, 3, 4, 5, 6 and 7. This means that the first three positions in the right six-pack viewed from the front (P1-D7, D8, D9), and the first three positions in the right six-pack viewed from the rear (P2-D7, D8, D9), can always be load source candidates.

P1-D1 to P1-D6 and P2-D1to P2-D6 device positions change to addresses A, B, C, D, E, and F in two cases. They change whenever a #5742 dual repeater controls them or if a #5741 single repeater controlling them is cabled to a #5742 dual repeater. Addresses A, B, C, D, E and F are in hexadecimal format. These same addresses may be displayed in decimal format (10, 11, 12, 13, 14, 15) in some i5/OS displays such as Hardware Service Manager or error logs.

Load source rules for #5786 and #5787

- The load source disk must be controlled by the SCSI bus port 0 of the load source disk unit controller.
- P1-D1, P1-D2, or P1-D3 can contain the load source disk only if slot C3 contains a #5741 single repeater card that is connected to SCSI port 0 of the disk controller.
- P1-D7, P1-D8, or P1-D9 can contain the load source if the #5741 in C2 is connected to SCSI port 0 on the disk controller or if the #5741 in C2 is cabled to the #5742 dual repeater in C3 and the #5742 in C3 is connected to SCSI port 0 on the disk controller.
- P2-D1, P2-D2, or P2-D3 can contain the load source disk only if slot C4 contains a #5741 single repeater card that is connected to SCSI port 0 of the disk controller.
- P2-D7, P2-D8, or P2-D9 can contain the load source if the #5741 in C5 is connected to SCSI port 0 on the disk controller or if the #5741 in C5 is cabled to the #5742 dual repeater in C4 and the #5742 in C4 is connected to SCSI port 0 on the disk controller.

#5741 and #5742 SCSI repeater card placement recommendations

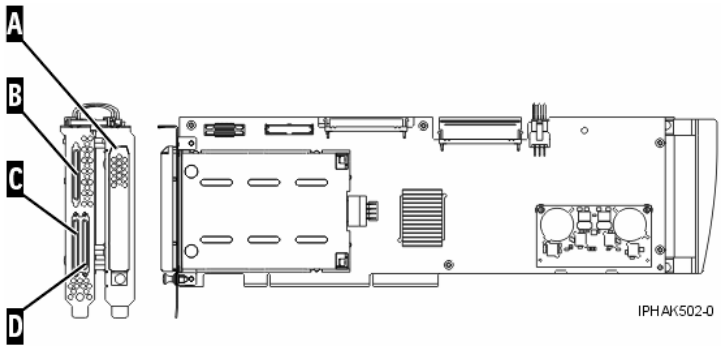
- To have four load source disks available in a single #5786/#5787, the #5786/#5787 must contain four #5741 single repeaters or #5742 dual repeaters in C2 and C5 and #5741 single repeaters in C3 and C4.
- To keep SCSI addressing consistent with no changes, but limit the available load source disks to two instead of four, then the #5786/#5787 should have a #5741 single repeater in C2 and C5 and #5742 dual repeaters in C3 and C4.
- When daisy-chaining SCSI repeaters, connect C2 to C3 and connect C5 to C4. This way, the repeaters in C2 and C3 control the disks in the front of the #5786/#5787 and the repeaters in C4 and C5 control the disks in the rear.

PCI-X EXP24 Controller-1.5 GB (CCIN571F/575B) SCSI port addresses

The controller consists of two physical cards that are firmly connected to each other and requires two adjacent PCI-X slots. It provides three Ultra320 SCSI ports or buses for the attachment of disk drives located in a #5786/#5787 TotalStorage EXP24 Disk Drawer/Tower.

THe #5739 and #5778 are physically the same adapter cards, but have different feature numbers to denote to IBM configuration tools whether an IOP is required. The #5739 indicates that an IOP is used. The #5781/#5782 and #5799/#5800 are also the same adapter cards. However, the #5781/#5782 indicates that the adapter is placed in a double-wide blind swap cassette, and the #5799/#5800 indicates that the adapter is placed in a system unit and has a light pipe inserted into the feature.

The following figure shows the SCSI port addressing on the double-wide EXP24 disk controller.



A- Battery cover

B- SCSI port 2

C- SCSI port 0

D- SCSI port 1

The IBM Systems Hardware Information Center contains additional information about the EXP24 using both System i (#5786 or #5787) and System p (#7031-D24 or #7031-T24) disk enclosure feature numbers. Refer to the Hardware Information Center on the Web at:

http://publib.boulder.ibm.com/infocenter/eserver/v1r3s/index.jsp

Search the information center using the feature numbers #5786, #5787, #7031-D24, or #7031-T24. Add the word “repeaters” to the search to find line drawings and instructions in addition to the information provided in this paper.

6

Integrated Virtual Ethernet

In this chapter, we provide information about the Integrated Virtual Ethernet (IVE) adapter from the viewpoint of i5/OS V5R4 with Licensed Internal Code level V5R4M5 on a System i POWER6 model 570 system. The IVE capabilities enable easy sharing of the integrated high-speed Ethernet adapter ports among partitions. It is an integrated resource that comes within the processor enclosure (“building block”) on each Model 570 (POWER6) system and its resources are virtualized to the operating systems of each partition.

A single IVE can be shared by all partitions in the system without requiring the Advanced Power Virtualization (APV) feature and without being made part of a Virtual I/O Server (VIOS) partition. Host Ethernet Adapter (HEA) is the term that is used in most system documentation for IVE. It is also the term that the Hardware Management Console (HMC) interface uses to set up the IVE for use by a partition. The acronyms IVE or HEA each mean exactly the same physical hardware. In this paper, we use the term Host Ethernet Adapter or its acronym HEA in most cases.

When ordering any System i POWER6 model 570 processor enclosure, you must specify either a #5636 IVE adapter or a #5639 IVE adapter. Currently only the 570 (POWER6) processor enclosure supports the IVE/HEA.

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6.1 Overview

A #5636 IVE two-port 10/100/1000 Mbps adapter or a #5639 IVE four port 10/100/1000 Mbps adapter must be specified for each processor enclosure (system unit) of a System i Model 570 (POWER6). Neither of these adapters uses an input/output processor (IOP) or requires a PCI slot.

Note: The System p Model 570 (POWER6), 9117-MMA, supports the #5636, #5639, and an additional #5637 integrated 2-port 10 Gbps SR3 (optical) adapter. The System i platform does not yet support the #5637.

The IVE feature code is installed by manufacturing. Any time you order a 570 (POWER6) processor enclosure, you must specify an IVE adapter. The #5636 is the default that is automatically selected by the IBM hardware configuration tool.

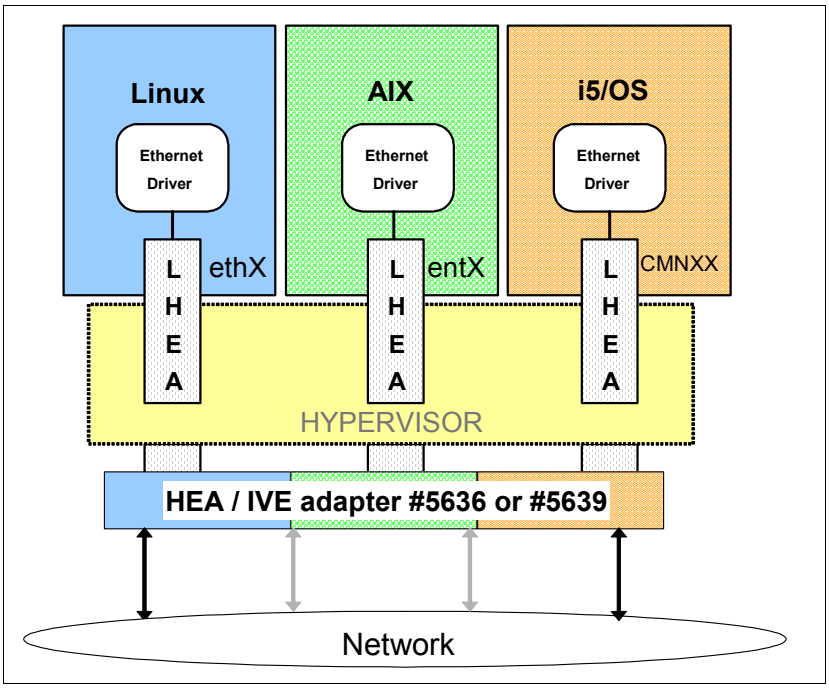
Similar to other integrated ports, the feature is neither hot-swappable nor hot-pluggable and must be serviced by a trained IBM System Service Representative.

The following HEA capabilities or characteristics are most important:

- Unlike most other types of I/O devices, you can never assign the HEA itself to a logical partition (LPAR). Instead, multiple LPARs can connect directly to the same HEA and use its resources. This allows these LPARs to access external networks through the HEA without having to go through an Ethernet bridge on another LPAR. To connect an LPAR to an HEA, you must create a Logical Host Ethernet Adapter (LHEA) for the LPAR. Each LHEA looks to the operating system as either a two- or four-port hardware LAN adapter.
- The HEA enables the sharing of a single RJ-45 port across LPARs. Each partition defines an LHEA that links to the physical port on a #5636 or #5639.
- Each partition operating system “thinks” it has a dedicated physical port or ports.
- Each partition works directly with HEA hardware structures.
- Transmit and receive of data is done independently of the hypervisor.
- The system hypervisor manages HEA resources.
- Logical ports are mapped to physical ports using the HMC for each partition.
- Up to 16 partitions can share a single HEA #5636. Therefore, there is no need to buy 16 Ethernet adapters.
- Up to 32 partitions can share a single HEA #5639. Therefore, there is no need to buy 32 Ethernet adapters.
- HEA-LHEA offers improved performance over a VIOS partition (supporting client AIX or Linux partitions) where all traffic must go through that VIOS partition. i5/OS V5R4 cannot be a client partition to a VIOS partition.
- HEA-LHEA offers improved performance over Virtual LAN (VLAN).
- The #5636 HEA includes two serial ports of which port 2, location P1-C10-T3 (top port), is used by i5/OS only when a uninterruptible power supply sense cable is connected with a feature code #1827 cable. The second serial port is not usable by i5/OS.
- The #5639 HEA includes one serial port used by i5/OS only when an uninterruptible power supply sense cable is connected with a feature code #1827 cable.

The following figure illustrates an example configuration with three LPARs, each of which “thinks” it has a dedicated LAN port (defined via the HMC as LHEA port). The lines with two dark arrows indicate the two physical ports in which the #5636 is installed and the two dark

arrows with two lighter colors arrows indicate the two additional ports that are available with the four physical ports of the #5639 connected to the network.



6.2 Physical port control

The HMC is used to configure the LHEA port and associate it with a specify HEA port. This configuration is similar to that which corresponds to the real adapter of a shared Ethernet adapter when using a VIOS partition. A VIOS partition is supported on the System i platform, but only as a resource for a Linux or AIX partition, not for a V5R4 i5/OS partition.

- Generally, partitions are not allowed to alter the speed/duplex parameters or bring up or down the physical ports.
- Only the HMC is allowed to manipulate the physical ports.
- Partitions are not allowed to access the physical port counters. Only the HMC has access to these counters.
- Each partition can access the logical port counters for any logical port they own.
- On a Manufacturing Default Configuration (MDC) machine, the partition gets one logical port per physical port and is allowed to manipulate the physical ports. In MDC mode, the single partition can access the physical port counters.
- The Hypervisor HEA firmware at initialization brings up the physical ports if possible without any input from HMC. They are brought up in “AUTO” speed/duplex mode or 1 Gbps full duplex per port when connected to a 1 Gbps network.
- HEA does not support half duplex operation. Only full duplex connections can be made to HEA. If the switch is configured for half duplex only, the link to HEA will not activate.

6.3 Media Access Control address

Each port of the #5636 IVE adapter or a #5639 IVE has a Media Access Control (MAC) address (MAC address) or hardware address or adapter address:

- Each logical port maps to one MAC address.
- The #5636 adapter card vital product data (VPD) contains 16 globally unique IEEE MAC addresses.
- The #5639 adapter card VPD contains 32 globally unique IEEE MAC addresses.
- HEA sorts received frames by MAC address to the correct logical port.

6.4 Multicast

A logical port can communicate with all other logical ports that are connected to the same physical port on the HEA. The physical port and its associated logical ports form a logical Ethernet network. Broadcast and multicast packets are distributed on this logical network as though it was a physical Ethernet network.

- A multicast manager exists in the system Hypervisor that duplicates broadcast or multicast frames and sends them to all partitions that have registered to receive them.
- Partitions can register to receive broadcast/multicast addresses via Hcall instructions.
- Up to 16 logical ports may be connected to a physical port using this logical network.

6.5 Logical Host Ethernet Adapter

An LHEA is a representation of a physical HEA within an LPAR. An LHEA appears to the partition operating system as if it were a physical Ethernet adapter, just as a virtual Ethernet adapter appears as if it were a physical Ethernet adapter.

When an LHEA is created for an LPAR, the resources that the LPAR can use on the actual physical HEA are specified:

- One LHEA can exist per HEA per partition.

  A partition can have multiple LHEAs, but each must be associated with a separate HEA.
- Each LHEA can contain up to four logical ports: two on a #5636 IVE two port adapter or four on a #5639 IVE four port adapter.

Refer to the following publications to help you configure an LHEA and optionally an LHEA as a partition console:

- *Hardware Management Console V7 Handbook*, SG24-7491
- *Integrated Virtual Ethernet Adapter Technical Overview and Introduction*, REDP-4340
- *System i Operations Guide for i5/OS Consoles,* SA76-0128

  https://www-01.ibm.com/servers/resourcelink/lib03030.nsf/pagesByDocid/55719E40DD8536A7852573500046E6EF?OpenDocument&pathID=36
- *System i and System p Logical Partitioning Guide,* SA76-0098

  https://www-01.ibm.com/servers/resourcelink/lib03030.nsf/pagesByDocid/0E6125F89F8B8EF6852572E6007E884D?OpenDocument&pathID=36

You may also search for Host Ethernet Adapter in the IBM Systems Information Center at:

http://publib.boulder.ibm.com/infocenter/systems/index.jsp

We provide a compressed view of associating a partition LHEA to a physical HEA later in the following section.

6.6 Configuring the HEA from the HMC

A physical port on an HEA is not usable by a partition unless an HEA resource is associated with an LHEA in that partition. The information presented in this topic is based upon and is a subset of the contents of the following documents:

- *System i and System p Logical Partitioning Guide*, SA76-0098

  https://www-01.ibm.com/servers/resourcelink/lib03030.nsf/pagesByDocid/0E6125F89F8B8EF6852572E6007E884D?OpenDocument&pathID=36

- *Integrated Virtual Ethernet Adapter Technical Overview and Introduction*, REDP-4340

Each LPAR can have one LHEA for each physical HEA on the managed system. Each LHEA can have one or more logical ports, and each logical port can connect to a physical port on the HEA. You can create an LHEA for an LPAR by using either of the following methods:

- You can add the LHEA to a partition profile, shut down the LPAR, and reactivate the LPAR using the partition profile with the LHEA.
- You can add the LHEA to a running LPAR using dynamic logical partitioning.

When you activate an LPAR, the LHEAs in the partition profile are considered to be required resources. If the physical HEA resources required by the LHEAs are not available, then the LPAR cannot be activated.

However, when the LPAR is active, you can remove any LHEAs you want from the LPAR. After you create an LHEA for an LPAR, a “network device” is created in the LPAR. This network device is named *entX* on AIX LPARs, *CMNXX* on i5/OS LPARs, and *ethX* on Linux LPARs, where X represents sequentially assigned numbers.

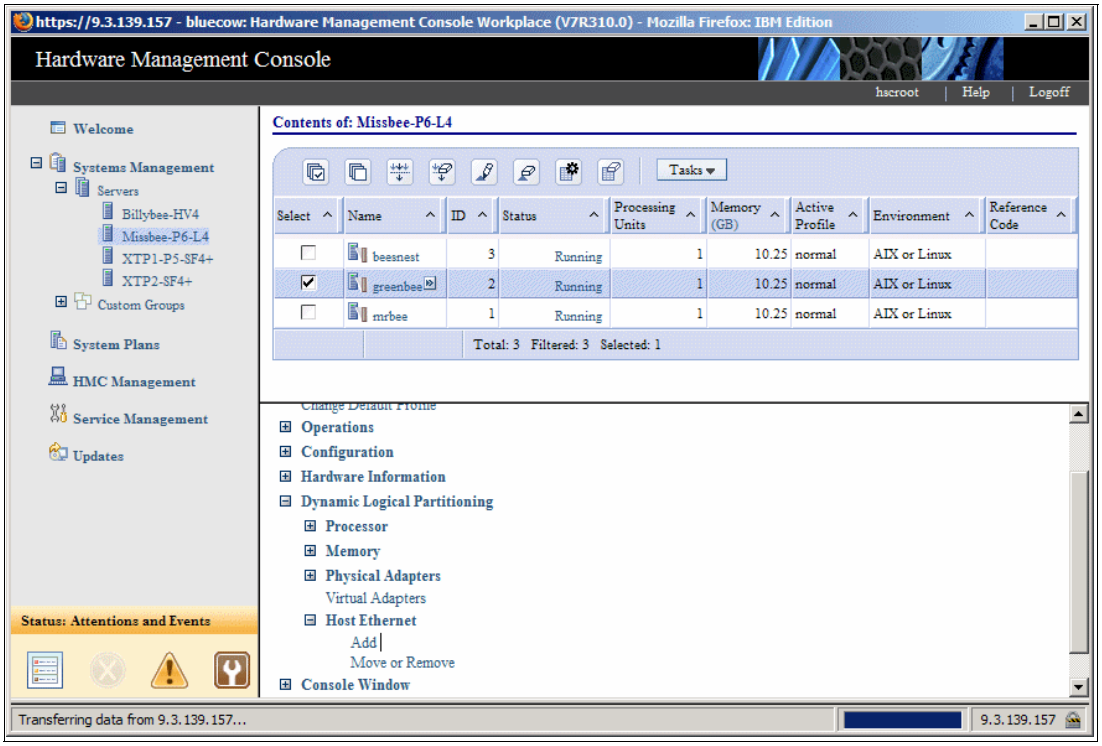
The user can then set up TCP/IP configuration similar to a physical Ethernet device to communicate with other LPARs. A logical port can communicate with all other logical ports that are connected to the same physical port on the HEA. The physical port and its associated logical ports form a logical Ethernet network.

The following task is a condensed version of creating a usable LHEA using the dynamic LPAR method via the HMC V7R3 interface:

1. In the left navigation pane of the HMC, expand **Systems Management** → **Servers**, and select the partition for which you want to set up the HEA-LHEA configuration.

   In the right pane, click the **Tasks** button. In the Tasks pane, select **Dynamic Logical Partitioning** → **Host Ethernet** → **Add**.

   The following figure illustrates an example for partition called *greenbee* with the Add link about to be selected.



2. In the Add Logical HEA Resources panel (next figure), select the HEA whose resources you want the LPAR to use.

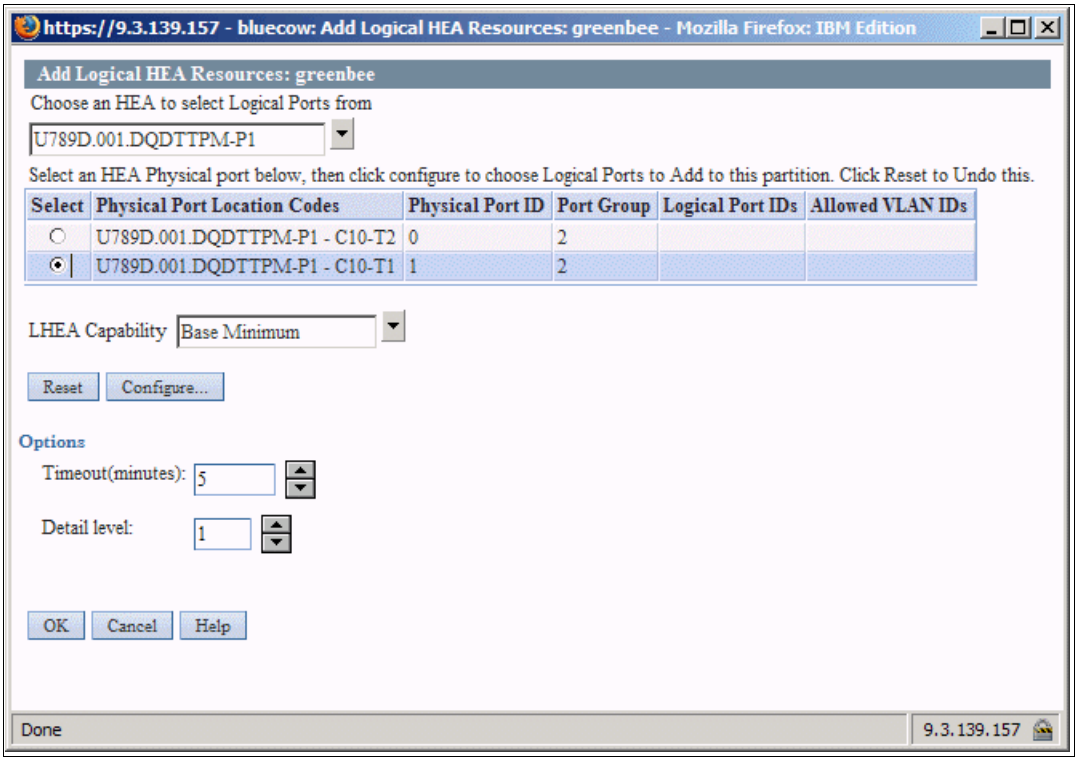
> **CCIN 181a and CCIN 181C:** On a System i model, resource CCIN 181A means feature #5636 2 port, or CCIN 181C means feature #5639 4 port.

In the following figure, we select the HEA (one per 570 (POWER6) processor enclosure) identified as U789D.001.DQDTTPM-P1 and its physical port C10-T1, physical port ID 1. This is the physical port that we want the LPAR greenbee to use for the LHEA that we create.

Leave the LHEA Capability parameter as its default value of Base Minimum.

> **LHEA capability values:** Discussion of LHEA capability values is beyond the scope of this paper. We also do not discuss how to change the Options values from the defaults that are shown.

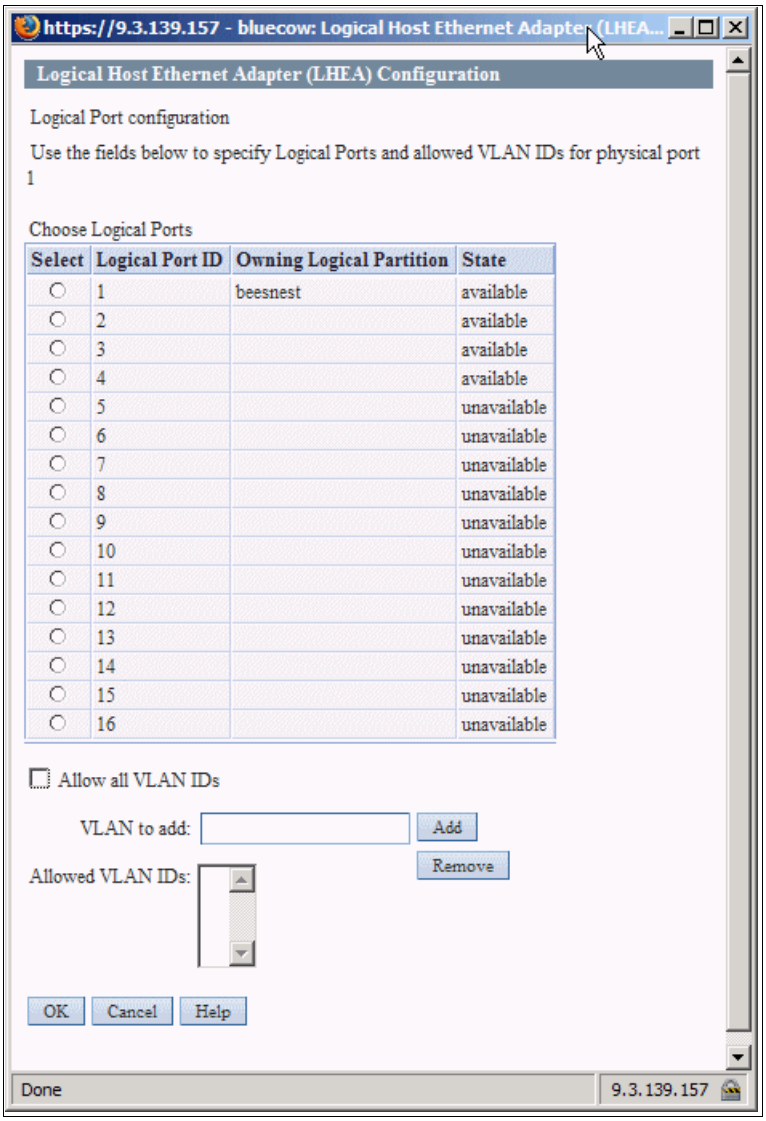
Click **Configure**.



3. In the Logical Host Ethernet Adapter (LHEA) Configuration window, set the logical port to accept packets with any virtual LAN ID (VLAN ID) or to accept only packets with specific VLAN IDs.

   If you want the logical port to accept packets with any VLAN ID, select **Allow all VLAN IDs**. If you want the logical port to accept only packets with specific VLAN IDs, enter each VLAN ID in the VLAN to add field and click **Add**. You can repeat this step, to allow up to 20 VLAN IDs to be accepted on the logical port.

   Click **OK**.



4. Repeat these steps for each additional physical port whose resources you want the LPAR to use.
5. When you are done, you return to the Hardware Management Console window. You see a summary window from which you can make changes or indicate that you are done.

After you finish, one or more new Ethernet adapters are visible to the operating system of the LPAR. An adapter is displayed as *CMNnn* to an i5/OS partition. The operating system must now perform its normal Ethernet configuration for that LHEA resource.

6.7 i5/OS communication resources and line description

The following figure shows an example of a #5636 LHEA adapter whose resources are presented to an i5/OS partition communication resource as #181A. As stated earlier, the #5639 communication resources are presented as type 181C.

```
                    Work with Communication Resources
                                                              System:   xxxxxxx
Type options, press Enter.
  5=Work with configuration descriptions   7=Display resource detail

Opt  Resource        Type  Status               Text
     CMB05           181A  Operational          Comm Processor
       LIN06         181A  Operational          Comm Adapter
         CMN06       181A  Operational          Ethernet Port
         CMN07       181A  Operational          Ethernet Port
```

For the #5639, you see 181C and four CMNnn Ethernet ports. The following figure illustrates an example of an Ethernet line description for communication line (LHEA) resource CMN07.

```
         Display Line Description

Line description . . . . . :   HEACMN07
Option . . . . . :   *BASIC
Category of line . . . . . :   *ELAN

Resource name  . . . . . :   CMN07
Online at IPL  . . . . . :   *YES
Vary on wait . . . . . :   *NOWAIT
Network controller . . . . . :   HEA07NET
Local adapter address  . . . . . :   00145E5F0EC1
Exchange identifier  . . . . . :   05696C00
Ethernet standard  . . . . . :   *ETHV2
Line speed . . . . . :   *AUTO
Current line speed . . . . . :   1G
Duplex . . . . . :   *AUTO
Current duplex . . . . . :   *FULL
Maximum frame size . . . . . :   8996
Maximum controllers  . . . . . :   40
Line description . . . . . :   HEACMN07
Option . . . . . :   *BASIC
Category of line . . . . . :   *ELAN
Error threshold level  . . . . . :   *OFF
Generate test frame  . . . . . :   *YES
Message queue  . . . . . :   *SYSVAL
Current message queue  . . . . . :   QSYSOPR
  Library  . . . . . :     QSYS
Text . . . . . :   *BLANK
```

7

System i towers schematics

In this chapter, we identify the system diagrams for the towers that are supported by the IBM System i, eServer i5, and iSeries servers, as well as the power and packaging features for those towers. IBM System i, eServer i5, and iSeries Models 800, 810, 825, 870, and 890 do not support System Products Division (SPD) towers and expansion units or migration towers. When upgrading from earlier models to these models, it is necessary to plan for the loss of towers and input/output processors (IOPs) and input/output adapters (IOAs) that are not supported on the later systems.

The tower schematics might have a shaded card slot showing a base IOP. A base IOP might not be included in the tower. Refer to the model feature descriptions in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135, to see where a base IOP might be included or allowed.

Refer to the following publications for an explanation of remote input/output (RIO-G) configuration rules and placement considerations:

- *IBM eServer iSeries Migration: A Guide to Upgrades and Migrations to POWER Technology*, SG24-7200

  This book also contains configuration rules for IBM System i5 and eServer i5 models and towers.
- *IBM eServer iSeries Migration: System Migration and Upgrades at V5R1 and V5R2*, SG24-6055

  This book also contains configuration rules for iSeries models and towers.
- *DB2 UDB for OS/390 and Continuous Availability*, SG24-5486, for i5/OS V5R4
- *IBM eServer i5 and iSeries System Handbook i5/OS Version 5 Release 3 October 2005 - Draft*, GA19-5486, OS/400 V5R3
- *High-speed Link Loop Architecture for the IBM eServer iSeries Server: OS/400 Version 5 Release 2*, REDP-3652
- V5R3 high-speed link (HSL) presentation from 22 November 2005

  http://www.ibm.com/servers/eserver/iseries/ha/pdf/V5R3_HSL_Rules.pdf

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For further information, refer to the IBM Systems Hardware Information Center at:

http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/index.htm

The following table lists the original availability dates and any announced withdrawal from marketing dates (cannot be ordered) for the I/O enclosures and racks that are supported for System i models listed in this paper.

Model	General availability	Withdrawn from marketing
#0578 PCI Expansion Unit in Rack	23 April 2001	01 October 2004
#0588 PCI-X Expansion Unit in Rack	28 February 2003	01 June 2006
#0595 PCI-X Expansion Unit in Rack	28 February 2003	---
#5074 PCI Expansion Tower	12 June 2000	01 October 2005
#5075 PCI Expansion Tower	12 June 2000	21 November 2003
#5078 PCI Expansion Unit	23 April 2001	01 October 2004
#5079 1.8 m I/O Tower	12 June 2000	01 October 2005
#5088 PCI-X Expansion Unit	28 February 2003	01 June 2006
#5094 PCI-X Expansion Tower	28 February 2003	---
#5095 PCI-X Expansion Tower	28 February 2003	---
#5096 PCI-X Expansion Tower (no disk)	16 February 2007	
#5097 1.8m I/O RACK	July 2004	01 October 2005
#5294 1.8m I/O Tower	28 February 2003	---
#5296 1.8m I/O Tower (no disk)	16 February 2007	
#5786 TotalStorage Expansion 24 Disk Drawer	16 February 2007	
#5787 TotalStorage Expansion 24 Disk Tower	16 February 2007	
#5790 PCI Expansion Drawer	15 October 2004	---
#8093 Optional 1.8 m I/O Rack	14 May 2002	07 May 2003
#8094 Optional 1.8 m I/O Rack	28 February 2003	01 October 2005
#8294 Optional Base 1.8m Rack	15 October 2004	---
#9057 Storage Expansion Unit	19 August 1997	01 January 2004
#9074 Base I/O Tower	12 June 2000	January 2004
#9079 Base I/O Tower	12 June 2000	October 2004
#9094 Base PCI I/O Enclosure	14 May 2002	01 October 2005
#9194 Base PCI-X Expansion Tower	15 October 2004	---

Note: The darker shaded areas in the following tables and graphics indicate the base features.

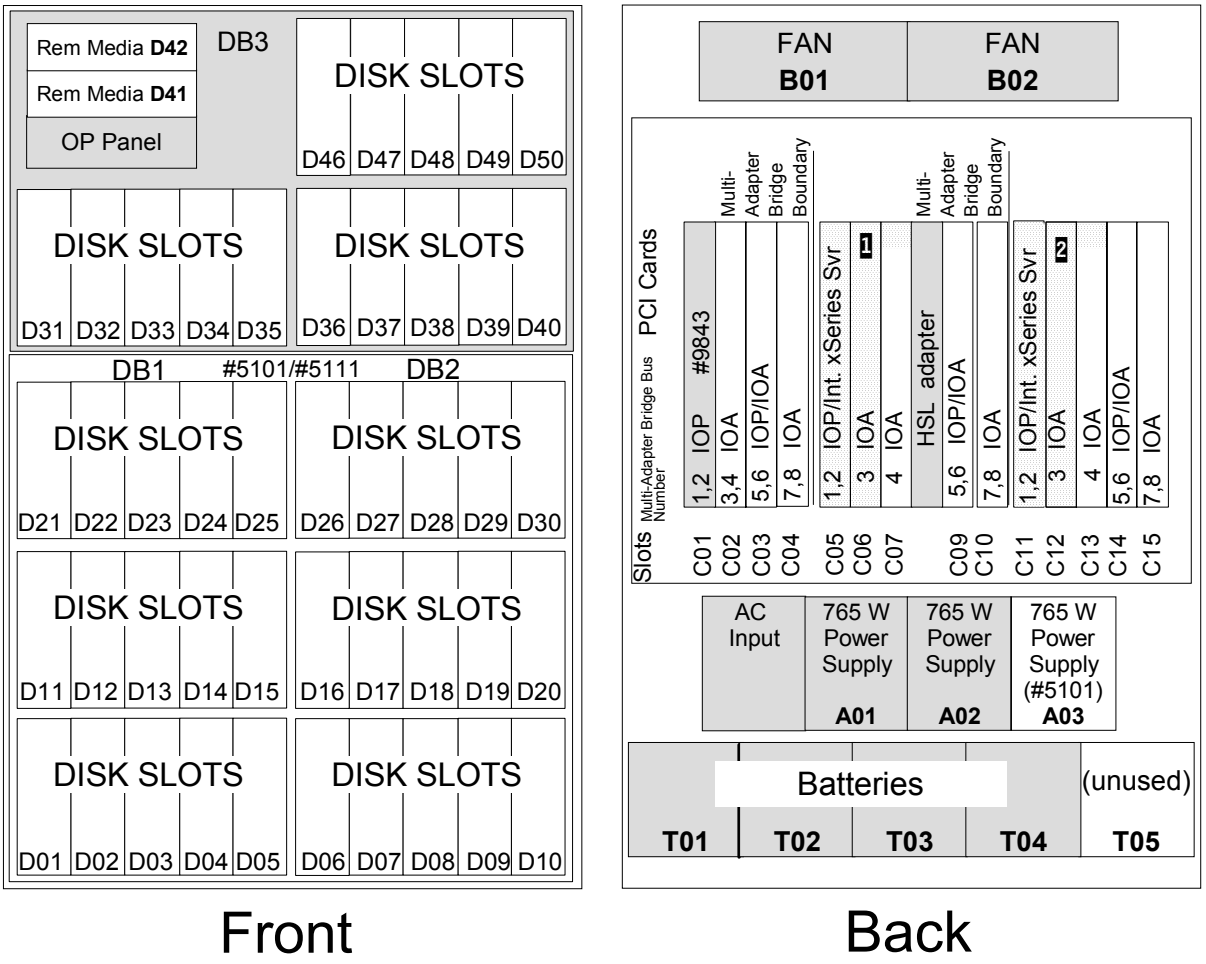
7.1 System i towers, racks, and expansion unit schematics

This section shows the schematics of the towers, racks, and expansion units supported by the System i models represented in this paper.

7.1.1 #5074 PCI Expansion Tower

The #5074 PCI Expansion Tower is supported by Models 520, 525, 550, 570, 595 810, 820, 825, 830, 840, SB2, SB3, 870 and 890.

Note: The total number of disk bays is 45.



Legend

Base Feature

Required Feature

Unavailable if Integrated xSeries Server is installed

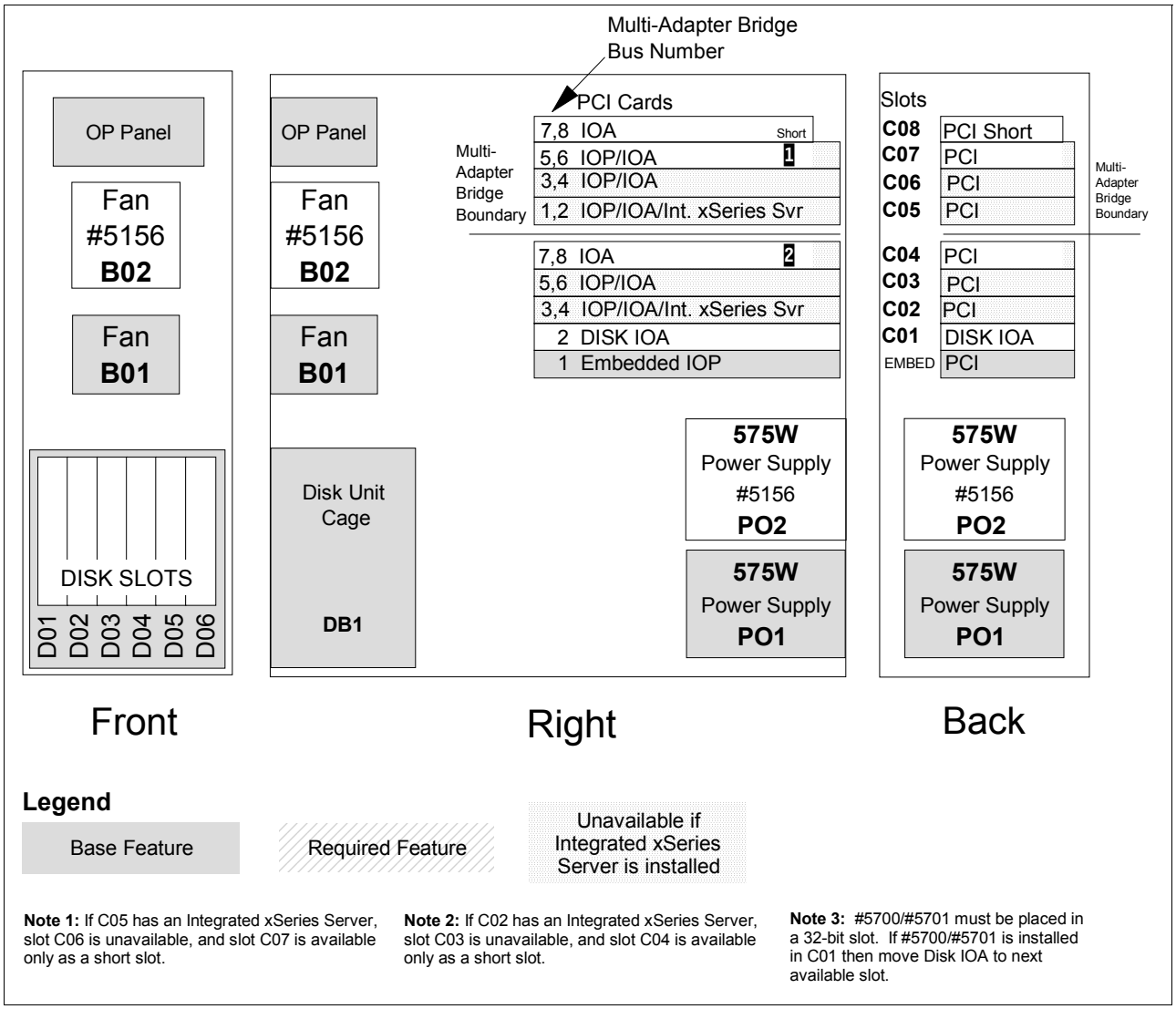
Note 1: If C05 has an Integrated xSeries Server, slot C06 is unavailable, and slot C07 is available only as a short slot.

Note 2: If C11 has an Integrated xSeries Server, slot C12 is unavailable, and slot C13 is available only as a short slot.

Note 3: #5700/#5701 must be placed in a 32-bit slot.

7.1.2 #5075 PCI Expansion Tower

The #5075 PCI Expansion Tower includes a 32 MB Peripheral Component Interconnect (PCI) IOP (CCIN 284B) embedded on its backplane. The #5075 is supported by Models 270, 810, 820, and 825.



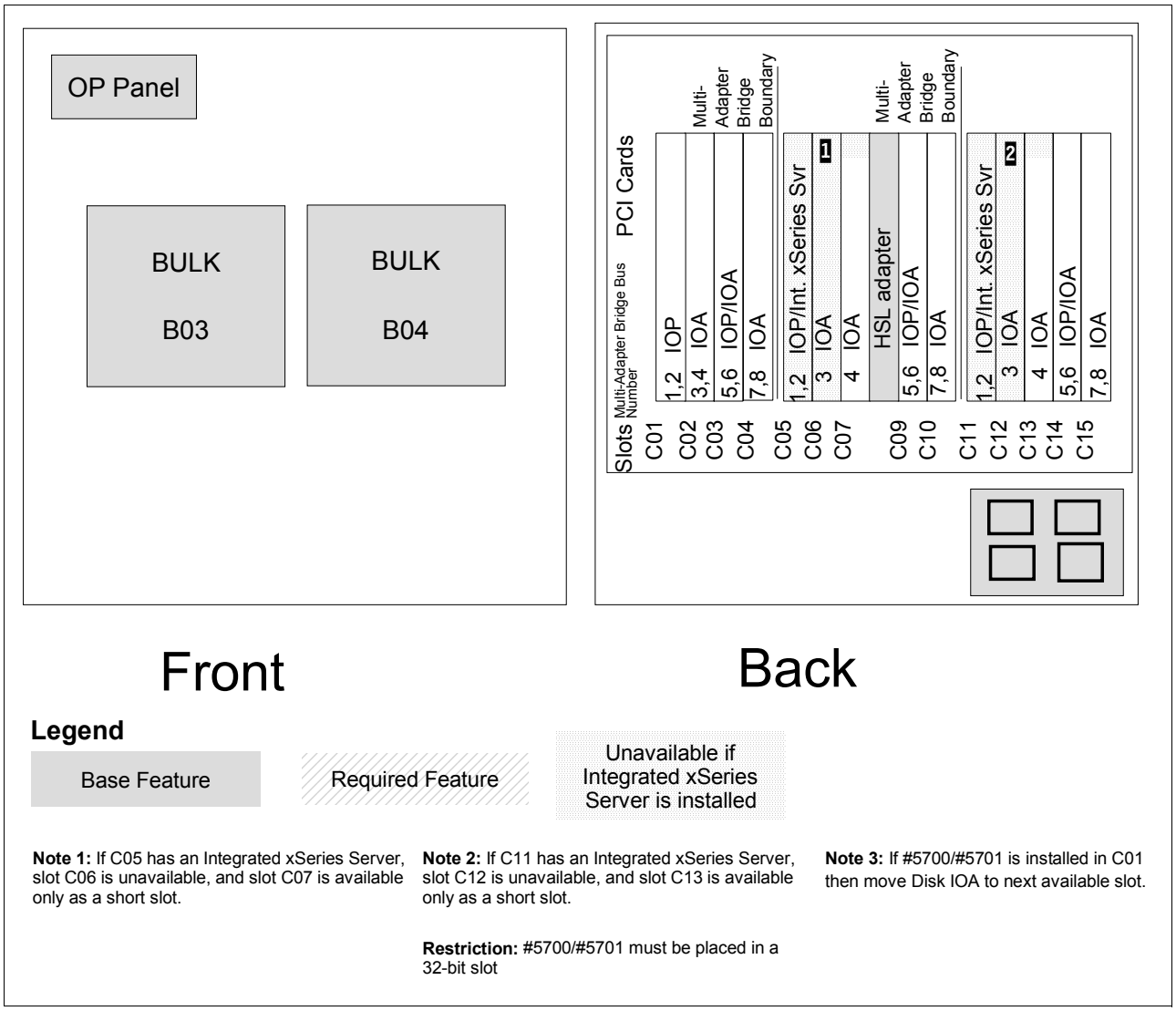
Note 1: If C05 has an Integrated xSeries Server, slot C06 is unavailable, and slot C07 is available only as a short slot.

Note 2: If C02 has an Integrated xSeries Server, slot C03 is unavailable, and slot C04 is available only as a short slot.

Note 3: #5700/#5701 must be placed in a 32-bit slot. If #5700/#5701 is installed in C01 then move Disk IOA to next available slot.

7.1.3 #5078/#0578 PCI Expansion Unit

The #5078 PCI Expansion Unit or #0578 PCI Expansion Unit in Rack is attached to the top of a #5074 PCI Expansion Tower or #9079 Base I/O Tower. It can also be mounted in a #0551 System i 36U 1.8m Rack.



Note 1: If C05 has an Integrated xSeries Server, slot C06 is unavailable, and slot C07 is available only as a short slot.

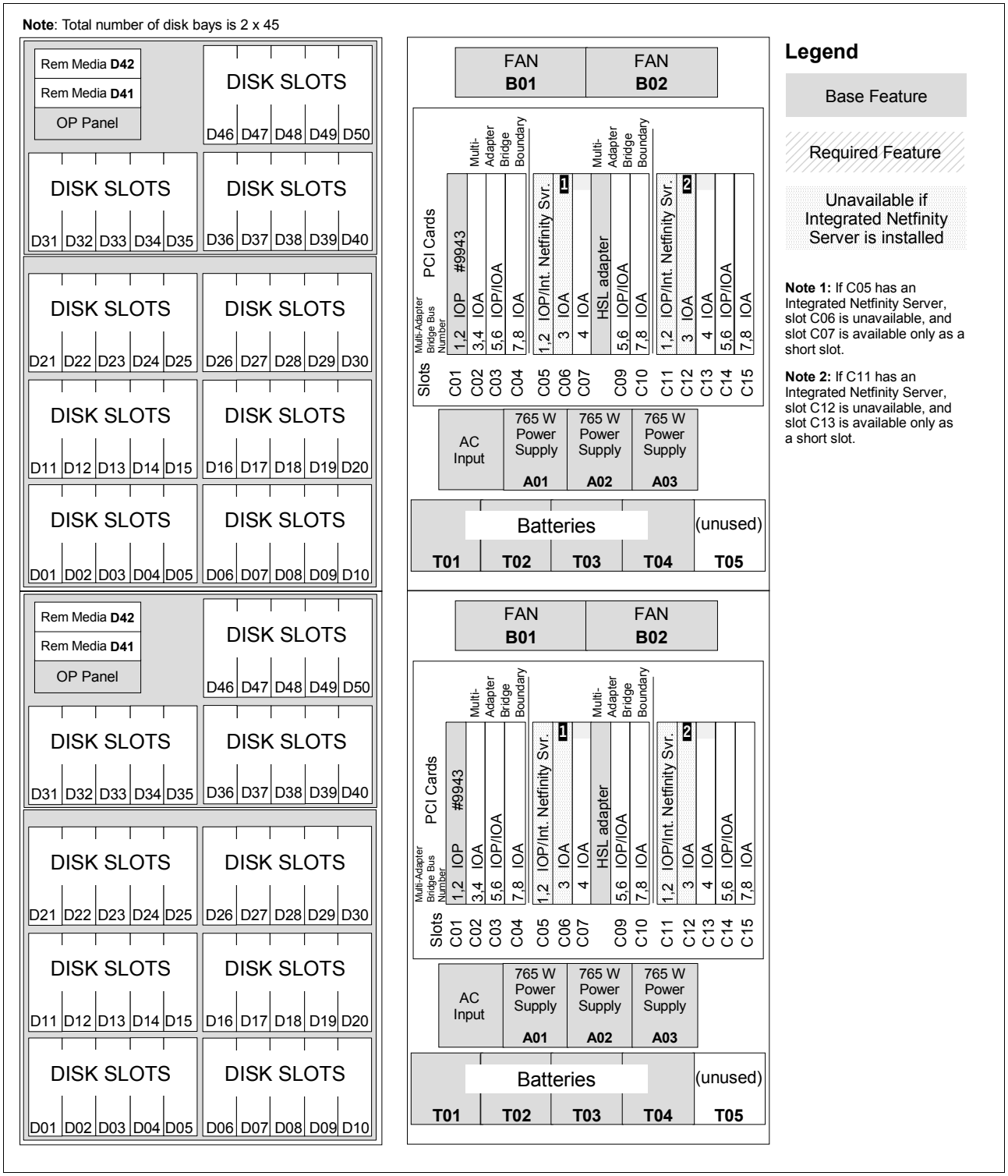
Note 2: If C11 has an Integrated xSeries Server, slot C12 is unavailable, and slot C13 is available only as a short slot.

Restriction: #5700/#5701 must be placed in a 32-bit slot

Note 3: If #5700/#5701 is installed in C01 then move Disk IOA to next available slot.

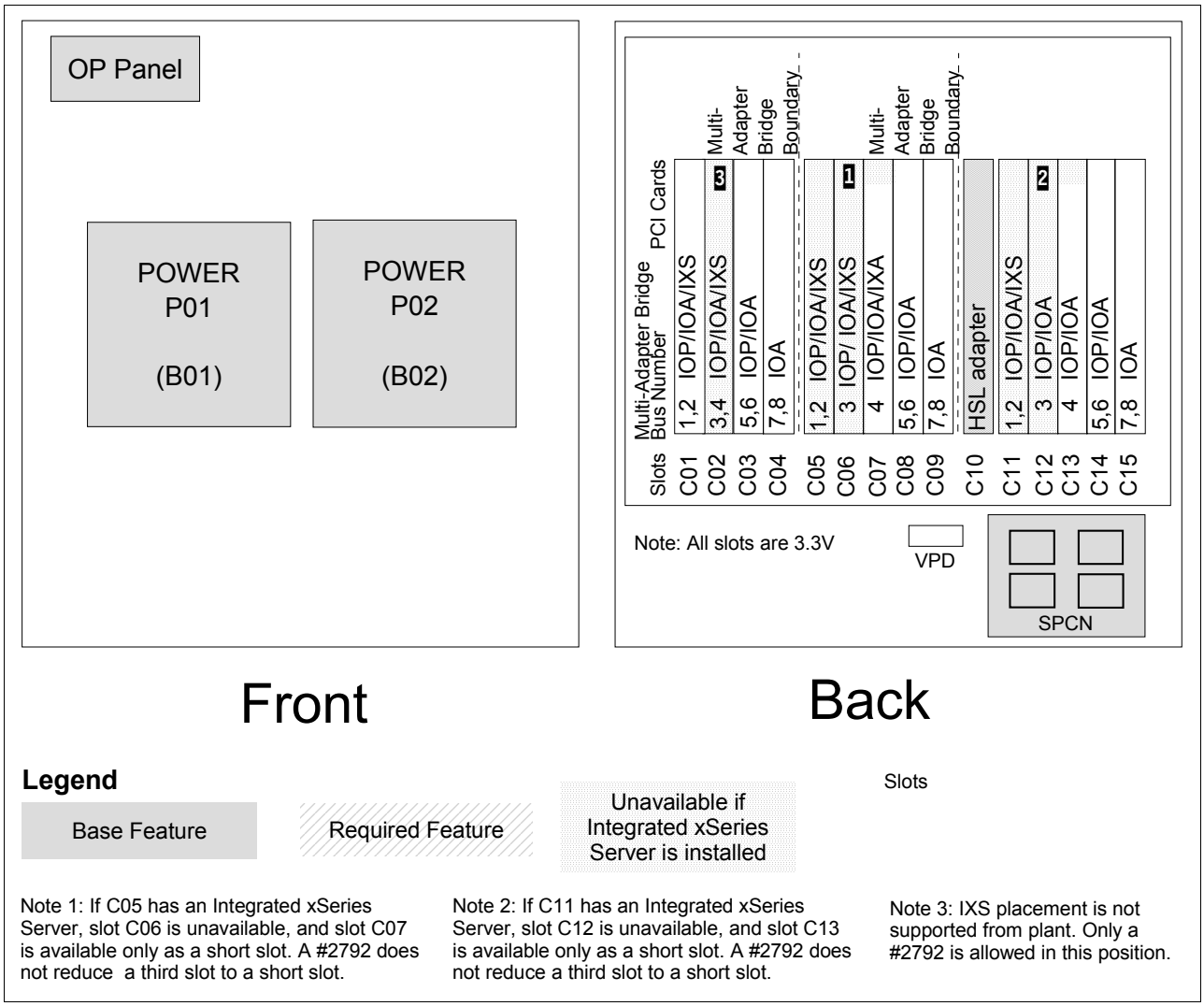
7.1.4 #5079 1.8 m I/O Tower

The #5079 1.8 m I/O Tower is supported by Models 520, 525, 550, 570, 595, 810, 820, 825, 830, 840, 870, and 890. The #5079 consists of two #5074 PCI Expansion Towers with side covers and casters removed.



7.1.5 #5088/#0588 PCI-X Expansion Unit

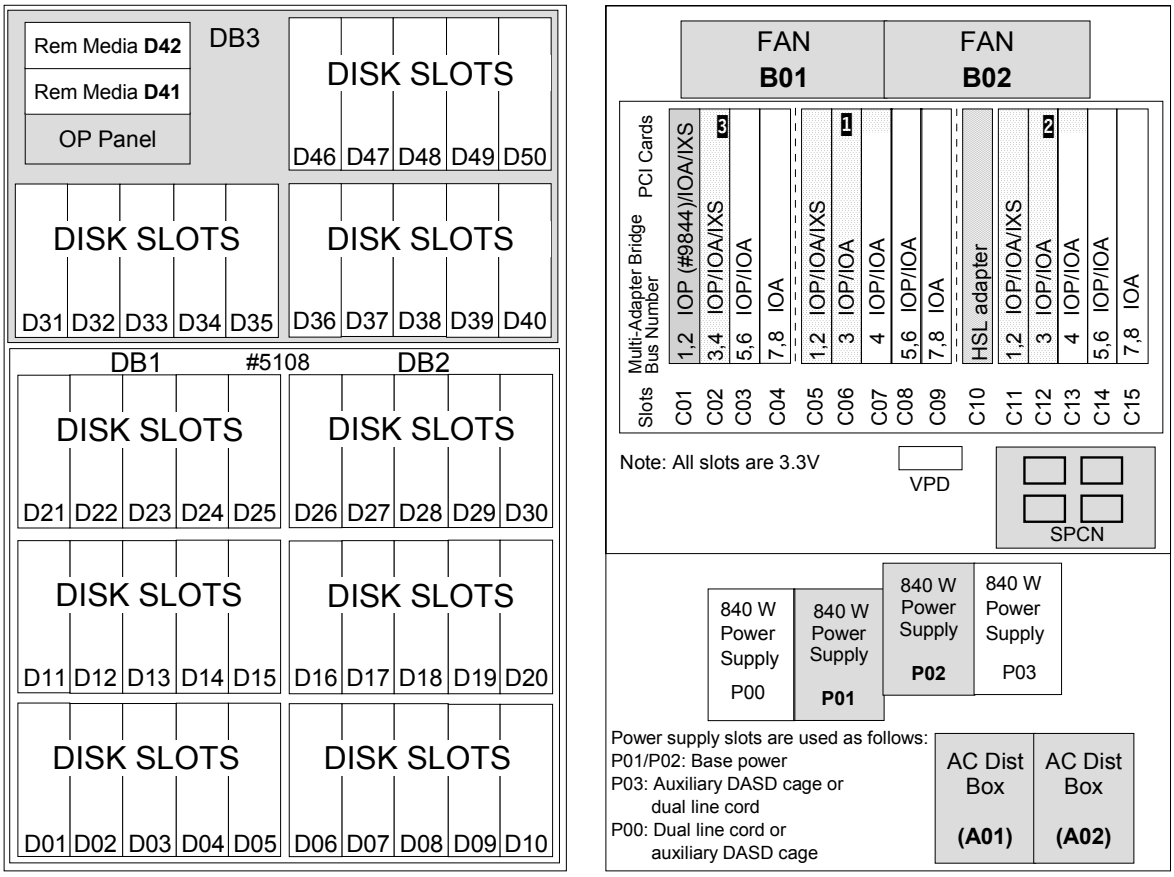
The #5088 PCI-X Expansion Unit is attached to the top of a #5074 PCI Expansion Tower, #5094 PCI-X Expansion Tower, or #9094 Base PCI I/O Enclosure. The #0588 is mounted in a #0551 System i 36U 1.8m Rack.



7.1.6 #5094 PCI Expansion Tower

The #5094 PCI-X Expansion Tower is supported by Models 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, and 890.

Note: The total number of disk bays is 45.



Legend

Base Feature | Required Feature | Unavailable if Integrated xSeries Server is installed

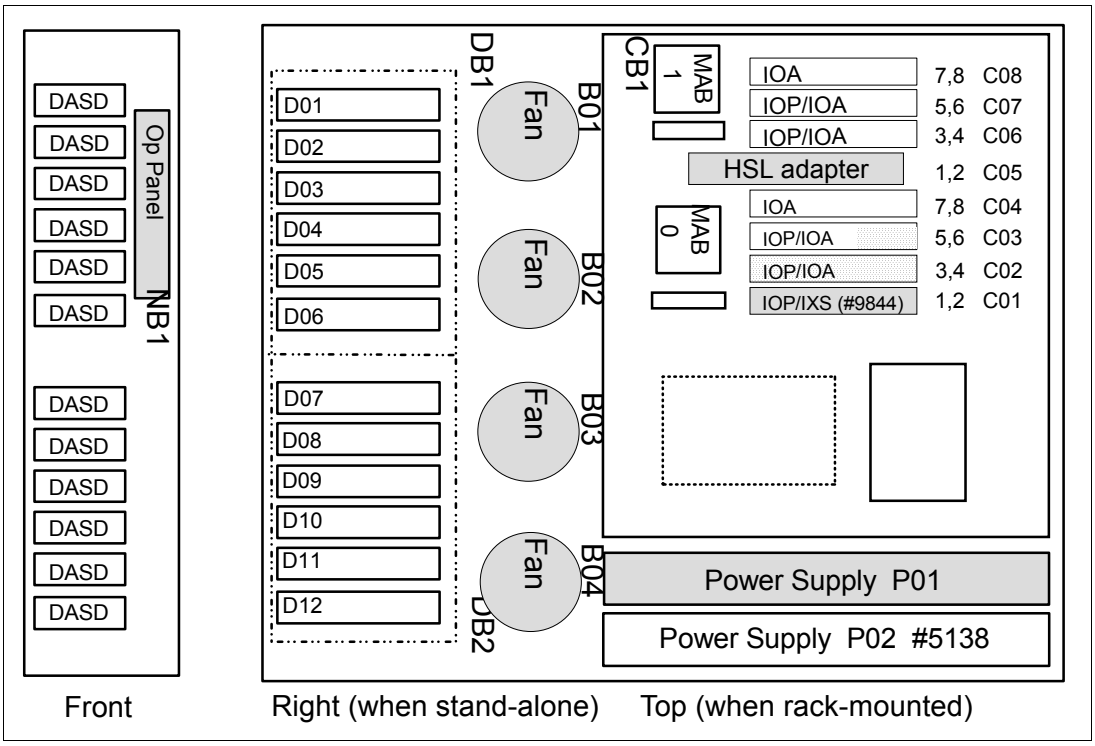
Note 1: If C05 has an Integrated xSeries Server, slot C06 is unavailable, and slot C07 is available only as a short slot. A #2792 does not reduce a third slot to a short slot.

Note 2: If C11 has an Integrated xSeries Server, slot C12 is unavailable, and slot C13 is available only as a short slot. A #2792 does not reduce a third slot to a short slot.

Note 3: IXS placement is not supported from plant. Only a #2792 is allowed in this position.

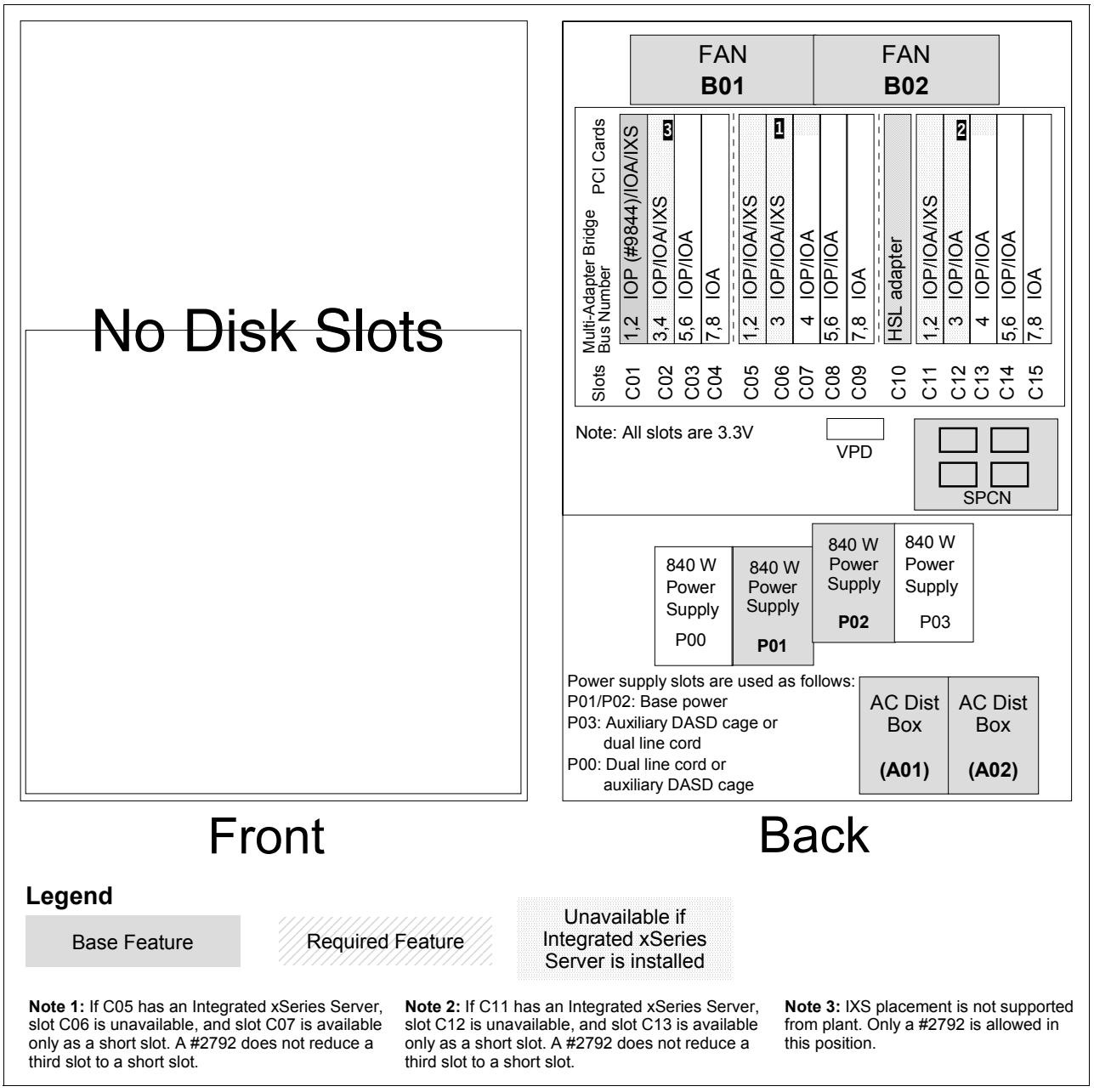
7.1.7 #5095/#0595 PCI-X Expansion Tower

The #5095 PCI-X Expansion Tower and #0595 PCI-X Expansion Unit in Rack are supported by Models 270, 520, 525, 550, 570, 800, 810, 820, 825, 830, 840, 870, and 890.



7.1.8 #5096 PCI-X Expansion Tower (no disk)

The #5096 PCI-X Expansion Tower (no disk) is supported by Models 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, and 890.



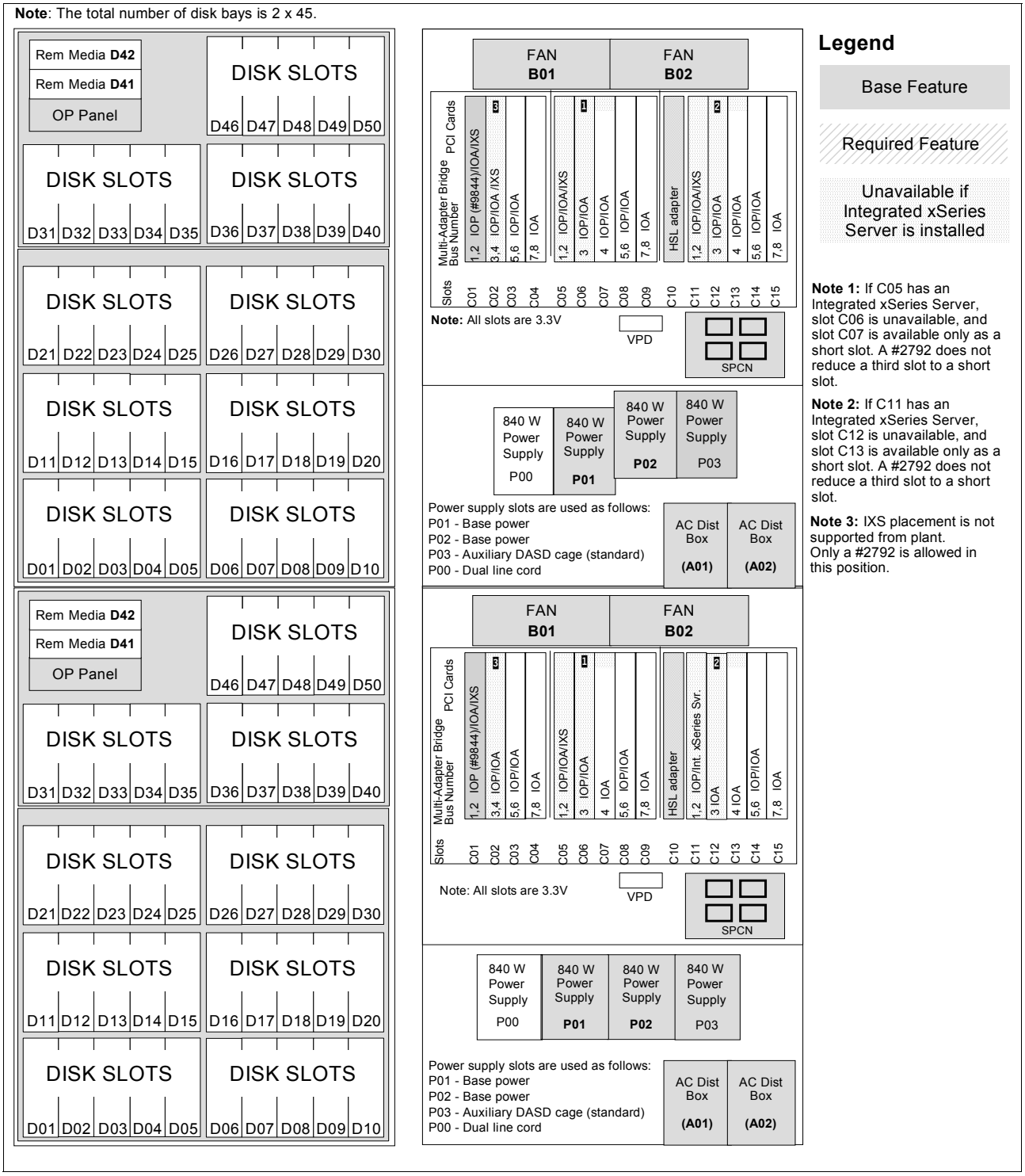
Note 1: If C05 has an Integrated xSeries Server, slot C06 is unavailable, and slot C07 is available only as a short slot. A #2792 does not reduce a third slot to a short slot.

Note 2: If C11 has an Integrated xSeries Server, slot C12 is unavailable, and slot C13 is available only as a short slot. A #2792 does not reduce a third slot to a short slot.

Note 3: IXS placement is not supported from plant. Only a #2792 is allowed in this position.

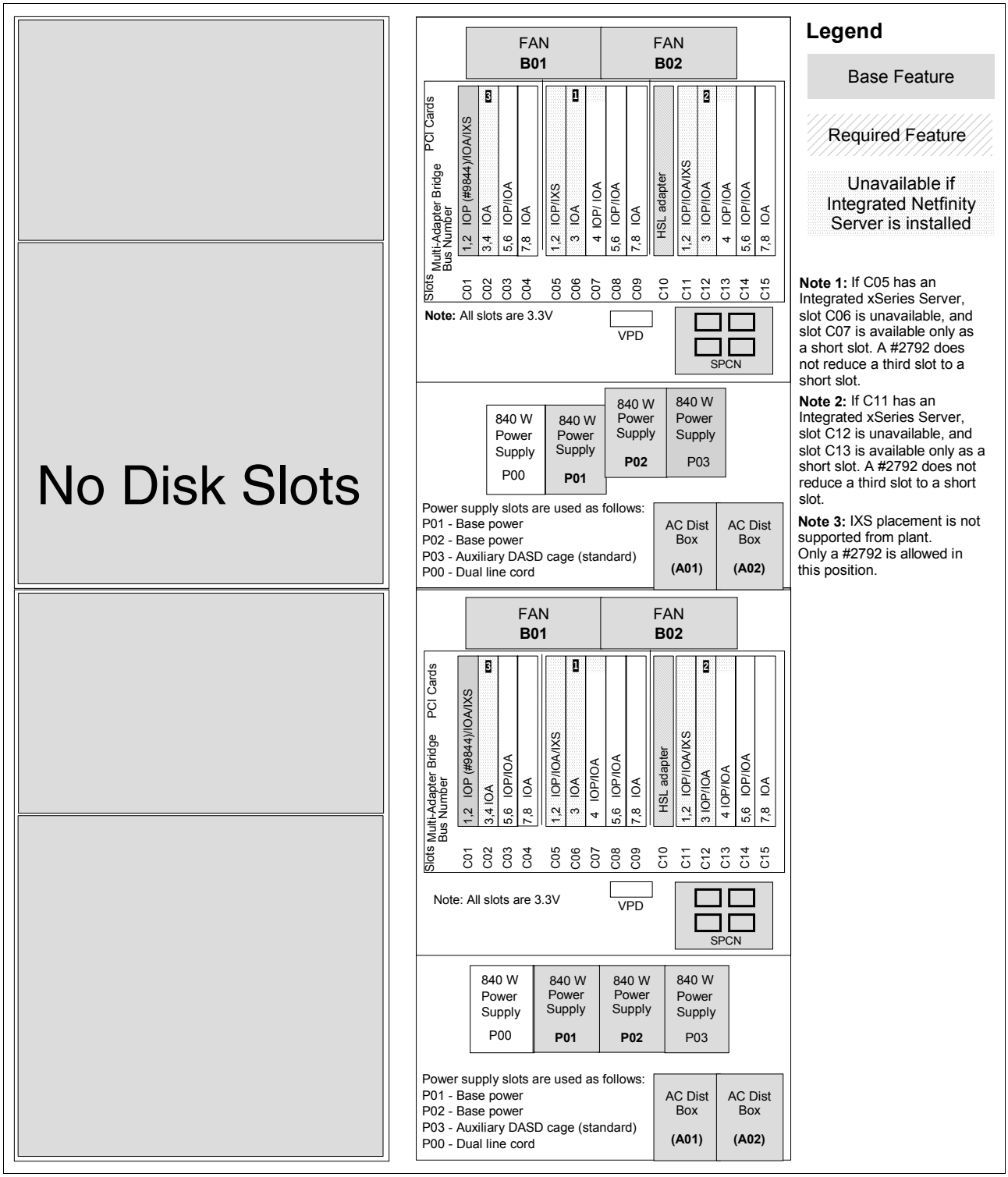
7.1.9 #5294 PCI-X Expansion Tower

The #5294 1.8m I/O Tower is supported by Models 520, 525, 550, 570, 820, 825, 830, 840, 870, and 890. The #5294 consists of two #5094 PCI-X Expansion Towers with side covers and casters removed.



7.1.10 #5296 1.8m I/O Tower (no disk)

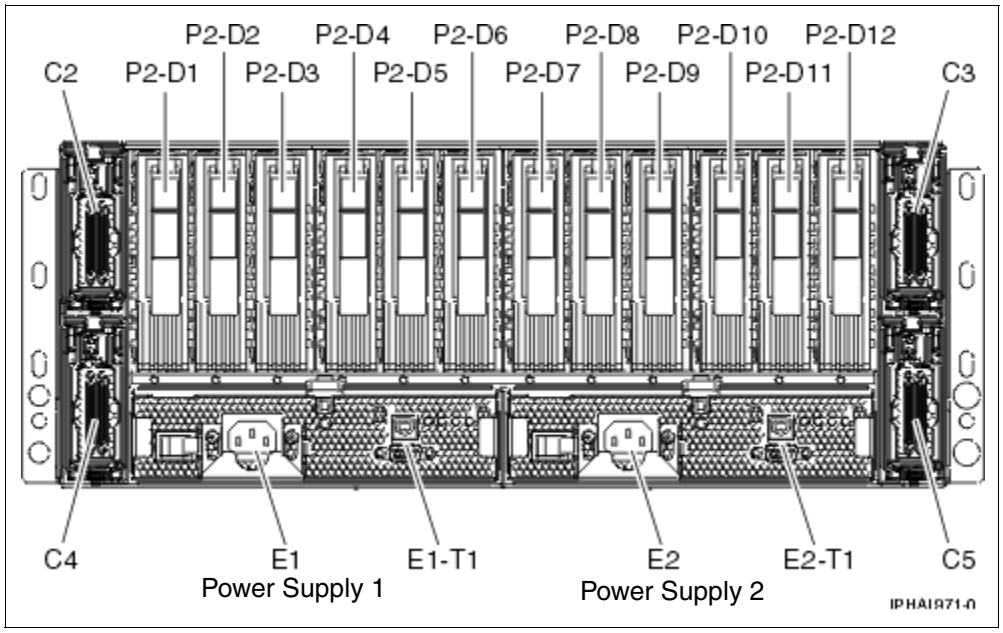
The #5296 1.8m I/O Tower (no disk) is supported by Models 520, 525, 550, 570, 820, 825, 830, 840, 870, and 890. The #5296 consists of two #5094 PCI-X Expansion Towers with side covers and casters removed.



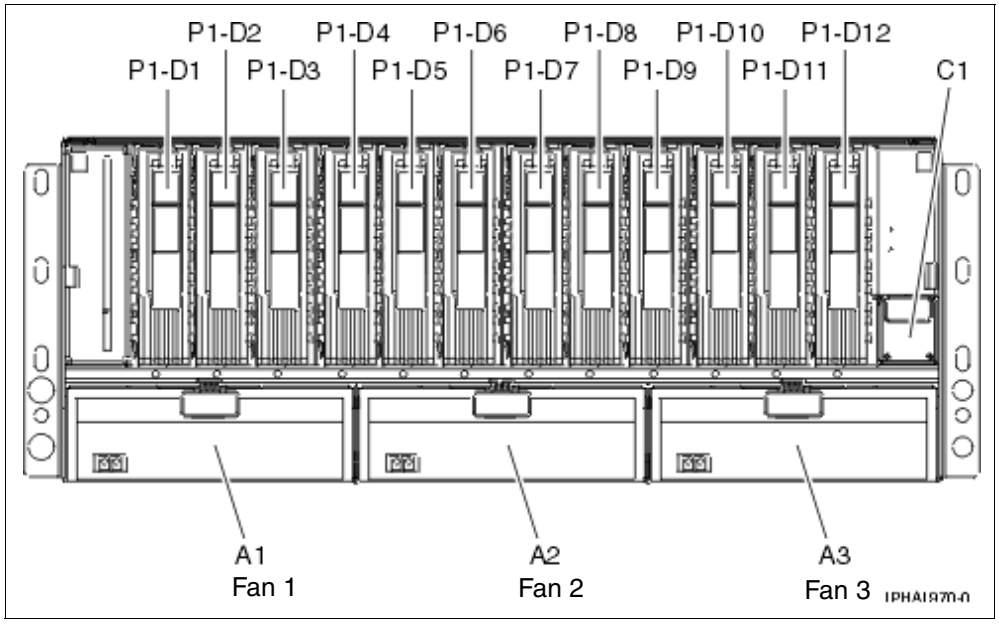
7.1.11 #5786 TotalStorage Expansion 24 Disk Drawer/#5787 TotalStorage Expansion 24 Disk Tower

The #5786 TotalStorage Expansion 24 Disk Drawer/#5787 TotalStorage Expansion 24 Disk Tower provide slots for up to 24 disk units in a 4 EIA unit high rack drawer or stand-alone tower. They are supported on Models 800, 810, 825, 870, 890, 520, 525, 550, 570, 595, and 9411-100.

The following figure shows the rear view of the #5786.



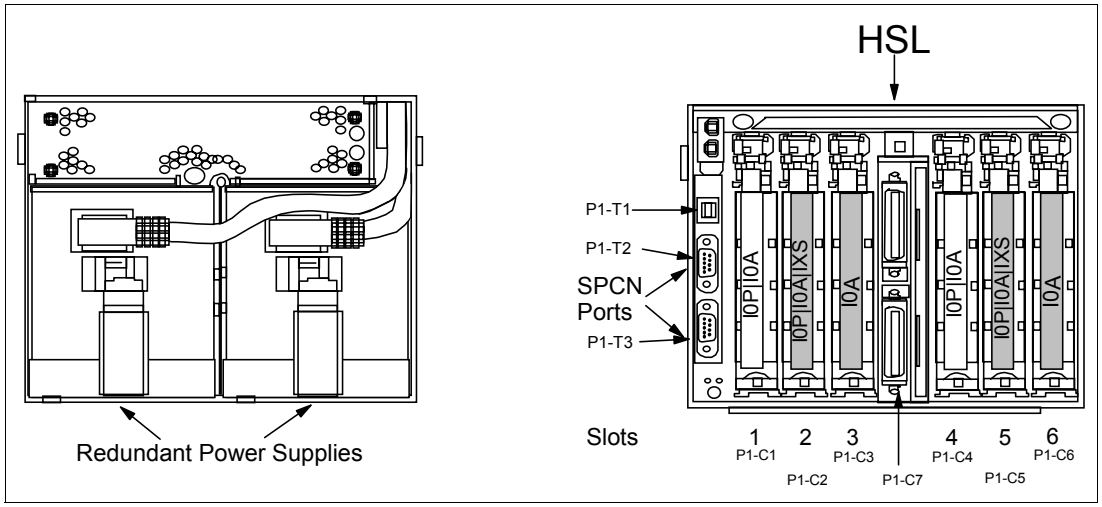
The following figure shows the front view of the #5786.



Note: On the #5787 tower models, the locations of C3 and C5 are on the top, and the locations of C2 and C4 are on the bottom. When viewed from the rear, C3 it on the top left, and C5 is on the top right. C2 is the bottom left and C4 is the bottom right.

7.1.12 #5790 PCI Expansion Drawer

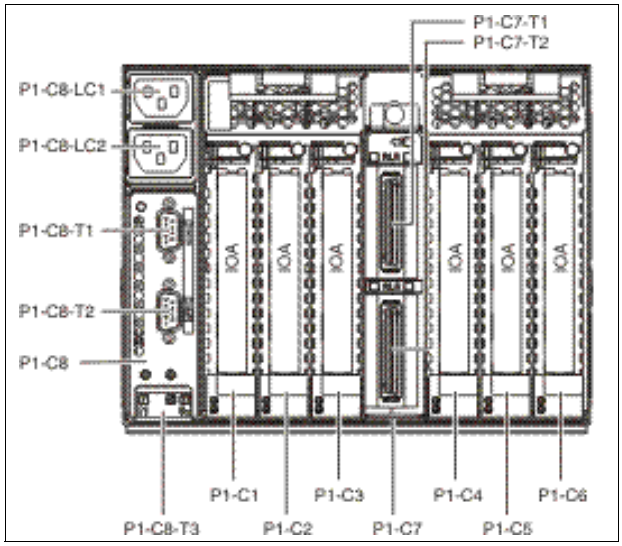
The #5790 PCI Expansion Drawer is supported on Models 520, 525, 550 and 570. The #5790 mounts in #0551, #0553, #0554, and #0555 iSeries racks and uses four EIA units (half-width of the rack).



Note: A #4812 PCI Integrated xSeries Server consumes two slots.

7.1.13 #5796 PCI-DDR 12XExpansion Drawer

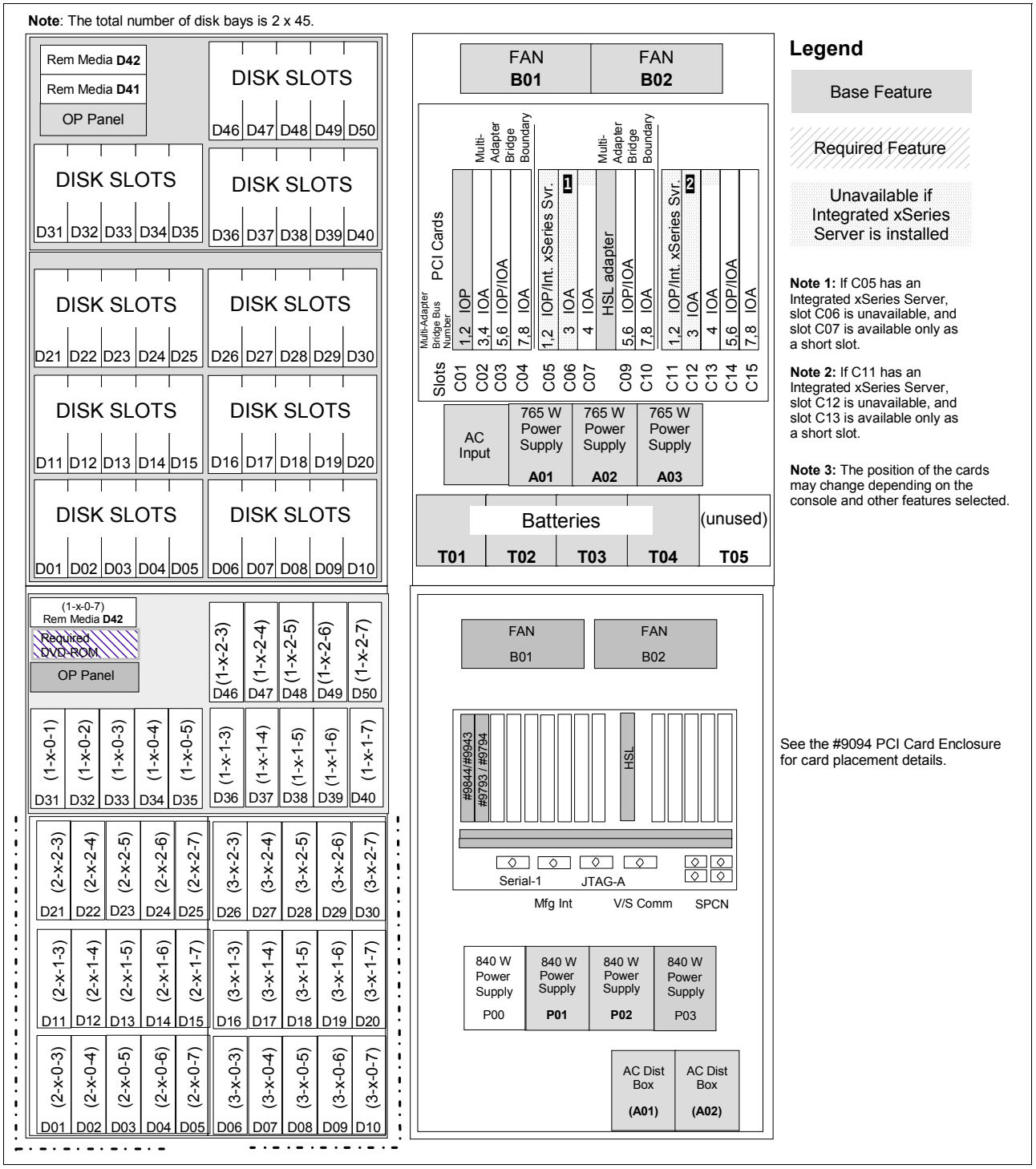
The #5796 12X PCI Expansion Drawer is supported on the Model 570 (POWER6). The #5796 mounts in #0551, #0553, #0554 and #0555 iSeries racks and uses four EIA units (half-width of the rack).



Note: A #5796 PCI-DDR 12X Expansion Drawer supports only I/O Adapters that can run without an IOP (IOP-less mode).

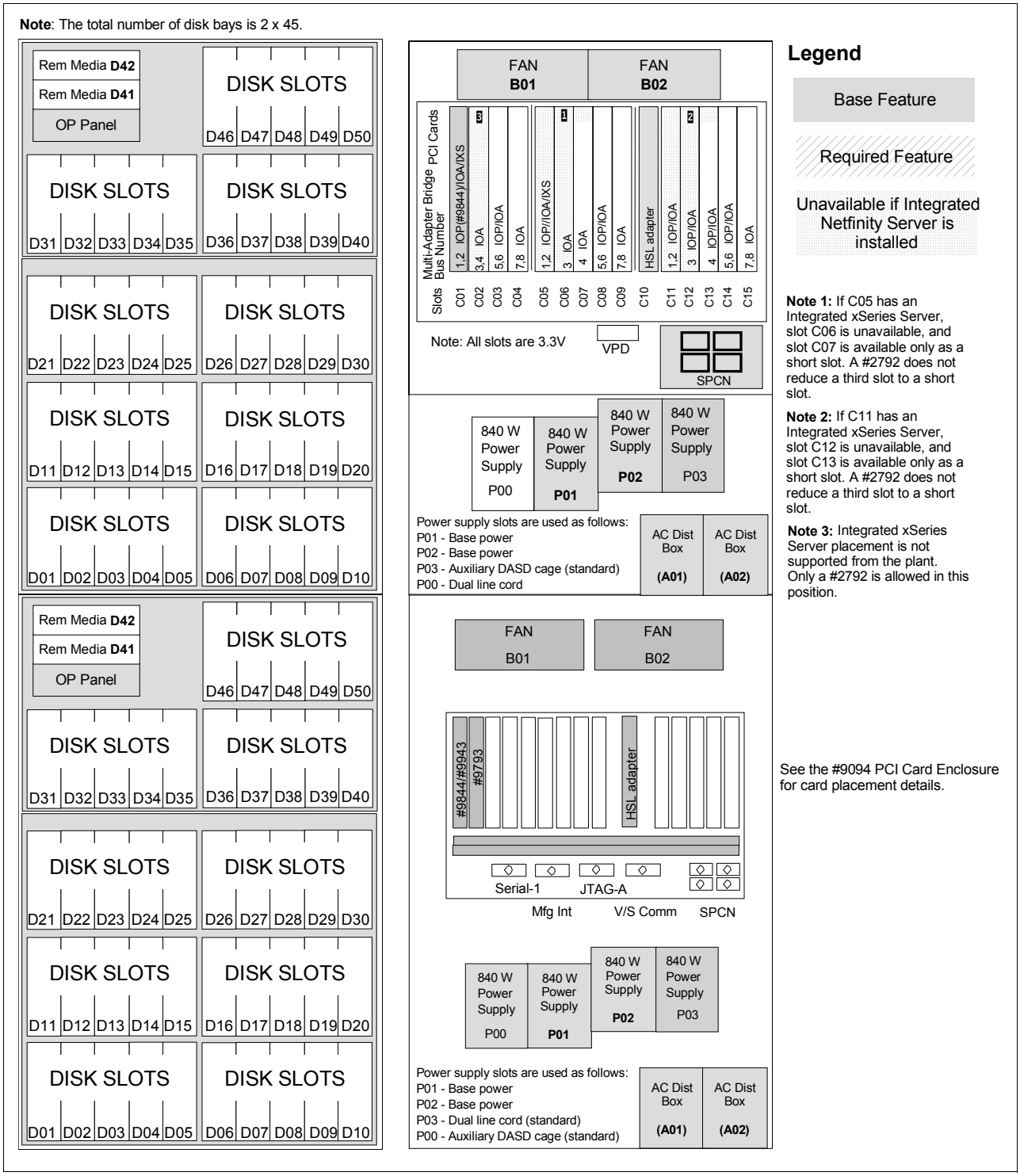
7.1.14 #8093 Optional Base 1.8 m I/O Rack

The #8093 Optional 1.8 m I/O Rack is the 1.8m optional base I/O rack for the Model 870 and 890.



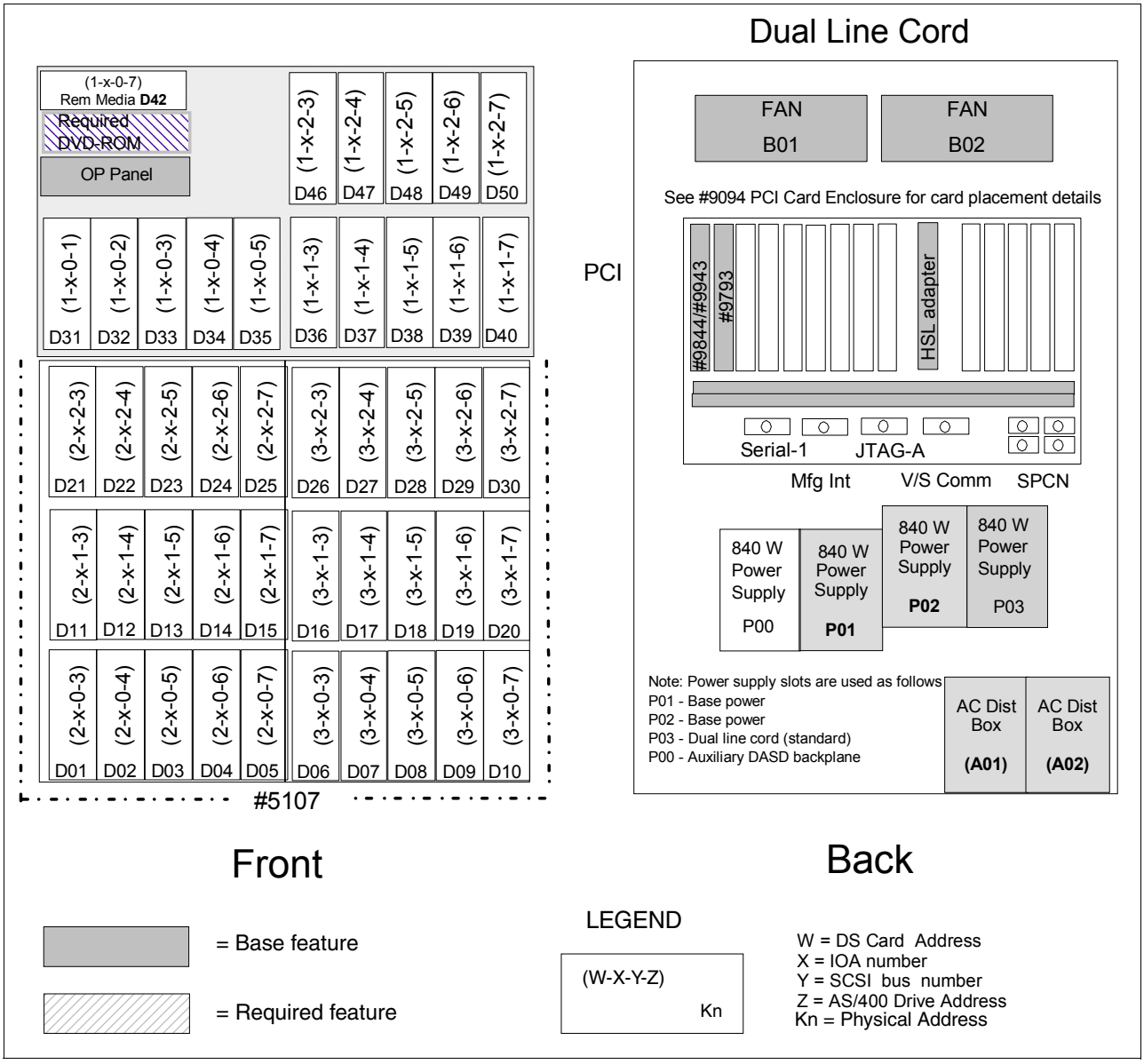
7.1.15 #8094 Optional 1.8 m I/O Rack

The #8094 Optional 1.8 m I/O Rack is the base I/O rack for the Model 870 and 890. It consists of a #5094 PCI-X Expansion Tower on top and a #9094 Base PCI I/O Enclosure on the bottom with side covers and casters removed.



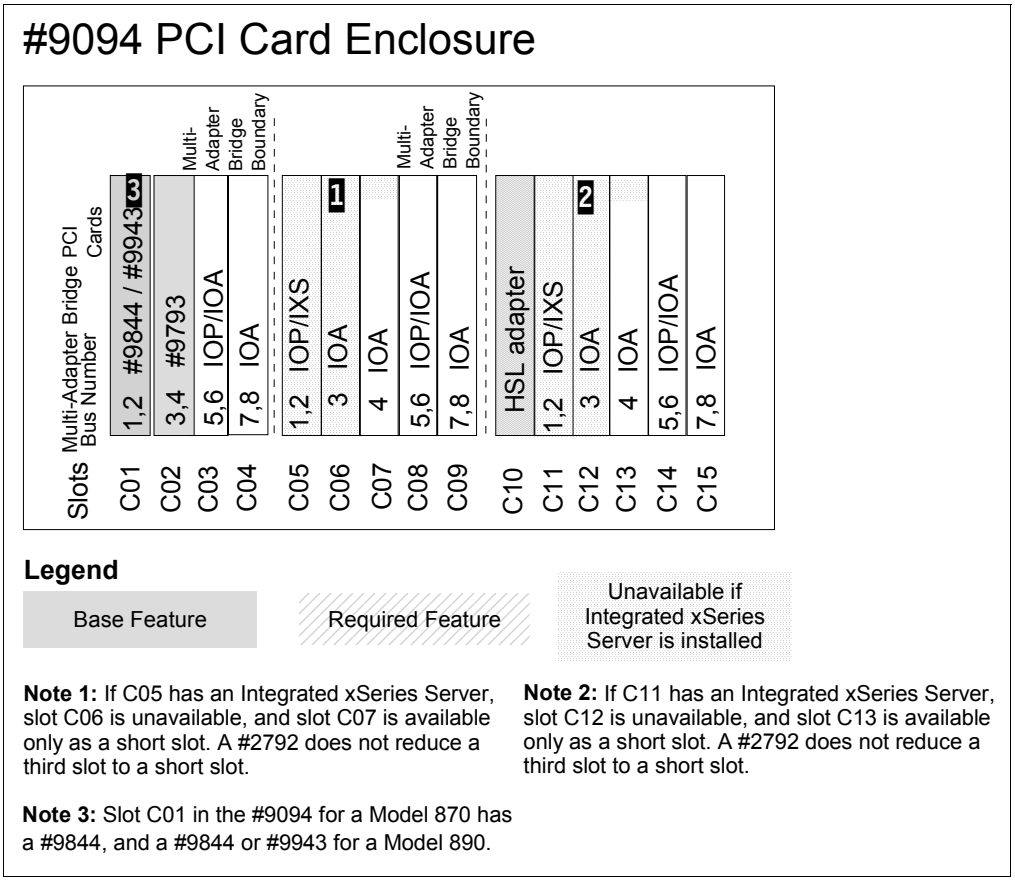
7.1.16 #9094 Base PCI I/O Enclosure

The #9094 Base PCI I/O Enclosure is the base I/O expansion unit for the Model 870 and 890.



Note: Hot plug and concurrent add of PCI cards, disk units, and removable media devices are supported.

7.1.17 #9094 PCI Card Enclosure



7.2 Required EIA units

The IBM marketing configurator does not manage rack space in System i racks. See the following table to determine the number of EIA units that are required for each Hardware Management Console (HMC), System i system unit, processor enclosure, or expansion tower installed in a System i rack.

System i model or tower	#0551 System i 36U 1.8m Rack	#0553 System i 42U 2.0m Rack	#0554 System i 11U .6m Rack	#0555 System i 25U 1.3m Rack
Model 270 system unit	16, includes two EIA for the #0133 and #0137			
Model 515 System Unit	4	N/A	N/A	4
Model 520 System Unit	4	4	4	4
Model 525 System Unit	4	4	N/A	4
Model 550 System Unit	4	4	4	4
Model 570 (POWER5 and POWER6) processor enclosure	4	0/4 - 4 5/8 - 8 9/12 - 12 13/16 - 16		

System i model or tower	#0551 System i 36U 1.8m Rack	#0553 System i 42U 2.0m Rack	#0554 System i 11U .6m Rack	#0555 System i 25U 1.3m Rack
Model 595 processor enclosure	Not available in a #0551 System i 36U 1.8m Rack			
Model 800 system unit	16 (includes two EIA for the #0133 and #0137)	16 (includes two EIA for the #0133 and #0137)		
Model 810 system unit	16 (includes two EIA for the #0133 and #0137)	16 (includes two EIA for the #0133 and #0137)		
Model 825 system unit	16 (includes two EIA for the #0134 and #0138)	16 (includes two EIA for the #0134 and #0138)		
#0595 PCI-X Expansion Unit in Rack	5	5		
#0578 PCI Expansion Unit in Rack	8			
#0588 PCI-X Expansion Unit in Rack	8	8		
#5074 PCI Expansion Tower	18			
#5094 PCI-X Expansion Tower	18 (reference RPQ #847215)	18 (reference RPQ #847215)		
#5096 PCI-X Expansion Tower (no disk)	N/A	N/A	N/A	N/A
#5786 TotalStorage Expansion 24 Disk Drawer	4	4	4	4
#5790 PCI Expansion Drawer (half wide)		4		
#5796 12X PCI Expanstion Drawer (half wide)		4		
#6586 Modem Tray for 19-Inch Rack	1U	1U	1U	1U
#7307 Dual I/O Unit Enclosure	4	4	4	4
#7311 Dual I/O Unit Enclosure	4	4	4	4
Model 7310-CR2 HMC rack mountable console		1		
#9079 Base I/O Tower	18			

8

Storage and media for IBM System i family models

In this chapter, we summarize i5/OS tape hardware-level support. We include specifications for internal tape devices for ¼-inch cartridge (QIC), Linear Tape Open (LTO), VXA, and 4mm, 8mm, 3570, 3590, and 3592 compatibility. We also cover optical device and DVD device support, alternate installation device capabilities, and initial program load (IPL) terminology, as well as cable information.

Consider reviewing the Redbooks publication *Implementing IBM Tape in i5/OS*, SG24-7440, for information about configuring i5/OS tape support of IBM System Storage LTO Ultrium products.

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8.1 External tape for System i family of models

External tape drives, media auto loaders, and tape library subsystems offer an optional I/O attachment for data interchange or backup and recovery purposes. The following tables provide a quick reference for each tape drive and tape library with supported attachment to i5/OS. Some tape drives and tape library products listed have been withdrawn from marketing.

The following feature codes are associated with each input/output adapter (IOA) controller that supports tape device attachments via low voltage differential (LVD), high voltage differential (HVD), and Fibre Channel attachment interfaces:

- LVD: # 5702, #5705, #5712, #5715, #5736, and #5775
- HVD: #2749
- Fibre Channel: #2765, #5704, and #5761

Note: In this publication we have included the #5749 and #5774 in this chapter and in the features description chapter (Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135). These 2-port Fibre Channel adapters support external tape and disk devices. They are supported only on POWER6 processor-based servers running IBM i 6.1 (also known as i5/OS V6R1) or later. The 9406-MMA POWER6 570 is included in this publication.

In the tables that follow we have also indicated, in the IOP-less support column, if IBM i 6.1 or later is required. There is no other V6R1 information in this publication. Full treatment of POWER6 processor-based servers and IBM i 6.1 is planned for a future publication.

Notes:

- Some System i models do not support all listed I/O controllers (IOAs).
- Some IOP-less IOAs might not support older tape or optical devices. An IOP-IOA pair should support these devices. See the “IOP-less” column in the tables in this topic and notes in 8.1.1, “Notes for storage and media support under i5/OS” on page 378, for more details.
- Through December 2007, all announced and supported LTO tape drives attach to a tape IOA that requires a controlling input/output processor (IOP).
- IBM i (i5/OS) does not formally support the WORM (Write Once, Read Many) function supported by several IBM tape devices described in this chapter. WORM support on tape devices requires special I/O instructions and a tape media designed for WORM usage. If WORM support is critical to an i5/OS environment, explore the possibilities of submitting an RPQ - Request for Price Quote proposal with an IBM representative.

For each LVD, HVD, and Fibre Channel attached device listed in the following tables, the required controller is dependent on the operating system level and I/O enclosure type. Some internal and external tape devices, optical disk, CDs, and DVDs can be driven by IOP-less controllers. For further information about the controller requirements, see the specific IOA feature number descriptions in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

i5/OS supports Library Managed Encryption (LME), sometimes also referred to as Transparent Encryption. With LME, the encrypting tape (LTO 4 or 3592 E05) must be in a library such as the 3494, 3584, 3577, 3576 or 3573 for encryption to be available. The library

and drive work together with the required Encryption Key Manager (EKM) component that is available on the hardware to provide data encryption without any host involvement.

The “LTO Ultrium” columns in the following tables denote that the listed tape drive and library-only supports tape drives of the specified Ultrium LTO type. For example, the machine type 3573 tape library supports either LTO Ultrium 3 or LTO Ultrium 4 tape drives. This column does not refer to the LTO Ultrium formats that can be written to and read.

The following table lists the external tape drive features.

Machine type	Model number	Format	LTO Ultrium 1	LTO Ultrium 2	LTO Ultrium 3	LTO Ultrium 4	3570	3590	3952-E05	3952-J1A	LVD	HVD	Fibre Channel	IOP-less	Encryption [a]	Withdrawn from marketing
1889		VXA-2												✓		
3570																
3580	H23	LTO		✓								✓				
3580	L23	LTO		✓							✓					
3580	L33	LTO			✓						✓					
3580	L3H	LTO			✓						✓					
3580	L43	LTO				✓					✓					
3588	F3B	LTO			✓								✓	1		
3588	F4A	LTO				✓							✓			
3590	E11	3590						✓				✓	✓			✓
3590	E1A	3590						✓				✓	✓			✓
3590	H11	3590 [b]						✓				✓	✓			✓
3590	H1A	3590 [b]						✓				✓	✓			✓
3592	E05	3592							✓	✓			✓	1	✓	
3592	J1A	3592								✓			✓	1		
5753		QIC SLR60												✓		
5754		QIC SLR100												✓		
5755		HH LT0-2		✓										✓		
6258		DAT72												✓		
6279		VXA-320												✓		
7206	336	DAT72									✓			✓		
7206	VX3	VXA-320									✓			✓	✓	
7206	VX2	VXA-2									✓			✓	✓	
7207	122	QIC														✓
7207	330	QIC SLR60									✓			✓		
7208	012	8mm										✓				✓
7208	342	8mm										✓				✓
7208	345	8mm									✓					✓
7212	10x	[c]												✓		
9348	00x											✓				✓

a. Although some drives support LTO 3 and LTO 4, only the LTO 4 drives are encryption enabled.
b. The #3590 with 384 tracks compared to Exx models using 256 tracks.
c. The 7212 tape and optical enclosure is capable of supporting multiple media formats: with FC #1107 (SLR60), FC #1108 (SLR100), FC #1104 (VXA-2), FC #1114 (VXA-320), FC #1109 (HH LTO-2), and FC #1108 (DAT72).
1. IBM i 6.1 (formerly i5/OS V6R1) or later.

The following table lists the tape library features.

Machine type	Model number	Format	LTO Ultrium 1	LTO Ultrium 2	LTO Ultrium 3	LTO Ultrium 4	3570	3590	3952-E05	3952-J1A	LVD	HVD	Fibre Channel	IOP-less	Encryption [a]	Withdrawn from Marketing
3494	D10	3590						✓				✓				✓
	D12	3590						✓				✓	✓			✓
	D22	3592							✓	✓			✓	1		
	HA1	3592						✓	✓	✓		✓				✓
	HA1	3592						✓	✓	✓			✓			
	L10*	3590						✓				✓			✓	✓
	L12	3590						✓				✓	✓		✓	✓
	L22	3592							✓	✓			✓	1	✓	
3570	Bxx	3570					✓					✓				✓
	Cxx	3570					✓					✓			✓	✓
3573	Lxx	LTO			✓	✓					✓				✓	
	Fxx	LTO			✓	✓							✓			
3575	Lxx	3570					✓					✓				✓
3576	E9U	LTO			✓	✓					✓		✓		✓	
	L5B	LTO			✓	✓					✓		✓		✓	
3577	L5U	3592							✓				✓		✓	
3580	H23*	LTO		✓								✓				
	L23*	LTO		✓							✓					
	L33	LTO			✓						✓					
	L3H	LTO			✓						✓					
	L43	LTO				✓					✓					
3581	F3H	LTO			✓								✓			
	F28	LTO		✓									✓			✓
	H17	LTO	✓									✓				✓
	H23	LTO		✓								✓				✓
	L23	LTO	✓	✓							✓					✓
	L28	LTO		✓							✓					✓
	L3H	LTO			✓						✓					
3582	L23	LTO		✓							✓	✓	✓			✓
3583	Lxx	LTO	✓	✓	✓						✓	✓	✓			✓

Machine type	Model number	Format	LTO Ultrium 1	LTO Ultrium 2	LTO Ultrium 3	LTO Ultrium 4	3570	3590	3952-E05	3952-J1A	LVD	HVD	Fibre Channel	IOP-less	Encryption [a]	Withdrawn from Marketing
3584	L22	3592							✓	✓			✓	1	✓	✓
	D22	3592							✓	✓			✓	1	✓	✓
	L32	LTO	✓	✓	✓						✓	✓	✓			✓
	L32	LTO	✓	✓	✓								✓	1		
	D32	LTO	✓	✓	✓						✓	✓	✓			✓
	D32	LTO	✓	✓	✓								✓	1		
	L53	LTO			✓	✓							✓	1	✓	✓
	D53	LTO			✓	✓							✓	1	✓	✓
3995	Cxx	UDO-1 l										✓				
3996	032, 080, 174.	UDO-1/2									✓			✓		
399F (Plasmon G-Series)		UDO-1									✓			✓		

a. Although some drives support LTO 3 and LTO 4, only the LTO 4 drives are encryption enabled.
1. IBM i 6.1 (formerly i5/OS V6R1) or later

A description of each tape device listed in the previous tables is provided in the following sections. For more information about storage products supported on the System i platform, refer to the IBM System Storage and TotalStorage products Web page at:

http://www.ibm.com/systems/storage/product/i.html

Refer to *IBM TotalStorage Tape Selection and Differentiation Guide*, SG24-6946, to assist you in finding the best tape product solution for the designated backup environment.

3580-H23 and L23 IBM TotalStorage Ultrium Tape Drive

The IBM 3580 Model H23 comes with an Ultra SCSI HVD attachment, and the Model L23 comes with a SCSI Ultra 160 LVD attachment, for connection to a wide spectrum of open system servers. The Ultrium Tape Drive 3580 Model H23 incorporates the IBM LTO Ultrium 2 Tape Drive. The IBM LTO Ultrium 2 Tape Drive is the second generation LTO Ultrium Tape Drive in the IBM TotalStorage LTO Ultrium family of products. The Ultrium 2 Tape Drive offers significant improvements over the Ultrium 1 Tape Drive.

3580-L33 IBM TotalStorage Ultrium Tape Drive

The IBM 3580 Ultrium 3 Tape Drive Model L33 incorporates the LTO IBM TotalStorage Ultrium 3 Tape Drive, which more than doubles maximum tape drive throughput data rate performance over the LTO generation 2 Tape Drive (Ultrium 2), up to 80 MBps native data transfer rate. In addition, with the use of the IBM TotalStorage LTO Ultrium 400 GB Data Cartridge the Ultrium 3 Tape Drive doubles the tape cartridge capacity up to 400 GB native physical capacity (800 GB with a two to one (2:1) compression). IBM Ultrium 3 Tape Drives can read and write LTO Ultrium 2 Data Cartridges and read LTO Ultrium 1 Data Cartridges. The Model L33 comes with a SCSI Ultra160 LVD attachment, for connection to a wide spectrum of open system servers.

3580-L43 and S43 IBM System Storage TS2340 Tape Drive Express

The IBM System Storage TS2340 Tape Drive Express Model L43 is available as an external stand-alone model or within rack-mountable units. These tape devices are designed to offer high capacity and performance for the midrange open systems environment. These models incorporate the LTO IBM System Storage Ultrium 4 Full-High Tape Drive, which is designed to provide maximum tape drive throughput native data rate performance of up to 120 MBps, compared to the IBM LTO generation 3 Tape Drive (Ultrium 3, LTO-3) at up to an 80 MBps native data transfer rate. In addition, with the use of the IBM LTO Ultrium 800 GB Data Cartridge, the Ultrium 4 Tape Drive provides double the tape cartridge capacity up to 800 GB native physical capacity (1,600 GB with a 2:1 compression) compared to previous Ultrium 3 Tape Drives. IBM Ultrium 4 Tape Drives can read and write LTO Ultrium 3 data cartridges and can read LTO Ultrium 2 data cartridges.

3580-H3L System Storage TS2230 Tape Drive Express

The System Storage TS2230 Tape Drive Express Model is an excellent tape storage solution for businesses that require backup or low-cost, real-time archival of their data within a small window of time. TS2230 Tape Drive Model H3L uses a Low Voltage Differential (LVD) Small Computer System Interface (SCSI) and offers LTO-3 support. The TS2230 has a storage capacity of up to 800 GB (with 2:1 compression) in conjunction with the IBM TotalStorage LTO Ultrium 400 GB data cartridge, which is double the capacity of the Ultrium 2 technology. Along with its higher capacity, the performance of the TS2230 Tape Drive has more than doubled over the previous generation of half-high LTO drives in the market, for a native data transfer rate of up to 60 MBps.

The TS2230 Tape Drive provides an excellent alternative to slower and smaller capacity ¼-inch, 4 mm, and 8 mm DLT/SDLT tape drives.

3588-F3B IBM System Storage TS1030 Tape Drive

The IBM System Storage TS1030 Tape Drive Model incorporates the LTO IBM Ultrium 3 Tape Drive, which more than doubles maximum tape drive throughput over the IBM LTO generation 2 Tape Drive (Ultrium 2). It has a native data transfer of up to 80 MBps. In addition, with the use of the IBM TotalStorage LTO Ultrium 400 GB Data Cartridge, the TS1030 Tape Drive Model F3B doubles the maximum tape cartridge capacity up to 400 GB native physical capacity (800 GB with 2:1 compression), as compared to the IBM Ultrium 2 Tape Drives and cartridges. IBM Ultrium 3 Tape Drives can read and write LTO Ultrium 2 Data Cartridges and read LTO Ultrium 1 Data Cartridges. The TS1030 Tape Drive Model F3B has a 4-Gbps Fibre Channel interface for connection to a wide spectrum of open system servers.

3588-F4A IBM System Storage TS1040 Tape Drive

The IBM 3588 Model F4A incorporates the LTO IBM Ultrium 4 Tape Drive, with enhanced maximum tape-drive throughput over the IBM LTO generation 3 Tape Drive (Ultrium 3). It has a native data transfer of up to 120 MBps. In addition, with the use of the IBM LTO Ultrium 800 GB Data Cartridge, the TS1040 doubles the maximum tape cartridge capacity by providing up to 800 GB of native physical capacity (1,600 GB with 2:1 compression), as compared to the IBM Ultrium 3 Tape Drives and cartridges. IBM Ultrium 4 Tape Drives can read and write LTO Ultrium 3 Data Cartridges and read LTO Ultrium 2 Data Cartridges. The TS1040 has a 4-Gbps Fibre Channel interface for connection to a wide spectrum of open system servers.

3590-E11 and H11 IBM TotalStorage Enterprise Tape Drive

The IBM TotalStorage Enterprise Tape Drive 3590 Models E11 and H11 are the rack-mountable models that include a 10-cartridge Automatic Cartridge Facility (ACF) that can be used in random access mode as a mini-library. Up to four 3590 Model E11 Tape

Drives can be installed in a rack, thus reducing the floor space required. The ACF can be quickly loaded with a new magazine.

This model can be ordered with either an integrated SCSI-3 controller with two ports that support a 16-bit, fast-and-wide, Ultra SCSI differential interface or a dual ported Fibre Channel attachment interface. It can also be mounted in an IBM TotalStorage Enterprise Tape Drive Frame 3590 Model A14 with the IBM TotalStorage Enterprise Tape Controller 3590 Model A60 for non-library attachment to ESCON® and FICON® channels. The Model E11 Tape Drive has a 14 MBps native data rate (with compression up to 40 MBps sustained data rate with Fibre Channel). The Model H11 Tape Drive has a 14 MBps native data rate.

3590-E1A and H1A IBM TotalStorage Enterprise Tape Drive

The IBM TotalStorage Enterprise Tape Drive 3590 Models E1A and H1A come without the ACF, and each is designed to go into the IBM TotalStorage Enterprise Automated Tape Library 3494. It can also go in the IBM TotalStorage Silo Compatible Tape Drive Frame 3590 Model C12 or C14 for attachment to a StorageTek™ Automated Cartridge System (ACS). This model can be ordered with either an integrated SCSI-3 controller with two ports that support a 16-bit, fast-and-wide, Ultra SCSI differential interface or a dual ported Fibre Channel attachment interface. The Model E1A tape drive has a 14 MBps native data rate (with compression up to 40 MBps sustained data rate with Fibre Channel). The Model H1A tape drive has a 14 MBps native data rate.

3592-E05 IBM System Storage TS1120 Tape Drive

The IBM System Storage TS1120 Tape Drive Model is supported for integration in the IBM System Storage Tape Libraries, TS7700 Virtualization Engine™, 3494 Virtual Tape Server (VTS), and tape controllers. The TS1120 Tape Drive is designed to provide higher levels of performance, reliability, security, and cartridge capacity than the IBM TotalStorage Enterprise Tape Drive 3592 Model J1A. The TS1120 E05 Tape Drive can help address the needs of tape customers across a broad range of computing environments.

The IBM System Storage TS1120 Tape Drive has been enhanced to provide the customer the option of using drive-based data encryption. This encryption capability is now standard on all new TS1120 Tape Drives and is a chargeable upgrade feature for existing installed TS1120 Tape Drives. The encryption capability includes drive hardware as well as microcode additions and changes. Also being introduced is a new, separate IBM Encryption Key Manager component for the Java Platform (EKM) program that supports the generation and communication of encryption keys for the tape drives across the enterprise.

The TS1120 drive's encryption capability and its subsystem integration support help provide customers with a flexible tape data encryption solution that supports encryption and key management across a variety of environments. It supports a single point of control for all encryption keys and most importantly can help customers protect tape data in a cost-effective way.

The TS1120 E05 Tape Drive is designed to support the IBM Tape Cartridge 3592 Extended, providing up to 700 GB rewritable (JB) or WORM (JX) native physical capacity. Or the TS1120 E05 Tape Drive can support the IBM TotalStorage Enterprise Tape Cartridge 3592 providing up to 500 GB rewritable (JA) or WORM (JW) or 100 GB rewritable (JJ) or WORM (JR) native physical capacity.

3592-J1A IBM TotalStorage Enterprise Tape Drive

The IBM 3592 TotalStorage Enterprise Tape Drive Model J1A has a dual-ported 2-Gbps Fibre Channel interface Fibre Channel attachment to host systems or a switched fabric environment. It has a high-technology design that increases the native data rate to up to 40 MBps, over 2.5 times the 14 MBps data rate of the 3590 E or H Models, and over four times

the 9 MBps data rate of the 3590 B Models. With data compression and a 32 K block size, the Model J1A is designed to offer up to 2.5 times the data rate of the 3590 E model.

9348 IBM Magnetic Tape Unit

The IBM 9348 Magnetic Tape Unit is a compact, front-loading, 1600/6250 bpi streaming tape drive. The 9348 autoloads/autothreads reels of industry-standard ½-inch magnetic tape. The 9348 has a data rate of 200 KB per second (maximum) at 1600 bpi or 781 KB per second (maximum) at 6250 bpi. It consists of a tape controller and an integrated tape unit and can be used for backup operations, program distribution, or data interchange with other systems.

Model 9348-001

The IBM 9348 Model 001 is mounted in an IBM 9309 rack enclosure and attaches via a SCSI differential adapter to all AS/400 9406 models.

Model 9348-002

The IBM 9348 Model 002 is mounted in a table-top enclosure and attaches via a SCSI differential adapter to AS/400 9402 Models C04 and C06, all models of the 9404, and AS/400 Advanced System 9406 Models 300, 310, and 320.

The 9348 Model 2 is a table-top enclosure that attaches via SCSI adapter to the 9402 Models C04 and C06, all models of the 9404, and AS/400 Advanced System 9406 Models 300, 310, and 320. A nine-foot power cord is provided with the 9348 Model 2. Optional 12 and 20 meter signal cables allow placement remote from the CPU.

3494 IBM TotalStorage Enterprise Tape Library

The IBM TotalStorage 3494 Enterprise Tape Library is designed to grow as your storage and usage needs grow. The cartridge capacity is determined by whether an optional *Convenience I/O Station* is installed. With the 30-cartridge Convenience I/O Station installed, the cartridge storage capacity is 160; with the 10-cartridge Convenience I/O Station installed, the cartridge storage capacity is 210; without either one, the capacity is 240.

The storage capacity and number of drives can be increased by adding either the IBM TotalStorage Enterprise Tape Storage Frame Model S10 or the IBM TotalStorage Enterprise Tape Drive Expansion Frame Models D10, D12, and D14. A Model B16 VTS with an attached Model D12 can also be added for a total of 15 additional frames and up to 6240 tape cartridges. TS7500 Virtualization Engines, TS7700 Virtualization Engines, and Virtual Tape Systems can be externally attached to the 3494 Tape Library. Up to 32 tape control unit functions can be supported by the Model L10, L12, or L14. The total quantity of supported tape drives is dependent on the combination of installed B16 VTSs and tape subsystems. The 3494 can be accessed by multiple systems such as the IBM eServer iSeries, AS/400, pSeries, RS/6000®, RS/6000 SP, eServer zSeries®, ES/3090™, ES/9000®, S/390®, Hewlett Packard (HP), and Sun™ processors, as well as Intel-based processors running Microsoft Windows.

Model 3494-D10

The IBM TotalStorage Enterprise Tape Drive Expansion Frame Model D10 for the Enterprise Tape Library 3494 supports the IBM 3490E Magnetic Subsystem Models C1A, C2A, and F1A. The Model D10 can contain zero or one 3490E tape drive unit (Model C1A or C2A) or up to two 3490E Model F1A Tape Drives and 400 or 300 tape cartridge storage cells.

Model 3494-D12

The IBM TotalStorage 3494 Tape Library Frame Model D12 for the 3494 Tape Library supports the 3590 Model H1A, E1A, or B1A Tape Drive and is designed to grow as your storage and tape drive needs grow. The base configuration of no tape drive unit and 400 tape

cartridge storage cells can be expanded with up to a total of six tape drive units and 250 tape storage cells.

Model 3494-HA1

The IBM TotalStorage Enterprise High Availability Tape Frames Model HA1 for the Enterprise Tape Library 3494 includes a second library manager and accessor, two service bays and required hardware and are designed for concurrent maintenance. The Model HA1 operates in stand-by mode to provide a redundant library manager and accessor or improved availability. With the Dual Active Accessor (DAA) feature active on the IBM TotalStorage Enterprise Tape Library Base Frame Model L10, L12, or L14, both accessors can operate simultaneously to increase mount performance of the library. With two library managers and dual accessors, and each containing two disk drives for duplication of the library databases, maintenance can now be performed in most situations on the failing library control unit component, while the 3494 is still available for customer production. The Model HA1 Frames contain no storage cells for tape cartridges.

Model 3494-L10

The IBM TotalStorage Enterprise Tape Library Base Frame Model L10 for the Enterprise Tape Library 3494 contains the automation, the library manager, either a 3490E Model C1A or C2A or up to two 3490E Model F1A Tape Drives, and storage cells for tape cartridges. The Model L10 can be upgraded to a Model L12 or L14.

Model 3494-L12

The IBM TotalStorage 3494 Tape Library Frame Model L12 for the 3494 Tape Library contains the automation, the library manager, up to two 3590 Tape Drives, and storage cells for ½-inch tape cartridges.

Model 3494-L14

The IBM TotalStorage Enterprise Tape Library Base Frame Model L14 for the Enterprise Tape Library 3494 contains the automation, the library manager, and storage cells for ½-inch tape cartridges.

Model 3494-L22

The IBM TotalStorage 3494 Tape Library Frame Model L22 for the 3494 Tape Library contains the automation, the library manager, up to four 3592 Tape Drives, and storage cells for ½-inch tape cartridges.

3570 IBM Magstar MP Tape Drive

The IBM Magstar® MP (Multi-Purpose) 3570 Tape Library provides a compact, integrated tape storage solution that delivers high performance, extraordinary reliability, and optimized read-and write-intensive operations. The Magstar MP 3570 Tape Library significantly expands the functional utility of tape storage with its revolutionary fast data recall performance that supports both current and emerging tape applications.

In addition, the Magstar MP 3570 Tape Library addresses the growing storage needs of customers by offering a more durable technology designed to meet the tougher demands of automation. Magstar MP 3570 Tape Library Models B0x, B1x, C0x, and C1x attach to AS/400, RS/6000, HP-UX, Sun Solaris™, Microsoft Windows, and other SCSI-attach systems. Magstar MP 3570 Tape Library Models B2x and C2x are supported on selected IBM Netfinity and IBM PC Server systems. The Magstar MP offers the following features:

- Fast access capability to support high I/O operations where multiuser access is required
- Support for time-sensitive applications where fast access to data is important (for example, storage management, network serving)

- Both automated backup/restore and archive storage and retrieval

Model 3570-B00

The IBM 3570 Model B00 is a drive unit with one tape drive and one cartridge. It has a tape drive data rate of 2.2 MBps and is a stand-alone unit.

Model 3570-B01

The IBM 3570 Model B01 is a library subsystem with one tape drive and 20 cartridges. It has a tape drive data rate of 2.2 MBps and is a stand-alone unit.

Model 3570-B02

The IBM 3570 Model B02 is a library subsystem with two tape drives and 20 cartridges. It has a tape drive data rate of 2.2 MBps and is a stand-alone unit.

Model 3570-B1A

The IBM 3570 Model B1A enhances the Magstar MP Tape Drives with a Drive Load-to-Ready time of 6.7 seconds (typical), a drive average search time of 8 seconds, and a cartridge capacity up to 15 GB using a three to one (3:1) compression. Model B1A is designed specifically for field inclusion in the IBM Magstar MP 3575 Tape Library Dataserver, providing a mid-range and network server tape storage solution that combines reliable, automated tape handling and storage with reliable, high-performance Magstar MP Tape Drives.

The attractive IBM Magstar MP 3575 Tape Library extends automated tape handling with optimized read-and write-intensive tape drives to RS/6000 and other popular SCSI-attach open systems. The Magstar MP Fast Access Linear Tape used in the IBM Magstar MP 3575 Tape Library offers ultra-fast access time to data that sets it apart from comparable products. Additionally, Magstar MP offers technology designed for the tougher demands of automated tape handling.

Model 3570-B11

The IBM 3570 Model B11 is a library subsystem with one tape drive and 20 cartridges. It has a tape drive data rate of 2.2 MBps and is a rack-mount unit.

Model 3570-B12

The IBM 3570 Model B12 is a library subsystem with two tape drives and 20 cartridges. It has a tape drive data rate of 2.2 MBps and is a rack-mount unit.

Model 3570-C00

The IBM 3570 Model C00 is a drive unit with one tape drive and a cartridge capacity of one. The tape drive data rate is 7.0 MBps, and the case is stand-alone.

Model 3570-C01

The IBM 3570 Model C01 is a library subsystem with one tape drive and a cartridge capacity of 20. The tape drive data rate is 7.0 MBps, and the case is stand-alone.

Model 3570-C02

The IBM 3570 Model C02 is a library subsystem with two tape drives and a cartridge capacity of 20. The tape drive data rate is 7.0 MBps, and the case is stand-alone.

Model 3570-C11

The IBM 3570 Model C11 is a library subsystem with one tape drive and a cartridge capacity of 20. The tape drive data rate is 7.0 MBps, and the case is rack-mounted.

Model 3570-C12

The IBM 3570 Model C12 is a library subsystem with two tape drives and a cartridge capacity of 20. The tape drive data rate is 7.0 MBps, and the case is rack-mounted.

Model 3570-C21

The IBM 3570 Model C21 is a library subsystem with one tape drive and a cartridge capacity of 20. The tape drive data rate is 7.0 MBps, and the case is a PC Rack-mount.

Model 3570-C22

The IBM 3570 Model C22 is a library subsystem with two tape drives and a cartridge capacity of 20. The tape drive data rate is 7.0 MBps, and the case is a PC Rack-mount.

3573 IBM System Storage TS3200 Tape Library Express

The 3573 IBM System Storage TS3200 Tape Library Express Model is designed to offer high capacity, performance, and technology for the midrange open systems environment and is an addition to the family of IBM System Storage tape library offerings. The TS3200 Tape Library is an external 4U stand-alone or rack-mountable unit that incorporates up to two LTO IBM TotalStorage Ultrium 3 Tape Drives, which more than doubles tape drive performance over the previous generation IBM LTO Ultrium 2 Tape Drives. It has a native data transfer rate of up to 80 MBps per drive.

Model 3573-F3H

The 3573 TS3200 Tape Library Express Model F3H comes with an Ultrium 3 4 Gb Fibre Channel Drive, which allows connection to a wide spectrum of open systems servers. Up to two IBM Ultrium 3 Tape Drives can read and write LTO Ultrium 2 Data Cartridges at original Ultrium 2 capacities. IBM Ultrium 3 tape drives can also read LTO Ultrium 1 Data Cartridges with improved data rates of up to 20 MBps native data transfer rate.

Model 3573-L2U

The 3573 TS3100 Tape Library Model L2U is an external 2U standalone or rack-mountable unit that incorporates a single LTO IBM TotalStorage Ultrium 3 Tape Drive, which more than doubles tape drive performance over the previous generation IBM LTO Ultrium 2 Tape Drives. It has a native data transfer rate of up to 80 MBps.

Model 3573-L3H

The 3573 TS3200 Tape Library Express Model F3H comes with an Ultrium 3 4 Gb Fibre Channel Drive, which allows connection to a wide spectrum of open systems servers. Up to two IBM Ultrium 3 Tape Drives can read and write LTO Ultrium 2 Data Cartridges at original Ultrium 2 capacities. IBM Ultrium 3 tape drives can also read LTO Ultrium 1 Data Cartridges with improved data rates of up to 20 MBps native data transfer rate.

Model 3573-L4U

The IBM 3573 Model L4U has up to two LVD SCSI drives (feature number 8043) or native switched fabric 4 Gbps Fibre channel drives (feature number 8044) and Ultrium 3 library native data physical capacities up to 17.6 TB (up to 35.2 TB using 2:1 compression) with 44 data cartridge slots. It also has a standard three cartridge I/O station, 44 data cartridge slots, and one dedicated cleaning cartridge slot.

3575 IBM Magstar MP Tape Library

The Magstar MP 3575 Tape Library Dataserver has been enhanced with the addition of a patented new Multi-Path architecture, which supports the sharing by homogeneous and heterogeneous hosts. The 3575 supports up to six SCSI-attach systems, in up to three logical libraries, sharing a common tape cartridge inventory and robotics. Support for Magstar MP

Model C tape drives, with increased aggregate data rates (up to 15 MBps using maximum data compression), and the ability to configure 14 bulk I/O slots within the library, in addition to the two-cartridge I/O slot, are part of the Multi-Path feature.

The 3575 Tape Library provides a mid-range and network server tape storage solution that combines reliable, field-proven, automated tape handling and storage with reliable, high-performance Magstar MP tape drives. Customers can tailor the library to match their system capacity and performance needs from 420 GB to 2.26 TB (1.26 TB to 6.8 TB with 3:1 compression) with Fast Access Linear Tape C-Format XL Data Cartridge, using up to six Magstar MP tape drives. Aggregate sustained data rates of 108 GB to 324 GB/hour with maximum compression allow extremely high data transfer performance. The 3575 offers outstanding retrieval performance with typical cartridge move times of less than four seconds. Native device driver support is included for AS/400, RS/6000, and other popular SCSI-attach open systems from manufacturers such as Hewlett-Packard, Sun, and Microsoft Windows.

Model 3575-L06

The IBM 3575 Model L06 has 60 cartridge slots and, with feature 1401, includes one Magstar MP Model C tape drive. With Fast Access Linear Tape C-Format XL Data Cartridge, data capacity is 420 GB in native mode and 1.26 TB with Lempel-Ziv (3:1) compression.

Model 3575-L12

The IBM 3575 Model L12 offers customers up to 840 GB of uncompressed data storage with their choice of up to four Magstar MP Model C tape drives. The library has 120 cartridge slots and, with feature 1400, includes two Magstar MP Model C tape drives.

Model 3575-L18

The IBM 3575 Model L18 offers customers up to 1.26 TB of uncompressed data storage with their choice of two through six Magstar MP Model C tape drives. The library has 180 cartridge slots and, with feature 1400, includes two Magstar MP Model C tape drives.

Model 3575-L24

The IBM 3575 Model L24 offers customers up to 1.68 TB of uncompressed data storage with their choice of two through six Magstar MP Model C tape drives. The library has 240 cartridge slots and, with feature 1400, includes two Magstar MP Model C tape drives.

Model 3575-L32

The IBM 3575 Model L32 offers customers up to 2.26 TB of uncompressed data storage with their choice of two through six Magstar MP Model C tape drives. The library has 324 cartridge slots, and with feature 1400, includes two Magstar MP Model C tape drives, and supports up to four additional tape drives. Data capacity is 2.26 TB in native mode, 6.8 TB with Lempel-Ziv (3:1) compression.

3576-E9U IBM System Storage TS3310 Tape Library Expansion Modules

The IBM 3576 System Storage TS3310 Tape Module Model E9U is an optional 9U expansion module. Each E9U expansion module can accommodate up to four LTO Ultrium Tape Drives and up to 80 tape cartridge slots and a configurable I/O station of 0-12 slots (dependent on the I/O configuration of the L5B). Up to four of these TS3310 E9U Tape Library modules can be added to a TS3310 Model L5B Tape Library forming an integrated tape library (5U base library and up to four 9U expansion modules).

The license key included with the model L5B activates one half of the total available storage of the E9U. Enablement of the remaining storage slots for each E9U expansion module requires purchase of the capacity expansion feature (#1640).

3576-L5B IBM System Storage TS3310 Tape Library

The IBM 3576 System Storage TS3310 Tape Library Model L5B is a 5U base library unit that contains the library control module, fixed tape cartridge storage of 30 slots, a configurable I/O station of six slots, a touch-screen display, cartridge handling robotics, and up to two LTO Ultrium tape drives. The library comes standard with enablement allowing access to one half of the total storage slots of the first Model E9U Expansion Module for future expansion of the TS3310 Tape Library.

3577-L5U IBM System Storage TS3400 Tape Library

The IBM 3577 TS3400 Tape Library Model L5U is an external 5U stand-alone or rack-mountable unit that incorporates up to two IBM System Storage TS1120 Tape Drives Model E05 (Machine Type 3592, Model E05), which are ordered separately. It comes with 4-Gbps dual-ported switched fabric Fibre Channel attachment. The TS1120 Tape Drive has a native data transfer rate of up to 100 MBps per drive.

3581 TotalStorage Ultrium Tape Autoloader

The IBM TotalStorage Ultrium Tape Autoloader models offer high capacity, performance, and technology designed for the midrange open systems environment. These models incorporate a single LTO IBM TotalStorage Ultrium 2 Tape Drive, which more than doubles tape drive performance over the generation 1 LTO Ultrium Tape Drives (Ultrium 1), for up to 35 MBps native data transfer rate (70 MBps with 2:1 compression).

In addition, with the use of the IBM TotalStorage LTO Ultrium 200 GB Data Cartridge, the Ultrium 2 Tape Drive has the capability of writing twice as much data, up to 200 GB native capacity (400 GB with 2:1 compression). IBM Ultrium 2 Tape Drives can read and write original LTO Ultrium Data Cartridges at original Ultrium 1 capacities and with an improved performance of up to 20 MBps for the native data transfer rate.

Model 3581-H17 and L17

The IBM 3581 Models H17 and L17 have seven cart slots, 0.7 TB data capacity (native), 1.4 data capacity (compaction), and one Ultrium tape drive. The H17 Model is equipped with an HVD Ultra SCSI, and the L17 Model is equipped with an LVD Ultra2 SCSI.

Model 3581-H23 and L23

The IBM 3581 Model H23 comes with an HVD Ultra SCSI attachment for connection to a wide spectrum of open systems servers. The IBM 3581 Model L23 comes with an LVD Ultra160 SCSI attachment.

Model 3581-F28 and L28

The IBM 3581 Model L28 comes with a LVD Ultra 160 SCSI attachment. It can be converted to an HVD Ultra SCSI attachment with HVD Converter Kit feature number 3104. The IBM 3581 Model F28 comes with a Native Switched Fabric Fibre Channel attachment.

Model 3581-F3H and L3H

The IBM 3581 Model L3H comes with an LVD Ultra160 SCSI attachment, and the Model F3H comes with a native switched fabric 2 Gbps Fibre Channel attachment. Both models come with a Rack Mount Kit (kit includes a rack mount power cord) and no country external power cord.

The 3581 Tape Autoloader is an external 2U stand-alone or rack-mountable unit that incorporates a single IBM LTO Ultrium 3 Tape Drive. The 3581 Tape Autoloader capacity is eight tape cartridges, providing a media capacity of up to 3.2 TB (6.4 TB with 2:1 compression) data storage per unit.

Other Ultrium 3 Tape Drive enhancements to help improve performance and reliability include the addition of a dual-stage 16-head actuator, independent tape loader and threader motors with positive pin retention, graceful dynamic braking, a larger 128 MB internal buffer, and highly integrated electronics using IBM-engineered copper technology.

3582-L23 IBM TotalStorage Ultrium Tape Library

The IBM 3582-L23 is an entry-level Ultrium Tape Library that can accommodate one or two Ultrium 3 or Ultrium 2 Tape drives and comes standard with a one-cartridge I/O station and 23 data cartridge slots, giving a native library capacity of up to 9.6 TB uncompressed data storage.

3583 TotalStorage Ultrium Scalable Tape Library

The IBM 3583 TotalStorage Ultrium Scalable Tape Library is an automated tape library that incorporates IBM TotalStorage LTO Ultrium Tape Drives. It attaches to iSeries, AS/400, pSeries, RS/6000, RS/6000 SP, xSeries, Netfinity, zSeries, Linux, and other UNIX® and PC servers that support OS/400, AIX, Sun Solaris, HP-UX, Microsoft Windows NT, Microsoft Windows 2000, and Microsoft Windows 2003 open systems with a SCSI.

Model 3583-L18

The IBM 3583 Model L18 has 18 cartridge slots and one to six IBM Ultrium Tape Drives.

Model 3583-L36

The IBM 3583 Model L36 has 36 cartridge slots and one to six IBM Ultrium Tape Drives.

Model 3583-L72

The IBM 3583 Model L72 has 72 cartridge slots, including a 12-cartridge I/O station, and one to six IBM Ultrium Tape Drives.

3584-L22 IBM TS3500 Tape Library

The IBM TotalStorage 3584 Tape Library Base Frame Model L22 has 58 to 260 cartridge slots. It also has support for up to twelve IBM System Storage TS1120 Tape Drives (3592 Model E05) or IBM TotalStorage 3592 Tape Drives Model J1A with an incremental reduction of storage slots beyond four drives or with Additional I/O Slots.

This model has the same footprint as the Model L52, which is a smaller footprint than the Model L32. Data capacity for the Model L22 using 3592 data cartridges is 130 TB native and 52 to 390 TB using 3592 data compression at 3:1 compression. Aggregate library data rates of up to 75 TB/hour for a fully configured 3584 library allow extremely high data transfer performance. Up to 15 IBM TotalStorage 3584 Tape Library Expansion Frame Models D22, D32, or D52 can be attached to the Model L22, supporting IBM TotalStorage LTO Ultrium 1 or 2 Tape Drives and cartridges or the IBM 3592 Tape Drives and cartridges. Up to 12 logical libraries or up to 12 control paths can be configured for each frame. Each Model L22 library has a standard 16-slot cartridge I/O station for importing or exporting 3592 cartridges from the library without requiring a re-inventory. Optional features can provide an additional 16 I/O slots for LTO Ultrium or 3592 tape cartridges.

For bulk-loading of tape cartridges, the library door can be opened. Each time the library door is closed, a barcode reader mounted on the autochanger scans the cartridge labels enabling a re-inventory of the cartridges in the library frame in less than 60 seconds. A door lock is included to restrict physical access to cartridges in the library. The library capacity and number of drives can be expanded to meet changing needs.

3584-L23 IBM TS3500 Tape Library

The IBM 3584 TS3500 Tape Library Model L23 is a base frame designed for TS1120 or 3592 Tape Drives and 3592 data cartridges. The Model L23 base frame has 58 to 260 cartridge slots and support for up to 12 tape drives with an incremental reduction of storage slots for more than four drives or with the additional I/O station installed. This model has a smaller footprint than the Model L32. The TS3500 Tape Library Model L23 is designed with an optimized gripper for use with LTO or 3592 tape cartridges. Up to 12 logical libraries (one per tape drive) can be configured for each frame.

Each Model L23 library has a standard 16-slot cartridge I/O station for importing or exporting 3592 tape cartridges from the library without requiring a re-inventory. An additional 16-slot cartridge I/O is optionally available for either LTO or 3592 data cartridges. Libraries that contain a mixture of LTO and 3592 drive technologies must have one LTO I/O station and one 3592 I/O station. For bulk loading of tape cartridges, the library door can be opened. Each time the library door is closed, a barcode reader mounted on the autochanger is designed to scan the cartridge labels, which enables a re-inventory of the cartridges in the library frame in as little as 60 seconds. A door lock is included to restrict physical access to cartridges in the library.

3584-L52 IBM TotalStorage Tape Library

The IBM TotalStorage 3584 Tape Library Base Frame Model L52 has 64 to 287 cartridge slots. It also has support for up to twelve IBM TotalStorage LTO Ultrium Tape Drives with an incremental reduction of storage slots beyond four drives or with additional I/O slots. This model has the same footprint as the Model L22, which is a smaller footprint than the Model L32.

Up to 15 IBM TotalStorage 3584 Tape Library Expansion Frame 3584 Models D22, D32, or D52 can be attached to the Model L52, supporting IBM TotalStorage LTO Ultrium Tape Drives and cartridges or the IBM TotalStorage 3592 Enterprise Tape Drive and cartridges. Up to 12 logical libraries and/or up to 12 control paths can be configured for each frame. Each Model L52 library has a standard 16-slot cartridge I/O station for importing or exporting LTO cartridges from the library without requiring a re-inventory. Optional features can provide an additional 16 I/O slots for LTO Ultrium or 3592 tape cartridges.

For bulk-loading of tape cartridges, the library door can be opened. Each time the library door is closed, a barcode reader mounted on the autochanger scans the cartridge labels enabling a re-inventory of the cartridges in the library frame in less than 60 seconds. A door lock is included to restrict physical access to cartridges in the library. The library capacity and number of drives can be expanded to meet changing needs.

3584-L53 IBM TS3500 Tape Library

The IBM 3584 TS3500 Tape Library Model L53 is a base frame designed for TS1030 LTO Ultrium Fibre Channel Tape Drives and LTO data cartridges. The Model L53 base frame has 64 to 287 cartridge slots. It has support for up to 12 tape drives with an incremental reduction of storage slots for more than four drives or with the additional I/O station installed. This model has a smaller footprint than the Model L32. The TS3500 Tape Library Model L53 is designed with an optimized gripper for use with LTO or 3592 tape cartridges. Data capacity for the Model L53 depends on the types of LTO Ultrium cartridges, up to 230 TB of physical capacity (at 2:1 compression) using LTO-DC with Ultrium 3 data cartridges. Up to 12 logical libraries (one per tape drive) can be configured for each frame.

Each Model L53 library has a standard 16-slot cartridge I/O station for importing or exporting LTO tape cartridges from the library without requiring a re-inventory. An additional 16-slot cartridge I/O is optionally available for either LTO or 3592 data cartridges. Libraries that

contain a mixture of LTO and 3592 drive technologies must have one LTO I/O station and one 3592 I/O station.

For bulk loading of tape cartridges, the library door can be opened. Each time the library door is closed, a barcode reader mounted on the autochanger is designed to scan the cartridge labels enabling a re-inventory of the cartridges in the library frame in as little as 60 seconds. A door lock is included to restrict physical access to cartridges in the library.

3995-Cxx IBM Optical Library Dataserver

The IBM 3995 C-Series family is based upon 5.2 GB (8x) 5.25-inch Extended Multifunction optical drive technology, which enables support for magneto-optical (MO) rewritable, Permanent Write Once/Read Many (WORM), and Continuous Composite WORM (CCW) recording technologies in a single library. The latest generation of the 3995 C-Series family features 5.25-inch, industry-standard 5.2 GB (referred to as 8x) Extended Multifunction Optical Drives. This family provides double the capacity over the previous 2.6 GB technology, allowing twice as much data to be stored on an optical cartridge.

Five SCSI-attached models are available, ranging from 104 GB to 1.341 TB (unformatted capacity), to support solutions in the open systems environment. Five AS/400-attached models are available, ranging from 104 GB to 1.341 TB (unformatted capacity) to support solutions in the AS/400 environment. Five LAN-attached models are available, ranging from 104 GB to 1.341 TB (unformatted capacity) to support solutions in the token-ring and Ethernet LAN environments. Four S/390-attached models are available, ranging from 270 GB to 1.341 TB (unformatted capacity) to support solutions in the S/390 environment. Three expansion units are available to further increase S/390 storage capacity up to 2.682 TB (unformatted capacity) per optical library subsystem.

3996 IBM Optical Library with Ultra Density Optical

The 3996 IBM Optical Library with Ultra Density Optical (UDO) is an externally attached storage library that uses 60-GB and 30-GB optical disc technology. The 3996, which is offered in three models, is available for use with the System i (i5/OS V5R4) and System p family of workstations and systems. It attaches through an external system adapter.

The 3996 library must be the only device attached to an adapter on a System i or System p model. Attaching a second external device to the same adapter as 3996 is not supported.

The 3996 uses an LVD SCSI.

Each 3996 library supports the following features:

- Support of an optical drive that is capable of reading or writing on optical discs, providing up to 60 GB of optical storage if that library has either a 60 GB Gen 2 optical drive or a mix of both 60 GB Gen 2 and 30 GB Gen 1 optical drives
- Compatibility of the two optical disk storage types:
  - The Ultra Density Optical level 2 (UDO2) optical disk, which is designed to hold up to 60 GB per cartridge and is read and write compatible in a Gen 2 drive only
  - The Gen 1 disk, which is designed to hold up to 30 GB per cartridge

    Gen 1 media is read and write compatible in a Gen 1 UDO drive, and read-only compatible in a UDO Gen 2 drive.
- Support of WORM and rewritable recording technologies in a single library
- An orderable update feature to the microcode of an installed 3996 Optical Library (Model 032, 080, and 174) to the latest microcode firmware level
- A barcode reader as an optional feature

- An LVD SCSI

There are three models of the 3996 Library:

- Model 032 has storage slots for up to 32 optical disk cartridges.

  If the 30 GB Gen 1 drive feature is selected in a Model 032, total maximum storage capacity is 960 GB. If the 60 GB Gen 2 drive feature is selected in a Model 032, maximum storage capacity is 1.92 TB (one terabyte equals 1,000 GB).

  The model 032 has one optical disk drive and an option for adding a second drive. If two drives are selected, they may be either Gen 2, Gen 1, or a combination of one Gen 2 and one Gen 1. Maximum capacities achieved in the library vary with the mix of optical disk media loaded in the library.

- Model 080 has storage slots for up to 80 optical disk cartridges.

  If the Gen 1 drive feature is selected in a Model 080, total maximum storage capacity is 2.4 TB. If the Gen 2 drive feature is selected in a Model 080, maximum storage capacity is 4.8 TB.

  The Model 080 has two optical disk drives with an option of increasing to up to four drives. Adding more drives reduces the number of disk slots to 72. If additional drives are selected, they may be either Gen 2 or Gen 1 drives. Maximum capacities achieved vary with the mix of optical disk media and the number of optical drives installed in the library.

- Model 174 has storage slots for up to 174 optical disk cartridges.

  If the Gen 1 drive feature is selected in a Model 174, total maximum storage capacity is 5.2 TB. If the Gen 2 drive feature is selected in a Model 174, maximum storage capacity is 10.4 TB.

  The Model 174 has two optical disk drives with an option of increasing to up to four drives. Adding more drives reduces the number of disk slots to 166. If additional drives are selected, they may be either Gen 2 or Gen 1 drives. Maximum capacities achieved in the library vary with the mix of optical disk media and the number of optical drives in the library.

The 3996 Optical Library models ship with Gen 1 30 GB drives unless feature #9200 (Ship with 60 GB Gen 2 Drives) is specified. This feature applies only when ordering the base library. Feature numbers for additional drives are available and must also be specified.

The supported media includes:

- Rewritable (Gen 1) 30 GB Media 10 pack: Provides ten rewritable 30 GB media
- WORM (Gen 1) 30 GB Media 10 pack: Provides ten WORM 30 GB media
- Rewritable (Gen 2) 60 GB Media 10 pack: Provides ten rewritable 30 GB media
- WORM (Gen 2) 60 GB Media 10 pack: Provides ten WORM 30 GB media
- Cleaner cartridge: Compatible with both Gen 1 and Gen 2 drives

The maximum number of these features that may be ordered (in any combination) with the 3996 Model 032 is two. For the 3996 Model 080 and 3996 Model 174, the maximum is four. If additional media are required, see announcement letter 107-425 (July 2007) for ordering instructions.

The 3996 with Gen 1 30 GB drives is supported with System i software level i5/OS V5R3 or later. The 3996 Optical Library with Gen 2 60 GB drives, or with a mix of Gen 1 and Gen 2 drives, is supported with System i software level i5/OS V5R4 or later.

7206-336 IBM External 36 GB DAT72 Tape Drive

The IBM 7206 Model 336 External 36 GB DDS Gen5 Tape Drive is a stand- alone, SCSI, 4 mm streaming tape drive that attaches externally to the System i and System p servers.

7206-VX3 IBM External Tape Drive

The IBM 7206-VX3 External Tape Drive is a stand-alone, SCSI, VXA-320 streaming tape drive that writes data to tape using a Discrete Packet Format. The tape drive provides a media capacity of up to 160 GB (320 GB with 2:1 compression) of data storage per cartridge and a sustained data transfer rate of up to 12.0 MBps.

7206-VX2 IBM External Tape Drive

The IBM 7206-VX2 External Tape Drive is a stand-alone, SCSI, VXA-2 streaming tape drive that attaches externally to the iSeries server. The 7206-VX2 External Tape Drive writes data to tape using a Discrete Packet Format. The tape drive provides a media capacity of up to 80 GB (160 GB with 2:1 compression) data storage per cartridge. It has a sustained data transfer rate of up to 6.0 MBps.

7207-122 IBM 4 GB External SLR5 QIC Tape Drive

The IBM 7207-122 provides up to 4 GB (8 GB with 2:1 compression) data storage per cartridge, which is over three times the capacity of the 7207 Model 012. It has a sustained data transfer rate of 380 KB per second (760 KB per second with 2:1 compression). It has two dual-ported wide connectors and attaches to a wide SCSI bus. New to the Model 122 is an internal self-test capability so the drive can be checked to verify that it is working properly. The tape media is enclosed in a self-contained cartridge to minimize wear and avoid contamination.

7207-330 IBM External SLR60 Tape Drive

The IBM 7207-330 30 GB External SLR60 Tape Drive is an entry-level save and restore device for medium-capacity fixed disk drive data and applications. The 7207 Model 330 is a stand-alone streaming tape drive in a single, externally attached enclosure, incorporating new 4-Channel Scalable Linear Recording (SLR) technology for attachment to the iSeries server. The 7207-330 provides up to 30 GB (60 GB with 2:1 compression) data storage per cartridge and a sustained data transfer rate of 4 MBps.

7208-012 IBM External 8mm Tape Drive

The IBM 7208-012 is a 5 GB External 8-mm tape drive. Model 012 features a media capacity of 5 GB per cartridge and a sustained data transfer rate of 500 KB per second. The 7208 Model 012 features data compression hardware using an adaptation of the IBM Improved Data Recording Capability (IDRC) algorithm, which provides an effective capacity of up to 10 GB typical per cartridge and an effective data transfer rate of 1 MBps typical, depending on the type of data transferred. Feature Code #0501 counts as one 7208, and the #0502 counts as two 7208s.

7208-342 IBM 20GB External 8mm Tape Drive

The IBM 7208 Model 342 20GB External 8mm Tape Drive is a stand-alone, SCSI, 8mm streaming tape drive packaged in a black enclosure that attaches to the AS/400 family of servers and systems. It provides a media capacity of 20 GB (40 GB with 2:1 compression) data storage per cartridge and a sustained data rate of 3.0 MBps (6.0 MBps with 2:1 compression). This tape drive has four times the capacity and six times the data rate of the IBM 7208 Model 012. The 7208 Model 342 features data compression hardware using an adaptation of the IBM IDRC algorithm

7208-345 IBM 60 GB External 8mm Tape Drive

The IBM 7208-345 has a media capacity of 60 GB (150 GB with 2.5:1 compression) data storage per cartridge and a sustained data rate of 12 MBps (30 MBps with 2.5:1 compression). This tape drive has three times the capacity and four times the data rate of the IBM 7208 Model 341. The Model 345 features data compression hardware using Adaptive Lossless Data Compression (ALDC), a state-of-the-art data compression technique developed by IBM. It also utilizes the IBM Mammoth-2 Advanced Metal Evaporated (AME) media data cartridge with SmartClean technology.

7212-10x IBM System Storage Tape and DVD Enclosure

The IBM 7212 System Storage Tape and DVD Enclosure Express Model 102 or 103 is designed to mount in one EIA Unit of a standard 19-inch rack, using an optional rack-mount hardware feature kit. The 7212 Express Model can be configured with one or two tape or DVD-RAM optical drives and can be configured for desktop installation. The base unit allows for a split-bus configuration for connection of each drive to individual external SCSI-LVD adapters on System i and System p servers. An optional single-bus configuration of the 7212-102 or 103 allows for connection of both drives to only one external SCSI-LVD adapter.

The Express offering for the IBM 7212 Model 102 or 103 is intended to provide external tape or optical drive options that can be compatible with other archival storage and retrieval technologies already installed in existing IT facilities. Optional drive technologies available in the 7212-103 Express offering are:

- 4mm - DAT72 36 GB tape drive (7212-103 Only)
- VXA, VXA-2 80 GB tape drive
- VXA-320 160 GB tape drive
- SLR (¼-inch format) - SLR60 37.5 GB tape drive
- SLR100 50 GB Tape Drive
- LTO - HH-LTO2 200 GB tape drive
- DVD-RAM - 9.4 GB optical drive

8.1.1 Notes for storage and media support under i5/OS

The following notes apply to many of the tape device and tape library products and features previously listed:

- The LTO Ultrium tape technologies can read and write to version n-1 and read only to version n-2. For instance, the LTO Ultrium 4 tape drives can read and write to LTO Ultrium 3 tapes, and can only read LTO Ultrium 2 tapes. An LTO Ultrium 4 tape drive cannot read or write an LTO Ultrium 1 tape.
- i5/OS V5R2 or later is required for LTO 3 support.
- i5/OS V5R3 or later is required for LTO 4 support.
- The TS3100, TS3200, TS3310, and TS3500 Tape Library products support LTO 3 and LTO 4 tape drives. The LTO Ultrium 4 Tape Drive has maximum rated native data rate of up to 120 MB. LTO Ultrium 3 Tape Drive has a maximum rated native data rate of up to 80 MBps.
- The IBM TS2340 is an Ultrium LTO 4 tape drive. It is supported within the IBM System Storage TS3100 Tape Library to the IBM System Storage TS3500 Tape Library.

- For tape support information on the Web, including System i support, refer to the following Web pages:
  - For assistance in identifying the Fibre Channel adapter feature numbers that support tape attachment to System i models, refer to the Host bus adapters (HBAs) Web page at:

    http://www-01.ibm.com/systems/support/storage/config/hba/index.wss

    On this page, under Products, select the tape (or disk) storage product. Then under Operating Systems, select **i5/OS** under the appropriate IBM System i servers section. Then click **Submit**.
  - For latest marketing status of tape and disk storage related products, see the IBM System Storage and TotalStorage products Web page at:

    http://www.ibm.com/systems/storage/product/i.html
- The #5775 PCI-X Disk/Tape Controller without IOP provides a PCI-X Disk/Tape SCSI Controller with zero write cache and without RAID support. Removable media devices (tape, optical libraries, DVD-ROM, or DVD-RAM) are also supported on the #5775.

  The #0647, #5736, #5766, and #5775 are physically the same adapter card. The #5775 should be the first choice over #0624/#0645 (#5702 and #5712 IOP-less equivalent) or #5705/#5715 controllers for systems running i5/OS V5R3 or later when attaching devices that do not require an IOP and IOA combination.

  The #5775 does not support 358x or 359x tape library devices (includes 3580). Use a #5702, #5705, #5712, #5715, #5736, or #5766 (IOP-based) to attach a 358x or 359x.

  Use the #5775 for attaching a 7210-030 DVD drive, 7212-103 with DVD, LTO-2, ¼-inch tape drive, or VXA-320 tape drive.

  Consider using the #5776 (IOP-less, disks only) controller for disks within a #5095/#0595 I/O enclosure or an EXP24.

  Several older technology tape devices supporting QIC SLRnn, 8mm, and early VXA-nn, data formats are not supported on IOP-less controllers (IOAs). See the IOP-less column in the two tables at the beginning of this chapter for supported tape devices on IOP-less controllers.
- If a tape or optical device is attached to an IOA or an IOP-IOA combination and that device is not supported by that hardware feature combination, you will see a System Reference Code in the Product Activity Log (PAL). A properly authorized user to the Start Service Tools command functions can view this log. SRC codes in the PAL that indicate “device not supported” include:
  - 63A03202 or 57xx3202: The attached device type is not supported in an IOP-less environment.
  - 63A09020 or 57xx9020: This error is reported when one of the following conditions occur:
    - An unsupported device type or model is attached to the system.
    - Both tape and disk drive devices are attached to an IOP or IOA card that does not support both tape and disk devices at the same time.
    - The tape library requires a resource, and no resource is reported.
    - Two tape library resources are attempting to allocate the same resource.
- For D-mode IPL, the device SCSI address must be set to “0”.
- 3580 L33/L3H and H3L (Ultrium 3) support requires V5R2 or later. There is no HVD support for Ultrium 3.

- The maximum number of automated tape library drives supported depends on the adapter that is used to attach to the System i model.
- External optical storage for System i models includes the 3995 Optical Library Dataserver, the 3996 Optical Library, 399F Optical Library (Plasmon G-Series), 7210-020 External CD-ROM, the 7210-025 External DVD-RAM and the 7210-030 External DVD-RAM.

  For more information on 399F refer to the Plasmon Web site at:

  http://www.plasmon.com
- The following optical devices are supported on IOP-less IOAs:
  - 4.7 GB DVD-RAM: #6330, #6333, #7210-025 (#6330), #7210-030 (#6333), #7212-102 with FC #1103 (#6333), #7212-102 with FC #1102 (#6330)
  - 4.7 GB SLIM DVD-RAM: #6331
  - DVD-ROM: #6336, #7212-102 with FC #1106 (#6336)
  - SLIM DVD-ROM: #6337
- For information on optical devices supported under i5/OS, refer to:

  http://www-03.ibm.com/systems/i/hardware/storage/optical/index.html

Update Device Microcode API: The Update Device Microcode API (QTAUPDDV) allows tape device microcode to be updated using an image that is copied from the Web. This function is supported with Version 5 and later i5/OS systems and OS/400.

8.1.2 Alternate IPL or alternate installation device considerations

The term *alternate IPL* or *ALT-IPL* is used in this publication to describe both alternate IPL devices and alternate installation devices. It is important to understand the differences. For pre-POWER5 and POWER6 processor-based servers, an alternate IPL device must be attached to the first system bus (bus one), and an alternate installation device can be attached to any bus except bus one.

Alternate installation device support allows you to perform installation and recovery procedures using a combination of devices. Prior to OS/400 V4R1, these types of activities can only be performed using devices that are attached to the first system bus. The first system bus connects to the service processor IOP. Typically, this is where the optical device or tape devices used for installations are attached. From OS/400 V4R1 onward, you have more choices depending upon the processor technology of the system, the POWER5 and POWER6 partition configuration, use of an HMC, and specific disk, tape, and optical attachment adapters and attached devices that support alternate IPL, alternate installation, and load source.

An alternate restart (IPL) device can be a tape drive or an optical device. The media in the alternate restart device is what the system uses to start from when you perform a D-mode initial program load (IPL). The alternate restart device loads the Licensed Internal Code contained on the removable media instead of the code on the load source disk unit.

Not all tape and optical devices and adapters supported on the system can be used for alternate restart (IPL). Over time, some of these restrictions will be removed for selected hardware. Review the individual adapter and device feature descriptions in this publication in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

When ordering a new configuration, the System Planning Tool (SPT) can be used to assist you in the alternate restart device placement for your IBM i logical partitions. For more information on SPT, go to:

http://www.ibm.com/servers/eserver/power/csp/

For multiple partition environments, you must specify an adapter that has a supported alternate IPL device attached for your partition. Starting with POWER6 models, you can do an IPL-type D from a tape device attached by a Fibre Channel interface only when it is attached to an adapter without an input/output processor (IOP). Two adapters supporting this are the #5749 and #5774.

For other system models and configurations, a tape device attached by a Fibre Channel adapter supporting alternate IPL can be explicitly set up as an alternate installation device.

You use the Dedicated Service Tools (DST) interface to ensure this is set up correctly and perform the function. In a multiple partition environment you can use the HMC to specify the IOP or adapter with a device supporting alternate IPL and activate DST for a partition.

Refer to the following publications or Web sites for more information on how to effectively set up alternate IPL or alternate installation devices.

- Support up through IBM i 5.4: *System i and System p Logical Partitioning Guide,* SA76-0098-02 available at:

  http://publib.boulder.ibm.com/infocenter/iseries/v5r4/index.jsp

  Expand Systems management → Logical partitioning

  Select Partitioning an iSeries server → Printable PDFs
- IBM i 6.1: *System i Systems management Logical partitions Version 6 Release 1*, available at:

  http://publib.boulder.ibm.com/infocenter/systems/scope/i5os/index.jsp

  Expand Systems management → Logical partitions

  Select PDF file for logical partitions
- System i and System p: *Partitioning for i5/OS with an HMC*, PDF, available at:

  http://publib.boulder.ibm.com/infocenter/systems/scope/hw/index.jsp
- IBM i 5.4: *IBM Systems - iSeries Backup and Recovery Version 5 Revision 4*, SC41-5304-08, PDF, available at:

  http://publib.boulder.ibm.com/infocenter/iseries/v5r4/index.jsp

  Search for SC41-5304
- IBM i 6.1: *System i Systems management Recovering your system Version 6 Release 1*, SC41-5304-09, PDF, available at:

  http://publib.boulder.ibm.com/infocenter/iseries/v5r4/index.jsp

8.2 SAN components for System i and iSeries systems

i5/OS supports tape attachment via SAN using Fibre Channel Tape Controller (Adapter) features #2765, #5704, or #5761. Disk attachment via storage area networks (SAN) is supported by Fibre Channel Disk Controller features #2766, #2787, or #5760.

For information about SANs that are supported by iSeries servers, refer to the following Web pages:

- Storage area network (SAN) scalable, flexible storage infrastructure

  http://www-1.ibm.com/servers/storage/san/index.html

- Support for Storage area network (SAN)

  http://www-1.ibm.com/servers/storage/support/san/index.html

8.2.1 Virtualization Engine TS7510 and TS7520 support

i5/OS supports the hardware attachment of the TS7510 and TS7520 via Fibre Channel Tape Controller (Adapter) features #2765, #5704, or #5761 at i5/OS V5R2 and later. The TS7510 and TS7520 are hardware and software solutions that can assist multiple open systems backups. The operating system sees tape library devices and thus uses tape configuration and interfaces, but the data is stored on disks.

Support under i5/OS is available as a request for price quotation (RPQ). RPQ-level support indicates limited availability of the support, and there are currently restrictions in that support under i5/OS.

To order the i5/OS RPQ that supports attachment of the IBM System Storage Virtualization Engine TS7510 and TS7520, contact your local IBM System Storage representative. They will submit a request through the country-specific RPQ order process.

For more information, consult the following Redbooks publications:

- *The IBM Virtualization Engine TS7510: Getting Started with i5/OS and Backup Recovery and Media Services*, SG24-7510
- *IBM TS7520 Virtualization Engine: Planning, Implementation, and Usage Guide*, SG24-7520
- *Implementing IBM Tape in i5/OS*, SG24-7440

8.3 QIC tape specifications and compatibility for System i models

The following table provides device specifications, performance, and compatibility details for internal QIC tape formats.

IBM tape device					QIC-2 GB	QIC-2 GB DC	4/8GB SLR5 QIC-4 GB DC	MLR1 QIC 5010 DC	MLR1 QIC 5010 DC	MLR3	SLR 60	SLR 100
Drive storage capability					**2.5 GB**[a]	**2.5 GB**[a]	**4 GB**	**13 GB**[a]	**16 GB**	**25 GB**	**30 GB**	**50 GB**
Compaction algorithm						**LZ1**	**LZ1**	**LZ1**	**LZ1**	**LZ1**	**LZ1**	**LZ1**
Minimum OS/400 level					**V4R1**	**V4R1**	**V4R1**	**V3R7**	**V4R1**	**V4R1**	**V5R1**	**V5R1**
Format	**Capacity**	**Native data transfer rate**	**Media**	**Media part number**	**#6380 #6480**	**#6381 #6481**	**#4482 #4582 #6382 #6482720 7-122**	**#6385**[b] **#6485**[b]	**#4483 #4583 #6383 #6483**	**#4486 #4586 #6386 #6486**	**#4584 #4684 #5753**[c] **#6384 #6484 #9284 #9653**[c] **7207-330**	**#4487 #4587 #5754**[c] **#8287 #8754**[c] **#4687 7329-380**
MLR3 [d]	25 GB[e]	2 MBps	MLR3-25GB	59H4128	--	--	--	--	--	R/W	R/W	R/W
QIC5010[d]	16 GB	1.5 MBps	MLR1-16GB	59H4175	--	--	--	R/W	R/W	R/W	R/W	R
	13 GB	1.5 MBps	DC5010	16G8574	--	--	--	R/W	R/W	R/W	R/W	R
	2 GB	1.5 MBps	MLR1-2 GB	35L0589	--	--	--	R/W	R/W	R/W	R/W	R
QIC4DC[f]	8 GB	760 KB/s	SLR5-4 GB	59H3660	--	--	R/W	--	R	R	R	R
QIC4GB	4 GB	380 KB/s	SLR5-4 GB	59H3660	--	--	R/W	--	R	R	R	R
QIC2DC[f]	5 GB	600 KB/s	DC9250	16G8436	--	R/W	R/W	--	R	R	R	
QIC2GB	2.5 GB	300 KB/s	DC9250	16G8436	R/W	R/W	R/W	R/W	R	R	R	
QIC1000	1.2 GB	300 KB/s	DC9120	21F8730	R/W	R/W	R/W	R/W	--	--		
QIC525	525 MB	200 KB/s	DC6525	21F8597	R/W	R/W	R/W	R/W[g]	--	--		
QIC525	320 MB	200 KB/s	DC6320	21F8583	R/W	R/W	R/W	R/W	--	--		
QIC120	120 MB	120 KB/s	DC6150	21F8578	R/W	R/W	R/W	R/W[g]	--	--		
QIC24[h]	60 MB		DC6150		R	R	--	--	--	--		
SLR100	50 GB	5 MBps	SLR100-50GB	35L0968	--	--	--	--	--	--	--	R/W
	5 GB	5 MBps	SLR100-5GB	35L0961	--	--	--	--	--	--	R/W	R/W
SLR60	30 GB	4 MBps	SLR60-30GB	19P4209	--	--	--	--	--	--	R/W	R/W
	37.5 GB	4 MBps	SLR60-37.5 GB	24R0146	--	--	--	--	--	--	R/W	R/W

a. Available as a migration feature only during an upgrade.
b. The internal 13 GB tape drives with feature code #6385 or #6485 also supports the 16 MB IBM MLR1 tape media.
c. Requires i5/OS V5R3
d. Indicates that the capacity can double typically when the compression option is selected.
e. Minimum operating system to support the 25GB capacity cartridge drive: V4R1.
f. QIC-2DC and QIC-4DC are compression formats. Cartridge capacity is data dependent. Capacities shown are typical.
g. Use of DC6150 and DC6525 media can shorten the life of the tape device and require more frequent maintenance.
h. QIC24 format is written by S/36.

8.4 VXA, LTO, and DAT tape specifications and compatibility for System i models

The following table provides device specifications, performance, and compatibility details for internal LTO and VXA tape formats.

IBM tape device					**VXA-2**	**VXA 320**	**LTO-2 Tape Unit**	**4MM DAT72**
Drive storage capability					**80 GB**	**160 GB**	**200 GB**	**36 GB**
Compaction algorithm					**ALDC**	**ALDC**	**SLDC**	
Minimum operating system level					**OS/400 V5R1**	**i5/OS V5R3**	**i5/OS V5R3**	**i5/OS V5R4**
Format	**Native Media Capacity**	**Native data transfer rate[a]**	**Media**	**Media part number**	**#1889[b] #4585 #4685 #9285 #9689[b]**	**#6279**	**#5755**	**6258 9258**
VXA1[f,b]	59 GB	6 MBps	V17-59GB	19P4877	R/W	--		--
	20 GB	6 MBps	V6-20GB	19P4878	R/W	--		--
	20 GB	6 MBps	V6-test	19P4879	R/W	--		--
VXA2[f,c]	80 GB	6 MBps	V23-80GB	19P4876	R/W	R/W		--
	59 GB	6 MBps	V17-59GB	19P4877	R/W	--		--
	20 GB	6 MBps	V6-20GB	19P4878	R/W	--		--
	20 GB	6 MBps	V6-test	19P4879	R/W	--		--
	80 GB	6 MBps	X23-80GB	24R2137	R/W	R/W		--
	40 GB	6 MBps	X10-40GB	24R2136	R/W	R/W		--
	20 GB	6 MBps	X6-20GB	24R2134	R/W	R/W		--
	20 GB	6 MBps	X6-test	24R2135	R/W	R/W		--
VXA3[f,d,e,5]	80 GB	12 MBps	V23-80GB	19P4876	--	R/W		--
	80 GB	12 MBps	X23-80GB	24R2137	--	R/W		--
	40 GB	12 MBps	X10-40GB	24R2136	--	R/W		--
	20 GB	12 MBps	X6-20GB	24R2134	--	R/W		--
	20 GB	12 MBps	X6-test	24R2135	--	R/W		--
LTO 1	100 GB	24 MBps	LTO Ultrium 1	09L9120			R/W	--
LTO 2	200 GB	35 MBps	LTO Ultrium 2	08L9870			R/W	--
DAT72[f] (DDS5)	36 GB	3 MBps	DAT72	18P7912	--	--	--	R/W
	20 GB	3 MBps	DDS4	59H4456	--	--	--	R/W
	12 GB	3 MBps	DDS3	59H3465	--	--	--	R/W

a. Throughput up to 2X with data compression.
b. Feature Code #8755 is an optional replacement for a 4 mm tape drive in System i Model 515 Express Configuration 1 or 3.
c. The VXA-2 drive can use VXA1 and VXA2 formats.
d. The VXA3 format doubles the native capacity of the media.
e. The VXA-320 drive can use VXA2 and VXA3 formats. The VXA-320 drive can read VXA-1 formats.
f. Indicates that the capacity and data transfer rate can double typically when the compression option is selected.

8.5 External SCSI, Fibre Channel tape, and optical cable part numbers for IBM System i and iSeries systems

The following tables provide the cable part number for SCSI and Fibre Channel-attached devices. Part numbers might not be available in all countries or regions.

Note: The length in feet is rounded to the nearest whole number.

SCSI cables for #2729 PCI Magnetic Media Controller, #2749 PCI Ultra Magnetic Media Controller, #6534 Magnetic Media Controller, and #6501 Tape/Disk Device Controller			
Tape drive	**Length**	**Part number**	**Feature code**
3490 C10, C11, C22 with #5040 - SCSI attach #6501 attach only	4.5m (15 ft) 12.0m (39 ft) 18.0m (59 ft)	61G8328 61G8329 61G8330	6045 6120 6180
3490 E01, E11 3590 B11, B1A, E11, E1A, H11, H1A	2.8m (9 ft) (HD68 to HD68) 4.5m (15 ft) (HD68 to HD68) 12.0m (39 ft)(HD68 to HD68) 18.0m (59 ft)(HD68 to HD68) 25.0m (82 ft)(HD68 to HD68)	05H4647 05H4648 05H4649 05H4650 05H4651	5128 5145 5112 5118 5125
3490 F00, F01, F11 3570 BXX and CXX 7208 - 342 9427 - 210, 211	0.5m (2 ft) (HD68 to HD68) 4.5m (15 ft) (HD68 to HD68) 12.0m (39 ft)(HD68 to HD68) 18.0m (59 ft)(HD68 to HD68) 25.0m (82 ft)(HD68 to HD68)	49G6456 49G6457 49G6458 49G6459 08L6201	5205 5245 5212 5218 5225 (3570 Cxx)
3580-H11, H13, H23 3581-H17 3581-L28 (with #3104 HVD converter) 3582-L23 3583 HVD drives 3584 HVD drives #1455 if shipped prior to 31 August 2001, and HVD drives #1465 [a]	0.41m (1.5 ft)(HD68 to HD68) 0.72m (2.4 ft) (HD68 to HD68) 2.5m (8 ft)(HD68 to HD68) 5.0m (16 ft) (HD68 to HD68) 10.0m (33 ft)(HD68 to HD68) 18.0m (59 ft) (HD68 to HD68) 25.0m (82 ft) (HD68 to HD68) VHDCI to HD68 interposer Interposer for #6501	19P0872 19P0873 35L1307 19P0052 19P0053 19P0097 19P0054 19P0482 05H3834	 5302 (9702 - 3580, 3581) 5305 (9705 - 3583) 5310 5318 5325 5099 2895

a. 3584 HVD drives #1455 shipped on or after 31 August 2001 and HVD drives #1475 have VHDCI connectors. These drives can use the VHDCI to HD68 cables shown for adapters #5702 and #5705, or they require the VHDCI to HD68 interposer.

SCSI cables for #2729 PCI Magnetic Media Controller, #2749 PCI Ultra Magnetic Media Controller, and #6534 Magnetic Media Controller			
Tape drive	**Length**	**Part number**	**Feature code**
3995 - C4x	12.0m (39 ft) 12.0m (39 ft) (for #2621 attach only)	05H5543 05H5439	7401/9401 7400/9400
7208 - 012	1.5m (5 ft) 4.0m (13 ft) 12.0 (39 ft)	52G0174 59H3462 59H3463	2871 2903 2904
7208 - 222/ 232/234 9348 - 001/002	1.0m (3 ft) 4.0m (13 ft) 12.0m (39 ft)	06H6037 59H3460 59H3461	2875 2901 2902
7208 - 342	4.5m (15 ft) 12.0m (39 ft) 18.0m (59 ft)	49G6457 49G6458 49G6459	5245/9245 5212/9212 5218/9218

SCSI cables for #2718 PCI Magnetic Media Controller and #2768 PCI Magnetic Media Controller			
Tape drive	**Length**	**Part number**	**Feature code**
7206-VX2 7206-VX3	1.5m (5 ft) (HD68 to HD68) 2.5m (8 ft) (HD68 to HD68)	19P4506 35L1307	5300/9750 5302/9752
7207 - 122 7207 - 330 7208 - 345	1.5m (5 ft) (HD68 to HD68) 2.5m (8 ft) (HD68 to HD68)	19P4506 35L1307	5300/9750 5302/9752
7210 - 020	1.0m (3 ft) (HD68 to LD50)	06H6037	2872/9148
7210 - 025[a] 7210 - 030[b, c] 7212 - 102[b, c]	1.5m (5 ft) (HD68 to HD68) 2.5m (8 ft) (HD68 to HD68)	19P4506 35L1307	5300/9750 5302/9752
7329 - 308	2.4m (8ft) (HD68 to HD68)	67G1260	5224/9224

a. Maximum cable length for the 7210-025 is 2.5 m.

b. The Model 7210-030 and 7212-102 do not connect via the #2718.

c. The maximum cable length attached to the #2768 is 2.5 m.

SCSI cables for the #5715/#5705 PCI-X Tape/DASD Controller (one port), #5702 PCI-X Ultra Tape Controller/#5712 PCI-X Tape/DASD Controller (two ports, VHDCI interface), #0647/#5775 PCI-X Disk/Tape Controller without IOP and #5736 PCI-X Disk/Tape Controller with IOP/#5766 PCI-X Tape Controller			
Tape drive	**Length**	**Part number**	**Feature code**
3580-L23 3582 Drives #8103, #8203 3583 Drives #8103	2.5m (8 ft) (VHDCI to HD68) 4.5m (14.5 ft) (VHDCI to HD68) 10.0m (33 ft) (VHDCI to HD68) 20.0m (66 ft) (VHDCI to HD68) 25.0m (82 ft) (VHDCI to HD68) Interposer VHDCI to HD68	19P0279 19P0050 19P0048 19P0049 35L1977 19P0872	5602 (9703 - 3580) 5604 (9704 - 3583) 5610 5620 5625 5099
3581-L28	2.5m (8 ft) (VHDCI to HD68) 4.5m (14.5 ft) (VHDCI to HD68) 10.0m (33 ft) (VHDCI to HD68) 25.0m (82 ft) (VHDCI to HD68)	CRU[a]	5602 (9703) 5604 5610 5625
3584 Drives #1474	4.5m (14.5 ft) (VHDCI to VHDCI) 10.0m (33 ft) (VHDCI to VHDCI) 20.0m (66 ft) (VHDCI to VHDCI) 25.0m (82 ft) (VHDCI to VHDCI)	19P2499 09L0881 19P1904 19P2500	5704 5710 5702 5725
3996-032, 080, 174	4.5m (14.5 ft) (VHDCI to HD68) 10.0m (33 ft) (VHDCI to HD68)	19P0050 19P0048	5604 5610
7206-VX2 7206-VX3 7206-336 7208-345	1.5m (5 ft) (VHDCI to HD68) 2.5m (8 ft) (VHDCI to HD68) 4.5m (14.5 ft) (VHDCI to HD68)[b] 10.0m (33 ft) (VHDCI to HD68) [b]	19P4508 19P0279 19P0050 19P0048	5601/9761 5602/9762 5604/9764 5610/9760
7207 - 122	1.5m (5 ft) (VHDCI to HD68) 2.5m (8 ft) (VHDCI to HD68)	19P4508 19P0279	5601/9761 5602/9762
7207 - 330	1.5m (4.5 ft) (VHDCI to HD68) 2.5m (8 ft) (VHDCI to HD68) 4.5m (14.5 ft) (VHDCI to HD68)[b] 10.0m (33 ft) (VHDCI to HD68)[b]	19P4508 19P0279 19P0050 19P0048	5601/9761 5602/9762 5604/9764 5610/9760
7210 - 020	1.0m (3 ft) (HD68 to LD50) also require interposer VHDCI to HD68	06H6037 19P0482	2872/9148 5099
7210 - 025	0.5m (2 ft) (VHDCI to HD68) 1.5m (5 ft) (VHDCI to HD68) 2.5m (8 ft) (VHDCI to HD68)	19P4507 19P4508 19P0279	5600/9765 5601/9761 5602/9762
7210 - 030[b]	0.5m (2 ft) (VHDCI to HD68) 1.5m (4.5 ft) (VHDCI to HD68) 2.5m (8 ft) (VHDCI to HD68) 4.5m (14.5 ft) (VHDCI to HD68)[b]	19P4507 19P4508 19P0279 19P0050	5600/9765 5601/9761 5602/9762 5604/9764
7212 - 102[b]	0.5m (2 ft) (VHDCI to HD68) 1.5m (4.5 ft) (VHDCI to HD68) 2.5m (8 ft) (VHDCI to HD68) 4.5m (14.5 ft) (VHDCI to HD68)[b] 10.0m (33 ft) (VHDCI to HD68)[b]	19P4507 19P4508 19P0279 19P0050 19P0048	5600/9765 5601/9761 5602/9762 5604/9764 5610/9760

a. Customer Replaceable Unit; use feature code to order.

b. The 4.5 m and 10.0 m cable can be used only if the 7206-VX2, 7206-336, 7207-330, 7212-102, or 7208-345 is the only device on the bus.

Fibre Channel cables for #5704 PCI-X Fibre Channel Tape Controller (LC) and #2765 PCI Fibre Channel Tape Controller (LC)			
Tape device	**Length**	**Part number**	**Feature code**
3581-F28	5m (16 ft) Fibre Channel (LC-LC) 25m (82 ft) Fibre Channel (LC-LC) 61m (200 ft) Fibre Channel (LC-LC) 7m (23 ft) Fibre Channel (LC-SC) 22m (72 ft) Fibre Channel (LC-SC) 61m (200 ft) Fibre Channel (LC-SC)	CRU[a]	#6005 #6025 #6061 #5907 #5922 #5961
3582 Drives #8105, #8205	5m (16 ft) Fibre Channel (LC-LC) 13m (43 ft) Fibre Channel (LC-LC) 25m (82 ft) Fibre Channel (LC-LC) 61m (200 ft) Fibre Channel (LC-LC) 7m (23 ft) Fibre Channel (LC-SC) 13m (43 ft) Fibre Channel (LC-SC) 22m (72 ft) Fibre Channel (LC-SC) 61m (200 ft) Fibre Channel (LC-SC)	19K1252 11P3880 19K1253 11P3884 11P3895 11P3896 11P3897 11P3900	#6005 #6013 #6025 #6061 #5907 #5913 #5922 #5961
3583 Drives #8105 or SDGM	5m (16 ft) Fibre Channel (LC-LC) 13m (43 ft) Fibre Channel (LC-LC) 25m (82 ft) Fibre Channel (LC-LC) 61m (200 ft) Fibre Channel (LC-LC) 7m (23 ft) Fibre Channel (LC-SC) 13m (43 ft) Fibre Channel (LC-SC) 22m (72 ft) Fibre Channel (LC-SC) 61m (200 ft) Fibre Channel (LC-SC) 5m (16 ft) Fibre Channel (SC-SC) 13m (43 ft) Fibre Channel (SC-SC) 25m (82 ft) Fibre Channel (SC-SC) 61m (200 ft) Fibre Channel (SC-SC)	19K1252 11P3880 19K1253 11P3884 11P3895 11P3896 11P3897 11P3900 03K9202 54G3386 03K9204 54G3390	**#6005** #6013 #6025 #6061 **#5907** #5913 #5922 #5961 #5805 #5813 #5825 #5861
3584 Fibre Channel Drives #1456, #1466, #1479	5m (16 ft) Fibre Channel (LC-LC) 13m (43 ft) Fibre Channel (LC-LC) 25m (82 ft) Fibre Channel (LC-LC) 61m (200 ft) Fibre Channel (LC-LC) 7m (23 ft) Fibre Channel (LC-SC) 13m (43 ft) Fibre Channel (LC-SC) 22m (72 ft) Fibre Channel (LC-SC) 61m (200 ft) Fibre Channel (LC-SC) 5m (16 ft) Fibre Channel (SC-SC) 13m (43 ft) Fibre Channel (SC-SC) 25m (82 ft) Fibre Channel (SC-SC) 61m (200 ft) Fibre Channel (SC-SC)	19K1252 11P3880 19K1253 11P3884 11P3895 11P3896 11P3897 11P3900 03K9202 54G3386 03K9204 54G3390	**#6005** #6013 #6025 #6061 **#5907** #5913 #5922 #5961 #5805 #5813 #5825 #5861
3590-E1A, E11, H1A, H11	7m (23 ft) Fibre Channel (LC-SC) 13m (43 ft) Fibre Channel (LC-SC) 22m (72 ft) Fibre Channel (LC-SC) 61m (200 ft) Fibre Channel (LC-SC) 5m (16 ft) Fibre Channel (SC-SC) 13m (43 ft) Fibre Channel (SC-SC) 25m (82 ft) Fibre Channel (SC-SC) 61m (200 ft) Fibre Channel (SC-SC)	11P3895 11P3896 11P3897 11P3900 03K9201 54G3386 03K9203 54G3390	#5907 #5913 #5922 #5961 #5805 #5813 #5825 #5861
3592-J1A	5m (16 ft) Fibre Channel (LC-LC) 13m (43 ft) Fibre Channel (LC-LC) 25m (82 ft) Fibre Channel (LC-LC) 61m (200 ft) Fibre Channel (LC-LC) 7m (23 ft) Fibre Channel (LC-SC) 13m (43 ft) Fibre Channel (LC-SC) 22m (72 ft) Fibre Channel (LC-SC) 61m (200 ft) Fibre Channel (LC-SC)	19K1252 11P3880 19K1253 11P3884 11P3895 11P3896 11P3897 11P3900	#6005 #6013 #6025 #6061 #5907 #5913 #5922 #5961

a. Customer Replaceable Unit; use feature code to order

8.6 Device cabling rules for #5702, #5705, #5712, #5715, #5736, #2718, and #2768 PCI Magnetic Media Controller

The #2718, #2768, #5702, #5705, #5712, and #5715 provide Ultra SCSI attachment capability for an external tape, an external CD-ROM device, or an external DVD-RAM device that has a Single Ended SCSI. The #5702 PCI-X Ultra Tape Controller and #5712 PCI-X Tape/DASD Controller have two SCSI ports, each port providing the same attachment capability of the #2718, #2768, #5705, and #5715. This doubles the capability.

The following devices are supported:

- 7206-VX2 80 GB External VXA-2 Tape Drive
- 7206-VX3 160 GB External VXA-320 Tape
- 7206-336 External DDS Gen 5 Tape Drive
- 7207-122 4 GB External SLR5 Tape Drive
- 7207-330 30 GB External SLR60 Tape Drive
- 7208-345 60 GB External 8mm Tape Drive
- 7210-020 External CD-ROM
- 7210-025 External DVD-RAM
- 7210-030 External DVD-RAM
- 7212-102 IBM TotalStorage Storage Device Enclosure
- 7329-308 SLR100 ¼-inch Tape Autoloader

The following combination of devices is supported:

- One 7206-VX2
- One 7206-VX3
- One 7206-336
- One 7207-122
- One 7207-330
- One 7208-345
- One 7210-020
- One 7210-025
- One 7210-030
- One 7212-102
- One 7329-308
- Two 7210-025s

  The two devices are daisy-chained.
- Two 7210-030s

  The two devices are daisy-chaned.
- One 7210-025 and one 7210-020

  The two devices are daisy-chained with the 7210-025 physically connected first; no #0120 attachment specify code is required for the 7210-020.
- One 7210-030 and one 7207-122

  The two devices are daisy-chained with the 7207-122 physically connected first.
- One 7210-030 and one 7208-345

  The two devices are daisy-chained withe the 7208-345 physically connected first.
- One 7210-030 and one 7210-025

  The two devices are daisy-chained with the 7210-030 physically connected first.

- One 7207-122 and one 7210-020

  The two devices are daisy-chained with the 7207-122 physically connected first; no #0120 attachment specify code is required for the 7210-020.

- One 7207-122 and one 7210-025

  The two devices are daisy-chained with the 7207-122 physically connected first.

- One 7208-345 and one 7210-020
- The two devices are daisy-chained with the 7208-345 physically connected first; no #0120 attachment specify code is required for the 7210-020.
- One 7208-345 and one 7210-025

  The two devices are daisy-chained with the 7208-345 physically connected first.

The #0120 7210-020 Attachment Specify is required for each 7210-020 External CD-ROM drive to be connected directly (not daisy-chained) to the system through a #2718, #2768, #5702, or #5705.

7210-020: If the 7210-020 is to be daisy chained with another external device, this specify code must not be present.

The #0162 Extended Single Ended Attach Specify is required when these devices are directly attached (not second on a daisy-chained string) to an iSeries server via a #2718 PCI Magnetic Media Controller, #2768 PCI Magnetic Media Controller, #5702 PCI-X Ultra Tape Controller/#5712 PCI-X Tape/DASD Controller, or #5705//#5715 PCI-X Tape/DASD Controller.

- 7210-025 External DVD-RAM
- 7210-030 External DVD-RAM
- 7329-308 SLR100 ¼-inch Tape Autoloader

#0162: If any of these devices are daisy-chained off another device, the #0162 specify must not be present.

9

Customer Card Identification Numbers cross-reference

In this chapter, we list the Customer Card Identification Number (CCIN) and feature code for many System i5 family features. The purpose of this chapter is to assist IBM Clients and personnel in configuring Miscellaneous Equipment Specifications (MES) and upgrades. In this chapter, we provide a cross-reference for the CCIN reported by the Hardware Resources Listing with a feature code used for ordering.

The CCIN is used when working from a Hardware Resource Listing. The Hardware Resource Listing is also known as the *Rack Configuration Listing*. The entries selected are those that are most useful when interpreting Hardware Resource Listings.

See Chapter 10, “Feature code cross-reference” on page 413, for a list of CCINs sorted by feature code. The feature code is used by marketing to report configurations and work with upgrades.

Changes have been made to this chapter as of 7 September 2007.

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CCIN	Feat. code	Description
0047	0047	Device Parity RAID-6 All
0121	0121	#0121 Lower Unit in Rack Specify
0122	0122	#0122 Upper Unit in Rack Specify
0135	0135	Rear Cover - CEC only
0136	0136	Rear Cover - CEC with #7116
0145	0145	AIX Partition Specify
0150	0150	820 Base Processor
0151	0151	820 Base Processor
0152	0152	820 Base Processor
0165	0165	VHDCI Attachment
0226	0226	1 Gbps Ethernet Specify
0272	0272	Renovated by IBM
0290	0290	Ext Tape Attached via #5736, #5775
0297	0297	Model 250 Package - 2295
0298	0298	Model 250 Package - 2296
0299	0299	MES Conversion Analysis for #5580, #5581
0329	0329	V.24/EIA232 80-ft Cable
032A	0327	Operations Console Cable
032B	0328	Operations Console Cable
032C	0367	Operations Console PCI Cable
0330	0330	V.24/EIA232 20-ft Cable
0331	0331	V.24/EIA232 50-ft Cable
0332	0332	V.24/EIA232 20-ft Enh Cable
0333	0333	V.24/EIA232 50-ft Enh Cable
0334	0334	V.24/EIA232 80-ft Enh Cable
0335	0335	V.36/EIA449 20-ft Cable
0336	0336	V.36/EIA449 50-ft Cable
0337	0337	V.36/EIA449 150-ft Cable
0338	0338	V.35 20-ft Cable
0339	0339	V.35 50-ft Cable
0340	0340	V.35 80-ft Cable
0341	0341	X.21 20-ft Cable
0342	0342	X.21 50-ft Cable
0343	1460	3m Copper HSL Cable
0344	0344	20-ft Comm Console Cable
0348	0348	V.24/EIA232 20-ft PCI Cable
0349	0349	V.24/EIA232 50-ft PCI Cable
0350	0350	V.24/EIA232 20-ft E PCI Cable
0351	0351	V.24/EIA232 50-ft E PCI Cable
0352	0352	V.24/EIA232 80-ft E PCI Cable
0353	0353	V.35 20-ft PCI Cable
0354	0354	V.35 50-ft PCI Cable
0355	0355	V.35 80-ft PCI Cable
0356	0356	V.36 20-ft PCI Cable
0357	0357	V.36 50-ft PCI Cable
0358	0358	V.36 150-ft PCI Cable
0359	0359	X.21 20-ft PCI Cable
0360	0360	X.21 50-ft PCI Cable
0361	1461	6m Copper HSL Cable
0362	0362	Comm Console PCI Cable
0364	0364	Parallel Cable
0365	0365	V.24/EIA232 80-ft PCI Cable
0368	1462	15m Copper HSL Cable
0380	0380	Remote Control Panel Cable
0381	0381	Remote Control Panel Cable
0382	0382	Remote Control Panel Cable

CCIN	Feat. code	Description
0383	0383	Remote Control Panel Cable
0446	0426	512 MB Server Memory
0446	0446	512 MB DDR Server Memory
0446	9726	Base 512 MB Server Memory
0447	0427	1 GB Server Memory
0447	0447	1 GB DDR Server Memory
0448	0428	2 GB Server Memory
0448	0448	2 GB DDR Server Memory
0530	0530	Software Version V5R3
0531	0531	#0531 i5/OS V5R3M5 LIC
0532	0532	V5R4 OS, V5R4M0 LIC
0550	0550	#0550 iSeries Rack - 830 Rack
0551	0551	#0551 System i 36U 1.8m Rack
0553	0553	#0553 System i 42U 2.0m Rack
0599	0599	Rack filler kit
1307	1307	1.75 m HSL-2 Cable
1308	1308	2.5 m HSL-2Cable
1468	1468	250 m Optical SPCN Cable
1469	1468	4.3m/200V/25A HD Wired EMEA
1470	1470	6m HSL Optical Cable
1471	1471	30m HSL Optical Cable
1472	1472	100m HSL Optical Cable
1473	1473	250m HSL Optical Cable
1474	1474	6m HSL to HSL-2 Cable
1475	1475	10m HSL to HSL-2 Cable
1481	1481	1.2m HSL-2 Cable
1482	1482	3.5m HSL-2 Cable
1483	1483	10m HSL-2 Cable
1485	1485	15m HSL-2 Cable
1500	1500	Interactive Capacity Card
1501	1501	Interactive Capacity Card
1502	1502	Interactive Capacity Card
1503	1503	Interactive Capacity Card
1504	1504	Interactive Capacity Card
1505	1505	Interactive Capacity Card
1506	1506	Interactive Capacity Card
1507	1507	Interactive Capacity Card
1508	1508	Interactive Capacity Card
1509	1509	Interactive Capacity Card
1510	1510	Interactive Capacity Card
1511	1511	Interactive Capacity Card
1512	1512	Interactive Capacity Card
1513	1513	Interactive Capacity Card
1514	1514	Interactive Capacity Card
1516	1516	Interactive Capacity Card
1517	1517	Interactive Capacity Card
1518	1518	Interactive Capacity Card
1519	1519	Interactive Capacity Card
1520	1520	Interactive Capacity Card
1521	1521	Interactive Capacity Card
1522	1522	Interactive Capacity Card
1523	1523	Interactive Capacity Card
1524	1524	Interactive Capacity Card
1525	1525	Interactive Capacity Card
1526	1526	Interactive Capacity Card
1527	1527	Interactive Capacity Card
1531	1531	Interactive Capacity Card
1532	1532	Interactive Capacity Card

CCIN	Feat. code	Description
1533	1533	Interactive Capacity Card
1534	1534	Interactive Capacity Card
1535	1535	Interactive Capacity Card
1536	1536	Interactive Capacity Card
1537	1537	Interactive Capacity Card
1540	1540	Interactive Capacity Card
1541	1541	Interactive Capacity Card
1542	1542	Interactive Capacity Card
1543	1543	Interactive Capacity Card
1544	1544	Interactive Capacity Card
1545	1545	Interactive Capacity Card
1546	1546	Interactive Capacity Card
1547	1547	Interactive Capacity Card
1548	1548	Interactive Capacity Card
1576	1576	Interactive Capacity Card
1577	1577	Interactive Capacity Card
1578	1578	Interactive Capacity Card
1579	1579	Interactive Capacity Card
1581	1581	Interactive Capacity Card #5229
1583	1583	Interactive Capacity Card
1585	1585	Interactive Capacity Card
1587	1587	Interactive Capacity Card
1588	1588	Interactive Capacity Card
1591	1591	Interactive Capacity Card
1800	1800	HSL-2 Ports - 2 Copper
1801	1801	HSL-2 Ports - 2 Optical
1802	1802	12X Channel CEC GX Adapter IBT 2 port
1806	1806	HSL-2 Ports - 2 Copper
1807	1807	HSL-2 Ports - 2 Optical
180A	7882	SCSI to IDE Converter Card
181A	5636	#5636 - IVE - 2x1Gb Ethernet
181C	5639	#5639 - IVE - 4x1Gb Ethernet
182A	1827	Serial-UPS Conversion Cable
185D	1857	2 Enclosure SP Flex Cable
185E	1858	3 Enclosure SP Flex Cable
185F	1859	4 Enclosure SP Flex Cable
2010	2010	1.6 SPPR CPU for Model 20S
2030	2030	0.7 SPPR CPU for Model 200
2031	2031	1.1 SPPR CPU for Model 200
2032	2032	1.6 SPPR CPU for Model 200
2040	2040	1.1 SPPR Processor
2041	2041	1.6 SPPR Processor
2042	2042	2.0 SPPR Processor
2043	2043	3.0 SPPR Processor
2044	2044	5.0 SPPR Processor
2050	2050	6.4 SPPR Processor
2051	2051	11.4 SPPR Processor
2052	2052	16.8 SPPR Processor
2058	4805	PCI Crypto Accelerator
2066	2066	Model 730 2-way Processor
206A	2061	720 (240 CPW) with #1500 Interactive
206B	2061	720 (240 CPW) with #1501 Interactive
206C	2061	720 (240 CPW) with #1502 Interactive
206D	2062	720 (420 CPW) with #1500 Interactive
206E	2062	720 (420 CPW) with #1501 Interactive
206F	2062	720 (420 CPW) with #1502 Interactive
207A	2062	720 (420 CPW) with #1503 Interactive

CCIN	Feat. code	Description
207B	2063	720 (810 CPW) with #1500 Interactive
207C	2063	720 (810 CPW) with #1502 Interactive
207D	2063	720 (810 CPW) with #1503 Interactive
207E	2063	720 (810 CPW) with #1504 Interactive
207F	2064	720 (1600 CPW) with #1500 Interactive
208A	2064	720 (1600 CPW) with #1502 Interactive
208B	2064	720 (1600 CPW) with #1503 Interactive
208C	2064	720 (1600 CPW) with #1504 Interactive
208D	2064	720 (1600 CPW) with #1505 Interactive
2114	2114	External SCSI Y-Cable
2118	1850	VHDCI to P Converter Cable
2159	2159	Model 170 Processor
2160	2160	Model 170 Processor
2164	2164	Model 170 Processor
2176	2176	Model 170 Processor
2183	2183	Model 170 Processor
2207	2207	Model S40 8-way Processor
2208	2208	Model S40 12-way Processor
2248	2248	Model 270 Processor
2250	2250	Model 270 Processor
2252	2252	Model 270 Processor
2253	2253	Model 270 2-way Processor
2289	2289	Model 170 Processor
2290	2290	Model 170 Processor
2290	2298	Model 170 Processor Package 64 MB
2291	2291	Model 170 Processor
2291	2299	Model 170 Processor Package 64 MB
2292	2292	Model 170 Processor
2295	0297	Model 250 Package
2295	2295	Model 250 Processor
2296	0298	Model 250 Package
2296	2296	Model 250 Processor
22A2	2248	270 (150 CPW) with #1517 Interactive
22A4	2250	270 (370 CPW) with #1516 Interactive
22A5	2250	270 (370 CPW) with #1518 Interactive
22A7	2252	270 (950 CPW) with #1516 Interactive
22A8	2252	270 (950CPW) with #1519 Interactive
22AA	2253	270 (2000 CPW) with #1516 Interactive
22AB	2253	270 (2000 CPW) with #1520 Interactive
2315	2315	Model SB2 8-way Processor
2316	2316	Model SB3 12-way Processor
2318	2318	Model SB3 24-way Processor
2341	2341	Model S40 ISV 12-way Processor
2349	2349	Model 830 4/8-way Processor
2351	2351	Model 830 1/8-way POD
2352	2352	Model 840 8/12-way POD
2353	2353	Model 840 12/18-way POD
2354	2354	Model 840 18/24-way POD
2383	2383	Model 170 Processor
2384	2384	Model 170 Processor
2385	2385	Model 170 Processor
2386	2386	Model 170 Processor
2388	2388	Model 170 2-way Processor
2395	2395	Model 820 Processor
2396	2396	Model 820 Processor
2397	2397	Model 820 2-way Processor
2398	2398	Model 820 4-way Processor
23A1	2395	820 (370 CPW) with #1521 Interactive

CCIN	Feat. code	Description
23A2	2395	820 (370 CPW) with #1522 Interactive
23A3	2395	820 (370 CPW) with #1523 Interactive
23A4	2395	820 (370 CPW) with #1524 Interactive
23A9	2396	820 (950 CPW) with #1521 Interactive
23AA	2396	820 (950 CPW) with #1522 Interactive
23AB	2396	820 (950 CPW) with #1523 Interactive
23AC	2396	820 (950 CPW) with #1524 Interactive
23AD	2396	820 (950 CPW) with #1525 Interactive
23B1	2397	820 (2000 CPW) with #1521 Interactive
23B2	2397	820 (2000 CPW) with #1522 Interactive
23B3	2397	820 (2000 CPW) with #1523 Interactive
23B4	2397	820 (2000 CPW) with #1524 Interactive
23B5	2397	820 (2000 CPW) with #1525 Interactive
23B6	2397	820 (2000 CPW) with #1526 Interactive
23B8	2398	820 (3200 CPW) with #1521 Interactive
23B9	2398	820 (3200 CPW) with #1522 Interactive
23BA	2398	820 (3200 CPW) with #1523 Interactive
23BB	2398	820 (3200 CPW) with #1524 Interactive
23BC	2398	820 (3200 CPW) with #1525 Interactive
23BD	2398	820 (3200 CPW) with #1526 Interactive
23BE	2398	820 (3200 CPW) with #1527 Interactive
23C1	2400	830 (1850 CPW) with #1531 Interactive
23C2	2400	830 (1850 CPW) with #1532 Interactive
23C3	2400	830 (1850 CPW) with #1533 Interactive
23C4	2400	830 (1850 CPW) with #1534 Interactive
23C5	2400	830 (1850 CPW) with #1535 Interactive
23D1	2402	830 (4200 CPW) with #1531 Interactive
23D2	2402	830 (4200 CPW) with #1532 Interactive
23D3	2402	830 (4200 CPW) with #1533 Interactive
23D4	2402	830 (4200 CPW) with #1534 Interactive
23D5	2402	830 (4200 CPW) with #1535 Interactive
23D6	2402	830 (4200 CPW) with #1536 Interactive
23D8	2403	830 (7350 CPW) with #1531 Interactive
23D9	2403	830 (7350 CPW) with #1532 Interactive
23DA	2403	830 (7350 CPW) with #1533 Interactive
23DB	2403	830 (7350 CPW) with #1534 Interactive
23DC	2403	830 (7350 CPW) with #1535 Interactive
23DD	2403	830 (7350 CPW) with #1536 Interactive
23DE	2403	830 (7350 CPW) with #1537 Interactive
23E7	2431	Model 270 Processor with #1518
23E8	2418	840 (10000 CPW) with #1540 Interactive
23E9	2418	840 (10000 CPW) with #1541 Interactive
23EA	2418	840 (10000 CPW) with #1542 Interactive
23EB	2418	840 (10000 CPW) with #1543 Interactive
23EC	2418	840 (10000 CPW) with #1544 Interactive
23ED	2418	840 (10000 CPW) with #1545 Interactive
23EE	2418	840 (10000 CPW) with #1546 Interactive
23F0	2432	Model 270 Processor with #1516
23F1	2432	Model 270 Processor with #1519
23F4	2434	Model 270 Processor with #1516
23F5	2434	Model 270 Processor with #1520
23F8	2420	840 (16500 CPW) with #1540 Interactive
23F9	2420	840 (16500 CPW) with #1541 Interactive
23FA	2420	840 (16500 CPW) with #1542 Interactive
23FB	2420	840 (16500 CPW) with #1543 Interactive
23FC	2420	840 (16500 CPW) with #1544 Interactive
23FD	2420	840 (16500 CPW) with #1545 Interactive
23FE	2420	840 (16500 CPW) with #1546 Interactive

CCIN	Feat. code	Description
23FF	2420	840 (16500 CPW) with #1547 Interactive
2400	2400	Model 830 2-way Processor
2402	2402	Model 830 4-way Processor
2403	2403	Model 830 8-way Processor
2407	2407	Dedicated Domino Processor
2408	2408	Dedicated Domino Processor
2409	2409	Dedicated Domino Processor (2-way)
2410	2410	100 Client Server Processor
2411	2411	3.0 SPPR Processor
2412	2412	6.1 SPPR Processor
2416	2416	Model 840 8/12-way POD
2417	2417	Model 840 12/18-way POD
2418	2418	Model 840 12-way Processor
2419	2419	Model 840 18/24-way POD
241B	2069	Model 740 8-way Processor
241B	2070	Model 740 12-way Processor
241C	2067	Model 730 4-way Processor
241D	2068	Model 730 8-way Processor
241F	2065	Model 730 Processor
2420	2420	Model 840 24-way Processor
2422	2422	Dedicated Domino Processor
2423	2423	Dedicated Domino Processor
2424	1851	0.6m SCSI P-P Cable
2424	2424	Dedicated Domino 2-way Processor
2425	1852	2.5m SCSI P-P Cable
2425	2425	Dedicated Domino Processor
2426	2426	Dedicated Domino 2-way Processor
2427	2427	Dedicated Domino 4-way Processor
242B	2064	Model 720 4-way Processor
242C	2062	Model 720 Processor
242D	2063	Model 720 2-way Processor
2431	2431	Model 270 Processor
2434	2434	Model 270 2-way Processor
2435	2435	Model 820 Processor
2436	2436	Model 820 Processor
2437	2437	Model 820 2-way Processor
2438	2438	Model 820 4-way Processor
243A	2061	Model 720 Processor
2452	2452	Dedicated Domino Processor
2454	2454	Dedicated Domino 2-way Processor
2456	2456	Dedicated Domino Processor
2457	2457	Dedicated Domino 2-way Processor
2458	2458	Dedicated Domino 4-way Processor
245D	0153	Model 830 8-way Processor
2461	2461	Model 840 24-way Processor
25B9	2463	Model 800 1-way Processor
25BA	2464	Model 800 1-way Processor
25BA	2465	Model 810 1-way Processor
25BA	2466	Model 810 1-way Processor
25F0	2467	Model 810 1-way Processor
25EB	2469	Model 810 2-way Processor
246F	0158	Model 840 12-way Processor
246F	0159	Model 840 24-way Processor
25DC	2473	Model 825 3/6-way Processor
25DC	2495	Model 825 1/6-way Processor
2486	2496	Model 870 2/16-way Processor
2487	2487	Model 890 16/24-way Processor
2487	2497	Model 890 16/24-way Processor

CCIN	Feat. code	Description
2488	2488	Model 890 24/32-way Processor
2488	2498	Model 890 24/32-way Processor
2488	2499	Model 890 4/32-way Processor
2498	0642	PCI Ultra-3 RAID Adapter
249B	2435	Model 820 Processor with #1521
249C	2435	Model 820 Processor with #1522
249D	2435	Model 820 Processor with #1523
249E	2435	Model 820 Processor with #1524
24A8	2436	Model 820 Processor with #1521
24A9	2436	Model 820 Processor with #1522
24AA	2436	Model 820 Processor with #1523
24AB	2436	Model 820 Processor with #1524
24AC	2436	Model 820 Processor with #1525
24B0	2437	Model 820 Processor with #1521
24B1	2437	Model 820 Processor with #1522
24B2	2437	Model 820 Processor with #1523
24B3	2437	Model 820 Processor with #1524
24B4	2437	Model 820 Processor with #1525
24B5	2437	Model 820 Processor with #1526
24B8	2438	Model 820 Processor with #1521
24B9	2438	Model 820 Processor with #1522
24BA	2438	Model 820 Processor with #1523
24BB	2438	Model 820 Processor with #1524
24BC	2438	Model 820 Processor with #1525
24BD	2438	Model 820 Processor with #1526
24BE	2438	Model 820 Processor with #1527
24C0	2416	#1540 interactive 8/12-way 840 POD
24C1	2416	#1541 interactive 8/12-way 840 POD
24C2	2416	#1542 interactive 8/12-way 840 POD
24C3	2416	#1543 interactive 8/12-way 840 POD
24C4	2416	#1544 interactive 8/12-way 840 POD
24C5	2416	#1545 interactive 8/12-way 840 POD
24C6	2416	#1546 interactive 8/12-way 840 POD
24C8	2417	#1540 interactive 12/18-way 840 POD
24C9	2417	#1541 interactive 12/18-way 840 POD
24CA	2417	#1542 interactive 12/18-way 840 POD
24CB	2417	#1543 interactive 12/18-way 840 POD
24CC	2417	#1544 interactive 12/18-way 840 POD
24CD	2417	#1545 interactive 12/18-way 840 POD
24CE	2417	#1546 interactive 12/18-way 840 POD
24D0	2419	#1540 interactive 18/24-way 840 POD
24D1	2419	#1541 interactive 18/24-way 840 POD
24D2	2419	#1542 interactive 18/24-way 840 POD
24D3	2419	#1543 interactive 18/24-way 840 POD
24D4	2419	#1544 interactive 18/24-way 840 POD
24D5	2419	#1545 interactive 18/24-way 840 POD
24D6	2419	#1546 interactive 18/24-way 840 POD
24D7	2419	#1547 interactive 18/24-way 840 POD
24D8	2349	#1531 Interactive 4/8-way 830 CUoD
24D9	2349	#1532 Interactive 4/8-way 830 CUoD
24DA	2349	#1533 Interactive 4/8-way 830 CUoD
24DB	2349	#1534 Interactive 4/8-way 830 CUoD
24DC	2349	#1535 Interactive 4/8-way 830 CUoD
24DD	2349	#1536 Interactive 4/8-way 830 CUoD
24DE	2349	#1537 Interactive 4/8-way 830 CUoD
2515	2515	C10 Floating Pt Processor
2516	2516	C20 Floating Pt Processor
2523	2523	D80 Processor

CCIN	Feat. code	Description
2525	2525	D02 Processor
2528	2528	16.8 SPPR CPU for Model F97
2530	2530	E04 Processor
2531	2413	E06 Processor
2533	2533	E20 Processor
2534	2534	E25 Processor
2536	2536	E35 Processor
2537	2537	E45 Processor
2539	2539	E02 Twinaxial
2540	2540	0.7 SPPR CPU for Model D35
2541	2541	D45 Processor
2542	2542	D50 Processor
2543	2543	D60 Processor
2544	2544	D70 Processor
2552	2552	C06 Processor
2553	2553	D06 Processor
2554	2554	D04 Processor
2555	2555	D10 Processor
2556	2556	D20 Processor
2557	2557	D25 Processor
2558	2558	C04 Processor 8 MB
2559	2559	E50 Processor
2560	2560	E60 Processor
2561	2561	E70 Sort Processor
2562	2562	E80 Sort Processor
2563	2563	E90 (2-way) Sort
2568	2568	E95 (2-way) Sort
2582	2582	F06 Processor
2583	2583	F25 Processor
2584	9584	ASCII Workstation Controller
2585	2414	F02 Processor
2585	9585	Twinaxial Workstation Controller
2586	2586	0.7 SPPR for F04
2587	2587	F10 Processor
2588	2588	F20 Processor
2591	2591	Ext. 1.44 GB Diskette Drive
2592	2592	F35 Processor
2593	2593	F45 Sort Processor
2594	2594	F50 Processor
2595	2595	F60 Sort Processor
2596	2596	F70 Processor 1-way
2597	2597	F80 Processor 2-way
2598	2598	F90 Processor 2-way
259A	2599	F95 Processor 2-way
25B9	2463	Model 800 Processor
25BA	2432	Model 270 Processor
25BA	2452	Dedicated Domino Processor
25BA	2464	Model 800 Processor
25BA	2465	Model 810 Processor
25BA	2466	Model 810 Processor
25BC	0150	Model 820 Base Processor
25BD	0151	Model 820 Base Processor
25BE	0152	Model 820 Base Processor
25D3	0197	Model 890 24-way Processor
25D5	0198	Model 890 32-way Processor
25EB	2469	Model 810 2-way Processor
25F0	2467	Model 810 Processor
25F8	7878	Serial/VPD PCI Card

CCIN	Feat. code	Description
2600	2600	Magnetic Storage Controller
2601	2601	9346 Magnetic Tape Unit Controller
2602	2602	Processor Expansion
2602	2607	9348 Magnetic Tape Unit Attachment
2604	2604	3422 3430 Magnetic Tape Subsystem
2605	2605	ISDN Basic Rate Adapter
2608	2608	2440/9348 HCD Magnetic Tape Attachment
2609	2609	EIA 232/V.24 2-Line Adapter
2609	2654	EIA 232/V.24 2-Line 20E
2609	2655	EIA 232/V.24 2-Line 20
2609	2657	EIA 232/V.24 2-Line 50E
2609	2658	EIA 232/V.24 2-Line 50
2609	8863	EIA 232/V.24 2-Line 20E
2609	8866	EIA 232/V.24 2-Line 50E
2610	2610	X.21 2-Line Adapter
2610	2656	X.21 2-Line 20
2610	2659	X.21 2-Line 50
2611	2611	DASD Controller
2612	2612	EIA 232/V.24 1-Line Adapter
2612	9612	Standard EIA 232/V.24 1-Line/Adapter
2613	2613	V.35 1-Line Adapter
2614	2614	X.21 1-Line Adapter
2617	2617	Ethernet/IEEE 802.3 CSMA/CD
2617	9617	Base Ethernet IOP
2618	2618	Fiber Distributed Data Adapter
2618	8664	Optional Base Fiber DD Interface
2619	2619	16/4 Mbps Token-Ring Adapter
2619	9619	Base 16/4 Mbps Token-Ring IOP
2620	2620	Cryptographic Processor
2621	2621	Removable Media Device Attachment
2622	2622	3490 Magnetic Tape Attachment
2623	2623	Six-Line Comm Controller
2623	9623	Standard Six Line Comm Controller
2624	2624	Storage Device Controller
2624	9624	Store Device Control Specify
2625	2625	Ethrnet/IEEE 802.3 CSMA/CD
2626	2626	16/4 Mbps Token-Ring Adapter
2628	2628	Cryptographic Processor-Comm
2629	2629	LAN/WAN/Workstation IOP
2630	8505	I/O Card Unit Conversion
2634	2634	16/4 Mbps Token-Ring Adapter
2636	2636	16/4 Mbps Token-Ring Adapter
2637	9144	ASCII Workstation Controller
2637	9147	Standard MFIOP/ASCII WSC
2637	9150	Standard MFIOP/ASCII WSC
2638	9146	Standard MFIOP/Twinaxial WSC
2644	2644	34xx Magnetic Tape Attachment
2647	2647	9348 Model 2 Tape Attachment
2651	9651	Storage Device Controller
2654	8609	EIA 232/V.24 2-Line
2654	9609	Standard EIA 232/V.24 2-line
2661	9148	Standard MFIOP/Twinaxial WSC
2661	9151	Standard MFIOP/Twinaxial WSC
2661	9172	Twinaxial MFIOP
2663	2663	I/O Attachment Processor
2664	2664	Integrated Fax Adapter
2665	2665	Copper Dist Data Interface

CCIN	Feat. code	Description
2665	8665	Optional Base Shielded DD Interface
2666	2666	Frame Relay Adapter
2668	2668	AS/400 Wireless LAN Adapter
2669	2669	Shared Bus Interface Card
2670	2670	System Unit Expansion Tower (optical)
2671	2671	PCI Bus IOP
2672	2672	PCI Bus IOP
2673	2673	Optical Bus Adapter
2673	9673	Standard Optical Bus Adapter
2674	2674	Optical Bus Adapter
2680	2680	Optical Bus Receiver (266 Mbps)
2682	2682	Opitcal Bus Receiver (1063 Mbps)
2683	2683	266 Mbps OptiConnect Receiver
2685	2685	1063 Mbps OptiConnect Receive
2686	2686	Optical Link Processor (266 Mbps)
2688	2688	Optical Link Processor (1063 Mbps)
2691	2691	Optical Bus Adapt w/Token Ring
2691	9691	#9691 Base Bus Adapter HSL Copper
2692	2692	Optional Bus Adapt w/Ethernet
2693	2693	Optional Bus Adapt w/Token Ring
2694	2694	Optional Bus Adapt w/Ethernet
2695	2695	Optical Bus Adapter
2696	9696	Base Optical Bus Adapter
2699	2699	2-Line WAN IOA
2699	9699	Base 2-Line WAN IOA
26A8	2351	Model 830 1/8-way POD with #1531
26A9	2351	Model 830 1/8-way POD with #1532
26AA	2351	Model 830 1/8-way POD with #1533
26AB	2351	Model 830 1/8-way POD with #1534
26AC	2351	Model 830 1/8-way POD with #1535
26AD	2351	Model 830 1/8-way POD with #1536
26AE	2351	Model 830 1/8-way POD with #1537
26B0	2352	Model 840 8/12-way POD with #1540
26B1	2352	Model 840 8/12-way POD with #1541
26B2	2352	Model 840 8/12-way POD with #1542
26B3	2352	Model 840 8/12-way POD with #1543
26B4	2352	Model 840 8/12-way POD with #1544
26B5	2352	Model 840 8/12-way POD with #1545
26B6	2352	Model 840 8/12-way POD with #1546
26B8	2353	Model 840 12/18-way POD with #1540
26B9	2353	Model 840 12/18-way POD with #1541
26BA	2353	Model 840 12/18-way POD with #1542
26BB	2353	Model 840 12/18-way POD with #1543
26BC	2353	Model 840 12/18-way POD with #1544
26BD	2353	Model 840 12/18-way POD with #1545
26BE	2353	Model 840 12/18-way POD with #1546
26BF	2353	Model 840 12/18-way POD with #1547
26C0	2354	Model 840 18/24-way POD with #1540
26C1	2354	Model 840 18/24-way POD with #1541
26C2	2354	Model 840 18/24-way POD with #1542
26C3	2354	Model 840 18/24-way POD with #1543
26C4	2354	Model 840 18/24-way POD with #1544
26C5	2354	Model 840 18/24-way POD with #1545
26C6	2354	Model 840 18/24-way POD with #1546
26C7	2354	Model 840 18/24-way POD with #1547
26C8	2354	Model 840 18/24-way POD with #1548
26D0	2461	Model 840 24-way Processor with #1540
26D1	2461	Model 840 24-way Processor with #1541

CCIN	Feat. code	Description
26D2	2461	Model 840 24-way Processor with #1542
26D4	2461	Model 840 24-way Processor with #1544
26D5	2461	Model 840 24-way Processor with #1545
26D6	2461	Model 840 24-way Processor with #1546
26D7	2461	Model 840 24-way Processor with #1547
26D8	2461	Model 840 24-way Processor with #1548
26EA	8961	Model 570 0/2-way Processor
26EA	8961	Model 570 2/4-way Processor
26F2	8971	570 CUoD 0/2way 1.65 HZ Processor
26F2	8971	Model 570 2/4-way Processor
26F2	8971	Model 570 4/8-way Processor
26F2	8971	Model 570 9/12-way Processor
26F2	8971	Model 570 13/16-way Processor
2705	2705	M1 Filler Tray
2706	2706	M2 Terminator Tray
2713	2713	SPD I/O Regulator
2715	2715	Processor/Memory Regulator
2718	2718	PCI Magnetic Media Controller
2720	2720	PCI WAN/Twinaxial IOA
2720	9720	Base PCI WAN/Twinaxial IOA
2721	2721	PCI 2-Line WAN IOA
2721	9721	Base PCI 2-Line WAN IOA
2722	2722	PCI Twinaxial Workstation IOA
2723	2723	PCI Ethernet IOA
2723	4723	PCI 10 Mbps Ethernet IOA
2723	9723	Base Ethernet IOA
2724	2724	PCI 16/4 Mbps Token-Ring IOA
2724	9724	Base 16/4 Mbps Token-Ring IOA
2726	2726	PCI RAID Disk Unit Controller
2728	9728	Base PCI Disk Unit Controller
2729	2729	PCI Magnetic Media Controller
2730	2730	Programmable Regulator
2732	2732	PCI Serial HIPPI Adapter
2732	9732	Base HSL Ports - 8 Copper
2732	9733	Base HSL Ports - 8 Copper
2735	2735	Optical Bus Adapter
2736	2736	Optical Bus Adapter
2737	2737	PCI USB 1.1 Adapter
2737	9737	Base HSL Ports - 16 Copper
2738	2738	HSL Ports - 8 Copper
2739	2739	Optical Bus Adapter
2739	9739	Base Optical Bus Adapter
273B	9730	Base HSL-2 Ports - 4 Copper
2740	2740	PCI RAID Disk Unit Controller
2740	9740	Base PCI RAID Disk Unit Controller
2741	2741	PCI RAID Disk Unit Controller
2742	0613	Linux Direct Attachment - #2742
2742	2742	PCI 2-Line WAN IOA
2742	6805	PCI 2-Line WAN IOA No IOP
2743	0601	Linux Direct Attachment - #2743
2743	2743	PCI 1 Gbps Ethernet IOA
2744	0603	Linux Direct Attachment - #2744
2744	2744	PCI 100 Mbps Token-Ring IOA
2745	0398	Operations Console Package
2745	0608	Linux Direct Attachment - #4745
2745	2745	PCI 2-Line WAN IOA
2745	4745	PCI 2-Line WAN IOA
2745	9745	Base PCI 2-Line WAN IOA

CCIN	Feat. code	Description
2746	2746	PCI Twinaxial Workstation IOA
2746	4746	PCI Twinaxial Workstation IOA
2746	9746	Base PCI Twinaxial Workstation IOA
2748	0605	Linux Direct Attachment - #4748
2748	2748	PCI RAID Disk Unit Controller
2748	4748	PCI RAID Disk Unit Controller
2748	9748	Base PCI Disk Unit Controller
2749	2749	PCI Ultra Magnetic Media Controller
2750	2750	PCI ISDN BRI U IOA
2750	4750	#4750 PCI ISDN BRI U IOA
2751	2751	PCI ISDN BRI S/T IOA
2751	4751	PCI ISDN BRI S/T IOA
2754	2754	HSL Ports - 8 Copper
2754	2777	HSL Ports - 8 Copper
2754	9752	Base HSL Ports - 8 Copper
2754	9777	Base HSL Ports - 8 Copper
2755	2755	HSL Ports -16 Copper
2755	9755	Base HSL Ports -16 Copper
2757	0618	Linux Direct Attachment - #2757
2757	2757	PCI-X Ultra RAID Disk Controller
2758	2758	HSL Ports - 2 Optical/6 Copper
2758	2774	HSL Ports - 2 Optical/6 Copper
2758	9758	Base HSL Ports - 2 Optical/6 Copper
2758	9774	Base HSL Ports - 2 Optical/6 Copper
2759	2759	HSL Ports - 4 Optical/12 Copper
2759	9759	Base HSL Ports-4 Optical/12 Copper
2760	0602	Linux Direct Attachment - #2760
2760	2760	PCI 1 Gbps Ethernet UTP IOA
2761	2761	PCI Integrated Analog Modem
2761	4761	PCI Integrated Analog Modem
2763	0604	Linux Direct Attachment - #2763
2763	2763	PCI RAID Disk Unit Controller
2765	0611	Direct Attachment #2765
2765	2765	PCI Fibre Channel Tape Controller
2766	0612	Linux Direct Attachment - #2766
2766	2766	PCI Fibre Channel Disk Controller
2767	9767	Base PCI Disk Unit Controller
2768	2768	PCI Magnetic Media Controller
2771	9771	Base PCI 2-Line WAN w/Modem
2772	0609	Linux Direct Attachment - #2772
2772	0610	Linux Direct Attachment - #2773
2772	2772	PCI Dual WAN/Modem IOA
2772	2773	PCI Dual WAN/Modem IOA (ANSI)
2773	0610	Linux Direct Attachment - #2773
2776	2776	HSL-2 Ports - 8 Copper
2778	0606	Linux Direct Attachment - #4778
2778	2778	PCI RAID Disk Unit Controller
2778	4778	PCI RAID Disk Unit Controller
2778	9778	Base PCI RAID Disk Unit Controller
2780	0627	Linux Direct Attachment - #2780
2780	2780	PCI Ultra 4 SCSI Disk Controller
2782	0619	Linux Direct Attachment - #2782
2782	2782	PCI-X RAID Disk Unit Controller
2785	2785	HSL-2 Ports - 2 Copper
2785	9785	Base HSL-2 Ports - 2 Copper
2786	2786	HSL Ports - 2 Optical
2786	9786	Base HSL Ports - 2 Optical
2787	0626	Linux Direct Attachment - #2787

CCIN	Feat. code	Description
2788	2788	HSL Ports - 8 Optical
2789	2789	HSL Ports - 4 Optical
2789	9789	Base HSL Ports - 4 Optical
2793	0614	Linux Direct Attachment - #2793
2793	0615	Linux Direct Attachment - #2794
2793	2793	PCI 2-Line WAN w/Modem
2793	2794	PCI 2-Line WAN w/Modem CIM
2793	6803	PCI WAN for ECS No IOP
2793	6804	PCI WAN for ECS (CIM)
2793	6833	PCI 2-Line WAN w/Modem No IOP
2793	6834	PCI 2-Line WAN w/Modem No IOP CIM
2793	9493	Base PCI WAN for ECS
2793	9494	Base PCI WAN for ECS CIM
2793	9793	Base PCI 2-Line WAN w/Modem
2793	9794	Base PCI 2-Line WAN w/Modem CIM
2793	9933	PCI 2-Line WAN w/Modem NoIOP
2793	9934	PCI 2-Line WAN w/Modem NoIOP CIM
27AE	7865	L/ML CEC Backplane
27AF	7877	Model 520 Power Regulator
2800	9800	Internal Disk Unit (640 MB)
2801	2801	1.96 GB Internal Disk Unit
2801	9801	Internal Disk Unit (1 GB)
2802	2802	2.0 GB Internal Disk Unit
2802	9802	Standard 2.0 GB Int Disk Unit
2805	0616	Linux Direct Attachment - #2805
2805	0617	Linux Direct Attachment - #2806
2805	2805	PCI Quad Modem IOA
2805	2806	PCI Quad Modem IOA CIM
2805	6808	PCI 4-Modem WAN IOA No IOP
2805	6809	PCI 4-Modem WAN IOA NoIOP CIM
2806	0617	Linux Direct Attachment - #0617 (CIM)
2809	2809	PCI LAN/WAN/Workstation IOP
280E	5760	PCI-X Fibre Channel Disk Controller
280D	5758	#5758 PCI-X 4Gbps Fibre Channel 1-Port
280D	5761	PCI-X Fibre Channel Tape Controller
2810	2810	LAN/WAN IOP
2811	2811	PCI 25 Mbps UTP ATM
2812	2812	PCI 45 Mbps Coax T3/DS3 ATM
2813	2813	PCI 155 Mbps MMF ATM
2813	2814	PCI 100 Mbps MMF ATM
2815	2815	PCI 155 Mbps UTP OC3 ATM
2815	4815	PCI 155 Mbps UTP OC3 ATM
2816	2816	PCI 155 Mbps MMF ATM
2816	4816	PCI 155 Mbps MMF ATM
2817	2817	PCI 155 Mbps MMF ATM
2818	2818	PCI 155 Mbps SMF OC3 ATM
2818	4818	PCI 155 Mbps SMF OC3 ATM
2819	2819	PCI 34 Mbps Coax E3 ATM
2824	2824	PCI LAN/WAN/Workstation IOP
2830	2830	Main Storage Expansion
2838	0607	Linux Direct Attachment - #4838
2838	2838	PCI 100/10 Mbps Ethernet IOA
2838	4838	PCI 100/10 Mbps Ethernet IOA
2838	9738	Base PCI 100/10 Mbps Ethernet
283F	7123	DASD Expansion Unit
283F	7127	DASD Expansion Unit
283F	7133	DASD Concurrent Maint Cage

CCIN	Feat. code	Description
2842	0636	Graphics Adapter (GXT4500P)
2842	2842	PCI IOP
2843	2843	PCI IOP
2843	9943	Base PCI IOP
2844	2844	PCI IOP
2844	9844	Base PCI IOP
2847	2847	Fibre Channel IOP for SAN load source
2849	0623	Linux Direct Attachment - #2849
2849	0633	LANAI+ (GXT 135P)
2849	2849	PCI 100/10 Mbps Ethernet IOA
2849	9749	Base PCI 100/10 Ethernet IOA
284A		IOP Embedded
284B		IOP Embedded
284C		IOP Embedded
284D		IOP Embedded
284E		IOP Embedded
2850	2850	Integrated PC Server 32 MB
2850	2851	PCI Integrated PC Server
2850	2852	PCI Integrated PC Server
2850	2854	PCI Integrated PC Server
2850	2857	PCI Integrated PC Server
2850	2858	FSIOA 128 MB Memory Keyboard Mouse
2850	2865	PCI Integrated Netfinity Server
2850	2866	PCI Integrated Netfinity Server
2850	2868	PCI Integrated Netfinity Server
2853	2853	3450 0.66m system to device cable
2855	2855	3450 1.2m system to device cable
2856	2856	3450 1.2m system to device cable
2860	2860	16 MB IOP Memory
2861	1855	4-port EIA 232 Cable
2861	2861	32 MB IOP Memory
2862	2862	128 MB IOP Memory
2863	2863	Cable, Artic960HX
2864	2864	Cable, Artic960HX
2867	2867	256 MB IOP Memory
286C		IOP Embedded
286D		IOP Embedded
286F		IOP Embedded
2877	2877	Cable H.100 BUS
287F		Model 825 Embedded 10/100 Ethernet
2881	2881	Main Storage Expansion
2884	2884	Main Storage Expansion
2886	2886	Optical Bus Adapter
2886	9886	Base Optical Bus Adapter
2887	2887	HSL-2 Bus Adapter
2887	9887	Base HSL-2 Bus Adapter
2888	2888	HSL-2/RIO-G Ports - 2 Copper
2890	2790	PCI Integrated Netfinity Server
2890	2791	PCI Integrated xSeries Server
2890	2799	PCI Integrated xSeries Server
2890	2890	PCI Integrated Netfinity Server
2890	2891	PCI Integrated xSeries Server
2890	2899	PCI Integrated xSeries Server
2892	2792	PCI Integrated xSeries Server
2892	2892	PCI Integrated xSeries Server
2892	4710	#4710 PCI Integrated xSeries Server
2892	4810	#4810 PCI Integrated xSeries Server

CCIN	Feat. code	Description
2892	9792	Base PCI Integrated xSeries Server
2895	2795	128 MB Server Memory
2895	2895	128 MB Server Memory
2896	2796	256 MB Server Memory
2896	2896	256 MB Server Memory
2897	2797	1 GB Server Memory
2897	2897	1 GB Server Memory
28B3	9787	Base HSL-2 Ports - 2 Copper
28BC	7124	DASD Expansion Unit - 5 slot
28CD	7136	DASD Expansion Unit - 6 slot
28CD	7137	DASD Concurrent Maintenance
28D2	6574	#6574 - 4-Disk Slot Exp - Base Controller
28D4	1846	Operator Panel - Model 570
28D7	7883	Model 520 SP Card
28D8	7818	HSL-2/RIO-G 2-Ports Copper
28D9	7867	L/ML Mid-backplane
28DA	7866	I/O PCI Backplane
28DB	7868	L/ML DASD Backplane
28DC	7869	Removable Media Backplane
28DD	7870	Power Supply Dist Backplane
28DF	6584	#6584 - 4-Disk Slot Exp - PCI-X Controller
28E7	6417	HSL-2/RIOG Bus Adapter
28E7	9517	Base HSL-2/RIOG Bus Adapter
28E8	7875	L/ML CPU Regulator
28EA	7881	Service Processor
28EB	7819	HSL/RIO 2-Ports Optical
28EF	0632	USB 2.0 PCI Adapter
28F6	6592	#6592 - 4-Disk Slot Exp - Base Controller
28F7	6593	#6593 - 4-Disk Slot Exp - PCI-X Controller
291E	7876	Model 520 Media Backplane Card
292C	4270	#4270 - Controller to External Port Cable
292D	5592 571B	4 Disk Slot Exp PCI-X Disk Controller-90MB No IOP
292D	5593 571B	4 Disk Slot Exp PCI-X Disk Controller-90MB No IOP
292D	6594	#6594 - 4-Disk Slot Exp-PCI-X Controller
2934	2934	Async Term/Printer Cable
2936	2936	Async Modem Cable-EIA232/188
2943	2943	8-port EIA232/422 Adapter
2944	0634	128-port ASYNC Adapter
2946	2946	622 MBS ADM Fiber Adapter
2947	2947	Artic960HX Adapter
2951	2951	Hermosa cable EIA232
2952	2952	Hermosa cable V.35
2953	2953	Hermosa V.36
2953	2954	Hermosa cable X.21
2962	0635	SDLC/X.25 - 2-port Adapter
2A6A	2065	560 CPW Model 730 Processor with #1506 Interactive Feature
2A6B	2065	560 CPW Model 730 Processor with #1507 Interactive Feature
2A6C	2065	560 CPW Model 730 Processor with #1508 Interactive Feature
2A6D	2065	560 CPW Model 730 Processor with #1509 Interactive Feature
2A6E	2066	1050 CPW Model 730 Processor with #1506 Interactive Feature
2A6F	2066	1050 CPW Model 730 Processor with #1507 Interactive Feature
2B6A	2066	1050 CPW Model 730 Processor with #1508 Interactive Feature
2B6B	2066	1050 CPW Model 730 Processor with #1509 Interactive Feature
2B6C	2066	1050 CPW Model 730 Processor with #1510 Interactive Feature
2B6D	2067	2000 CPW Model 730 Processor with #1506 Interactive Feature
2B6E	2067	2000 CPW Model 730 Processor with #1508 Interactive Feature
2B6F	2067	2000 CPW Model 730 Processor with #1509 Interactive Feature
2C6A	2067	2000 CPW Model 730 Processor with #1510 Interactive Feature
2C6B	2067	2000 CPW Model 730 Processor with #1511 Interactive Processor
2C6C	2068	2890 CPW Model 730 Processor with #1506 Interactive Feature
2C6D	2068	2890 CPW Model 730 Processor with #1508 Interactive Feature
2C6E	2068	2890 CPW Model 730 Processor with #1509 Interactive Feature
2C6F	2068	2890 CPW Model 730 Processor with #1510 Interactive Feature
2D6A	2068	2890 CPW Model 730 Processor with #1511 Interactive Processor
2D6B	2069	3660 CPW Model 740 Processor with #1514 Interactive Feature
2D6C	2069	3660 CPW Model 740 Processor with #1510 Interactive Feature
2D6D	2069	3660 CPW Model 740 Processor with #1511 Interactive Feature
2D6E	2069	3660 CPW Model 740 Processor with #1512 Interactive Feature
2E6A	2070	4550 CPW Model 740 Processor with #1514 Interactive Feature
2E6B	2070	4550 CPW Model 740 Processor with #1510 Interactive Feature
2E6C	2070	4550 CPW Model 740 Processor with #1511 Interactive Feature
2E6D	2070	_4550 CPW Model 740 Processor with #1512 Interactive Feature
2E6E	2070	4550 CPW Model 740 Processor with #1513 Interactive Feature
3001	3001	32 MB Main Storage
3002	3000	Migrated 128 MB Main Storage
3002	3002	128 MB Main Storage
3002	3062	128 MB Main Storage
3003	3003	256 MB Main Storage
3004	3004	256 MB Main Storage
3004	3064	256 MB Main Storage
3005	3005	512 MB Main Storage
3005	3065	512 MB Main Storage
3006	3006	512 MB Main Storage

CCIN	Feat. code	Description
3006	3066	512 MB Main Storage
3007	3007	1 GB Main Storage
3007	3067	1 GB Main Storage
3009	3009	128 MB Main Storage
3015	3015	8 GB Main Storage
3016	3016	8 GB Main Storage
3017	3017	32 GB Main Storage
3018	3018	32 GB Main Storage
3020	3020	4 GB Main Storage
3021	3021	4 GB Main Storage
3022	3022	128 MB Main Storage
3024	3024	256 MB Main Storage
3025	3025	512 MB Main Storage
3026	3026	512 MB Main Storage
3027	3027	1 GB Main Storage
3029	3029	128 MB Main Storage
3032	3032	256 MB Main Storage
3033	3033	512 MB Main Storage
3034	3034	1 GB Main Storage
3035	3035	16 GB Main Storage
3036	3036	16 GB Main Storage
3037	3037	64 GB Main Storage PDIMM
3038	3038	64 GB Main Storage PDIMM
3042	3042	256 MB Main Storage
3043	3043	512 MB Main Storage
3044	3044	1024 MB Main Storage
3045	3045	1024 MB Main Storage
3046	3046	2048 MB Main Storage
3054	3054	4 MB Additional Main Storage
3055	3055	8 MB Additional Main Storage
3060	3060	16 MB Additional Main Storage
3061	3061	16 MB Additional Main Storage
3092	3092	256 MB Main Storage
3093	3093	512 MB Main Storage
3094	3094	1024 MB Main Storage
3095	3095	1024 MB Main Storage
3096	3096	2048 MB Main Storage
303E	7816	2/4 GB CUoD Main Storage
304E	7828	CUoD 8/16 GB (4X4 GB)
309B	4443	512 MB DDR
309B	4444	1 GB DDR DIMMs
309D	4452	2 GB Memory (4x512 MB DIMMs)
309E	4490	4 GB Memory (4x1 GB DIMMs)
309F	4453	4 GB Memory (4x1 GB DIMMs)
30AA	4454	8 GB Memory (4x2 GB DIMMs)
30AC	4450	16 GB DDR DIMMs
30B3	4491	16 GB Memory (4x4 GB DIMMs)
30D2	4447	2 GB DDR DIMMs
30D3	4445	4 GB DDR DIMMs
30D5	4449	8 GB DDR DIMMs
30DC	7814	4 GB Main Storage
30DE	7890	4/8 GB CUoD DDR1 Memory
30DF	7891	8/16 GB DDR-1 Main Storage
30F0	7892	512 MB Main Storage DDR2 DIMM
30F2	7893	4 GB Main Storage DDR2 DIMM
30F3	7894	8 GB Main Storage DDR2 DIMM
30F7	4492	32 GB Memory (4x8 GB DIMMs)
30F8	7935	16/32 GB DDR-1 Main Storage

CCIN	Feat. code	Description
30F3	7894	8 GB Main Storage DDR2 DIMM
30F7	4492	32 GB Memory (4x8 GB DIMMs)
30F8	7935	16/32 GB DDR-1 Main Storage
3100	3100	16 MB Main Storage
3101	3101	32 MB Main Storage
3102	3102	16 MB Main Storage
3103	3103	32 MB Main Storage
3103	4103	32 MB Main Storage
3104	3104	64 MB Main Storage
3104	4204	64 MB Main Storage
3104	9304	Standard 64 MB Main Storage
3108	3108	8 MB Main Storage
3109	3109	32 MB Main Storage
3110	3110	64 MB Main Storage
3110	8210	Optional 64 MB Main Storage
3110	9110	Standard 64 MB Main Storage
3116	3116	MFIOP Storage Expansion
3117	3117	8 MB Main Storage
3117	4117	8 MB Main Storage SIMM
3118	3118	16 MB Main Storage
3118	4118	16 MB Main Storage SIMM
3119	3119	8 MB Main Storage
3120	3120	8 MB Main Storage
3120	4120	8 MB Main Storage
3121	3121	8 MB Main Storage
3121	4121	8 MB Main Storage
3122	3122	32 MB Main Storage
3122	4122	32 MB Main Storage
3124	1873	Drawer to Drawer Serial Cable
3125	1874	Rack to Rack Serial Cable
312F	4497	16 GB DDR2 Main Storage
3130	3130	32 MB Main Storage
3131	3131	64 MB Main Storage
3131	9231	Optional Base 64 MB Main Storage
3132	3132	128 MB Main Storage
3132	9232	Optional Base 128 MB Main Storage
3133	3133	64 MB Main Storage
3133	4133	64 MB Main Storage
3134	3134	128 MB Main Storage
3134	4134	128 MB Main Storage
3134	9234	Standard 128 MB Main Storage
3135	3135	256 MB Main Storage
3135	4135	256 MB Main Storage
3135	7135	Optional 256 MB Main Storage
3135	8135	Optional Base 256 MB Main Storage
3136	3136	256 MB Main Storage
3136	4136	256 MB Main Storage
3138	3138	64 MB Main Storage
3138	4138	64 MB Main Storage
313A	4400	1 GB DDR2 Main Storage
313B	4474	2 GB DDR2 Main Storage
313D	4475	4 GB DDR2 Main Storage
313E	4477	8 GB DDR2 Main Storage
3140	3140	8 MB Main Storage
3141	3141	16 MB Main Storage
3142	3142	32 MB Main Storage
3144	3144	8 MB Main Storage
3144	4144	8 MB Main Storage

CCIN	Feat. code	Description
3145	3145	16 MB Main Storage
3145	4145	16 MB Main Storage
3146	3146	32 MB Main Storage
3146	4146	32 MB Main Storage
3147	3147	32 MB Main Storage
3147	4147	32 MB Main Storage
3149	3149	128 MB Main Storage
3149	4149	128 MB Main Storage
314C	4498	32 GB DDR2 Main Storage
314E	4496	8/16 GB DDR2 Main Storage
3152	3152	32 MB Main Storage
3152	9252	Standard 32 MB Main Storage
3153	3153	64 MB Main Storage
3153	8253	Optional Base 64 MB Main Storage
3154	3154	128 MB Main Storage
3154	8254	Optional Base 128 MB Main Storage
3154	9254	Standard 128 MB Main Storage
3155	3155	256 MB Main Storage
3155	7255	Optional Base 256 MB Main Storage
3155	8255	Optional Base 256 MB Main Storage
3156	3156	64 MB Main Storage
3156	4156	64 MB Main Storage
3156	8156	Optional Base 64 MB Main Storage
3156	9156	Standard 64 MB Main Storage
3157	3157	128 MB Main Storage
3157	4157	128 MB Main Storage
3157	7157	Optional Base 128 MB Main Storage
3157	8157	Optional Base 128 MB Main Storage
3158	3158	256 MB Main Storage
3158	4158	256 MB Main Storage
3158	7158	Optional Base 256 MB Main Storage
3158	8158	Optional Base 256 MB Main Storage
3159	3159	8 MB Main Storage
3159	9159	Standard 8 MB Main Storage
3160	3160	16 MB Main Storage
3160	8160	Optional Additional 16 MB Main Storage
3160	9160	Standard 16 MB (2 SIMM)
3161	3161	32 MB Main Storage
3161	4161	32 MB Main Storage
3161	9161	Standard 32 MB Main Storage
3162	3162	128 MB Main Storage
3162	9262	Standard 128 MB Main Storage
3163	3163	256 MB Main Storage
3163	7263	Optional Base 256 MB Main Storage
3163	9263	Standard 256 MB Main Storage
3164	3164	512 MB Main Storage
3164	7264	Optional Base 512 MB Main Storage
3164	8264	Optional Base 512 MB Main Storage
3165	3165	1024 MB Main Storage
3165	7265	Optional Base 1024 MB Main Storage
3165	8265	Optional Base 512 MB Main Storage
3166	3166	256 MB Main Storage
3166	7266	Optional Base 256 MB Main Storage
3166	9266	Standard 256 MB Main Storage
316A	4500	0/4GB 533 MHz DDR2 Memory
316B	4501	0/8GB 533 MHz DDR2 Memory
316C	4502	0/16GB 533 MHz DDR2 Memory
316D	4503	0/32GB 400 MHz DDR2 Memory

CCIN	Feat. code	Description
316F	4495	4/8 GB DDR2 Main Storage
3172	3172	32 MB Main Storage (2 SIMMs)
3172	3182	32 MB Main Storage
3172	4172	32 MB Main Storage
3172	8172	Delt Price 32 MB
3172	9272	Standard 32 MB Main Storage
3172	9282	Standard 32 MB Main Storage
3179	3179	256 MB Main Storage
3179	9179	Base 256 MB Main Storage
3180	3180	512 MB Main Storage
3180	8180	Optional Base 512 MB Main Storage
3184	3184	32 MB Main Storage
3184	9184	Standard 32 MB Main Storage
3185	3185	64 MB Main Storage
3185	8185	Optional Base 64 MB Main Storage
3185	9185	Standard 64 MB Main Storage
3186	3186	128 MB Main Storage
3186	7186	Optional Base 128 MB Main Storage
3186	8186	Optional Base 128 MB Main Storage
3187	3187	256 MB Main Storage
3187	7187	Optional Base 256 MB Main Storage
3187	8187	Optional Base 256 MB Main Storage
3189	3189	128 MB Main Storage
3190	3190	256 MB Main Storage
3190	9190	Base 256 MB Main Storage
3191	3191	512 MB Main Storage
3191	8191	Optional Base 512 MB Main Storage
3192	3192	1024 MB Main Storage
3192	8192	Optional Base 1024 MB Main Storage
3193	3193	2048 MB Main Storage
3193	8193	Optional Base 2048 MB Main Storage
3195	3195	4096 MB Main Storage
3196	3196	8192 MB Main Storage
3197	3197	1024 MB Main Storage
3198	3198	2048 MB Main Storage
31B5/ 319B	5692	0/2GB 667 MHz DDR2 Memory
31B6/ 319C	5693	0/4GB 667 MHz DDR2 Memory
31B9/ 319D	5695	0/16GB 533 MHz DDR2 Memory
31B7/ 319E	5694	0/8GB 667 MHz DDR2 Memory
31BD/ 319F/ 31BA/ 31BC	5696	0/32GB 400 MHz DDR2 Memory
3273	1893	36.4 GB 10k rpm Disk Unit
3274	1894	73.4 GB 10k rpm Disk Unit
3275	1895	146.8 GB 10k rpm Disk Unit
3277	1896	36.4 GB 15k rpm Disk Unit
3278	1897	73.4 GB 15k rpm Disk Unit
3279	1898	146.8 GB Disk Unit
3612	3612	1024 MB Main Storage
3613	3613	2048 MB Main Storage
3614	3614	4096 MB Main Storage
3628	3628	Black P260/P275 Color
3636	1876	L200 Flat Panel Monitor
3637	3637	T541H/L150PTFT Color

CCIN	Feat. code	Description
3638	3638	Black C220P Color Monitor
3639	3639	Black L170P TFT Display
3641	3641	T115 TFT 15-inch Color Display
3643	3643	T120 TFT 20-inch Color Display
3644	3644	T119 TFT 19-inch Color Display
3645	3645	T117 TFT 17-inch Color Display
4326	1266	#4326 in 5786/5787
4326	4326	35.16 GB 15k rpm Disk Unit
4327	1267	#4327 in 5786/5787
4327	4327	70.56 GB 15k rpm Disk Unit
4327	5559	Quantity 16 of #4327
4327	5572	Quantity 4 of #4327 Package
4327	7509	Quantity 150 of #4327
4328	1268	#4328 in #5786/#5787
4328	4328	141.12 GB 15k rpm Disk Unit
4328	7510	Quantity 150 of #4328
4330	3585	300 GB 15k rpm EXP24 Disk Unit
433B	3676	69.7 GB 15k rpm SAS Disk Unit AIX/Linux
433C	3677	139.5 GB 15k rpm SAS Disk Unit AIX/Linux
433D	3678	283.7 GB 15k rpm SAS Disk Unit
	3660	Processor Fabric Cable - 2 Drawer
	3664	Processor Fabric Cable - 3 Drawer
	3665	Processor Fabric Cable - 4 Drawer
3925	1875	Serial Port Converter Cable
4010	4010	4 MB Write Cache
4011	4011	8 MB Data Store
4012	4012	32 MB Data Store
4104	4104	4 MB Main Storage
4104	9904	4 MB Main Storage
4114	4114	4 MB Main Storage Expansion
4263	4263	Direct Attachment Tape Cables
433B	1266	35.16 GB 15k rpm SAS Disk Unit
433B6	4326	35.16 GB 15k rpm SAS Disk Unit
433B	7508	Quantity 150 of #4326
433C	1267	70.56 GB 15k rpm SAS Disk Unit
433C	4327	70.56 GB 15k rpm SAS Disk Unit
433C	7509	Quantity 150 of #4327
433D	1268	141.12 GB 15k rpm SAS Disk Unit
433D	4328	141.12 GB15k rpm SAS Disk Unit
433D	7510	Quantity 150 of #4328
4329	1269	282.25 GB 15k rpm EXP24 Disk Unit
4329	4329	282.25GB 15k rpm Disk Unit
4329	7516	Quantity 150 of #1269
4330	1292	300GB 15k rpm EXP24 Disk Unit
4332	4332	Fibre Channel Loop Controller
4690	4690	Rack Status Beacon Assem
4691	4691	Rack Status Beacon Cable
4692	4692	Junction Box Cable
4693	4693	Rack Beacon Junction box
4758	4800	PCI Cryptographic Coprocessor (-001)
4758	4801	PCI Cryptographic Coprocessor (-023)
4758	4802	PCI Cryptographic Coprocessor (-023)
4758	4803	PCI Cryptographic Coprocessor (-002)
4758	4804	PCI Cryptographic Coprocessor (-002)
4764	4806	PCI-X Cryptographic Coprocessor
4812	4811	#4811 PCI Integrated xSeries Server

CCIN	Feat. code	Description
4812	4812	#4812 PCI Integrated xSeries Server
4812	4813	#4813 PCI Integrated xSeries Server
4953	4953	155 MBps ATM UTP Adapter
4957	4957	155 MBps ATM Fiber Adapter
4959	4959	4/16 Token-ring Adapter
4960	4960	Crypto SSL HW Accelerator
4961	0637	100/10 Mbps 4-port Ethernet Adapter
4961	4961	240V, 6ft, 30A Line Cord
4962	4962	Ethernet/LAN Encryption
4963	4963	Cryptographic Coprocessor
5033	5033	#5033 Migration Tower I
5034	5034	#5034 Migration Tower I
5035	5035	#5035 Migration Tower I
5052	8052	Optional 16 Disk Unit Expansion
5066	0565	#5065 Equivalent
5066	5066	1.8 M I/O Tower
506E	5741	EXP24 6 Disk Slot Enabler
506D	5742	EXP24 6/12 Disk Slot Enabler
5078	0578	PCI Expansion Unit in Rack
5078	5078	PCI Expansion Unit
5079	0574	#5074 Equivalent
5079	5079	1.8 M I/O Tower
5088	5088	PCI-X Expansion Unit
5088	0588	PCI-X Expansion Unit in Rack
5094	0694	#5094 Equivalent
5094	5094	PCI-X Expansion Tower
5095	0595	PCI-X Tower Unit in Rack
5097	5097	1.8M I/O Rack
5111	5111	#5111 30 Disk Expansion with Dual Line Cord
5121	5121	Power Regulator Card
5130	5130	Tower Attachment Power (RISC)
5133	5133	Feature Power Supply
5133	5134	Feature Power Supply
5135	5135	Feature Power Supply
5136	5136	Feature Power Supply
5140	5140	Regulator
5141	5141	3.6V I/O Regulator
5142	5142	Tower Attachment Power
5143	5143	Feature Power Supply (400W)
5144	5144	BBU External (Optional)
5145	5145	BBU Internal (Optional)
5146	5146	Redundant Power (Bulk Reg)
5147	5147	Feature Power - 560W
5148	5148	Additional Battery Backup Internal
5149	5149	Redundant Power (Bulk Reg)
5150	5150	Battery Backup (External)
5151	5151	Power Supply (650 Watts)
5152	5152	Feature Power Supply (500W)
5153	5153	Redundant Power Supplies
5156	5156	#5156 Redundant Power and Cooling
5157	5157	#5157 Feature Power Supply
5159	5159	850 W Power Supply
515F	5138	Redundant Power and Cooling
5160	5160	#5160 Power Distribution Unit
5161	5161	#5161 Power Distribution Unit
5162	5162	#5162 Power Distribution Unit
5163	5163	Power Dist Unit 3 Phase PDU

CCIN	Feat. code	Description
51B6	5158	850 W Power Supply
5228	8954	Model 520 1-way Processor
5229	5229	Model 520 2-way Processor
5229	8955	Model 520 2-way Processor
522A	5230	Model 520 1-way Processor
522A	8950	Model 520 1-way Processor
522A	8951	Model 520 1-way Processor
522A	8952	Model 520 1-way Processor
522A	8953	Model 520 1-way Processor
522A	8972	Model 520 1-way Processor
5237	8958	Model 550 1/4-way Processor
528C	7813	0/8 GR 1.8 GHz CUoD MCM
528C	8966	595 1.9 Ghz Proc 0/16-way
52A4	8981	Model 595 Processor Book
53BE	8968	595 2.3 Ghz Proc 8/16-way
5700	0620	Linux Direct Attachment - #5700
5700	5700	#5700 PCI 1 Gbps Ethernet IOA
5700	6800	PCI 1 Gbps Ethernet IOA
5701	0621	Linux Direct Attachment-5701
5701	5701	PCI 1 Gbps Ethernet UTP IOA
5701	6801	PCI 1 Gbps Ethernet UTP IOA
5702	0624	Linux Direct Attachment-5702
5702	0645	Direct Attachment #5712
5702	5702	#5702 PCI-X Ultra Tape Controller
5702	5705	#5705 PCI-X Tape/DASD Controller
5702	5712	Ultra320 SCSI
5702	5715	PCI-X Tape/DASD Controller
5703	0628	Linux Direct Attachment - #5703
5703	5703	PCI-X RAID Disk Controller
5704	0625	Linux Direct Attachment - #5704
5706	0643	Linux Direct Attachment - #5706
5706	5706	Dual Port 10/100/1000 Mbps Ethernet
5707	0644	Linux Direct Attachment - #5707
5707	5707	Dual Port 1Gbps Ethernet-SX IOA
5708	5580	Auxiliary write cache card for orderable #5580 - #2780 with auxiliary Write Cache. Shown as 5580b for card placement using the System Planning Tool.
5708	5581	Auxiliary write cache card for orderable feature #5581 - #2757 with auxiliary Write Cache. Shown as 5581b for card placement using the System Planning Tool.
5709	5709	#5709 RAID Enabler Card
5716	0646	Direct Attachment #5716
5718	5718	10 GB Ethernet (Fiber)
571A	0647	PCI-X Disk/Tape Controller w/o IOP
571A	5736	PCI-X Disk/Tape Controller w/IOP
571A	5766	PCI-X Tape Controller
571A	5775	PCI-X Disk/Tape Controller w/o IOP
571B	0648	PCI-X Disk Controller- 90 MB w/o IOP
571B	5737	PCI-X Disk Controller- 90 MB w/IOP
571B	5776	PCI-X Disk Controller- 90 MB w/o IOP
571E	5738	#5738 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches with IOP

CCIN	Feat. code	Description
571E	5777	#5777 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches without IOP
571E	5582	#5738 Controller with 1.5 GB Auxiliary Write Cache with IOP
571E	5583	#5583 Controller with 1.5GB Auxiliary Write Cache without IOP
571E	0649	#5582/#5583 PCI-X disk controller AIX direct
571F	5739	#5739 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP
571F	5778	#5778 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP
571F	5781	#5781 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP
571F	5782	#5782 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP
571F	5799	#5799 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches with IOP
571F	5800	#5800 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP
571F	0650	#5739/#5778 PCI-X EXP24 disk controller disk Linux or AIX direct
571F	0651	#5781/#5782 PCI-X EXP24 disk controller Linux or AIX direct
571F	0651	#5799/#5800 PCI-X EXP24 disk controller Linux or AIX direct
5727	9510	Base Integrated Cache - 40 MB
573A	5721	PCI-X 10Gbps Ethernet-SR IOA
573B	5713	PCI-X 1 Gbps iSCSI TOE-Copper
573B	5783	PCI-X 1 Gbps iSCSI HBA Copper
573C	5714	PCI-X 1 Gbps iSCSI
573C	5784	PCI-X 1 Gbps iSCSI HBA Fiber
573D	5570	#5727 Cache
	4327	2 #4327 70.56 GB Disks
573D	5571	#5727 Cache
	4327	6 #4327 70.56 GB Disks
573D	5727	Integrated Cache - 40 MB Models 515, 520, 525, or 550
573D	5728	Integrated Cache - 40 MB Model 570
574F	5582	Auxiliary 1.5 GB write cache card for #5582 (#5738 Controller w/Auxiliary Write Cache). Shown as 5582b for card placement using the System Planning Tool.
574F	5583	Auxiliary 1.5 GB write cache card for #5583 (#5777 Controller w/Auxiliary Write Cache). Shown as 5583b for card placement using the System Planning Tool.
574F	5590	Auxiliary 1.5 GB write cache card for orderable feature #5590 (#2780 PCI-X Ultra4 RAID Disk Controller with 757 MB Write cache). Shown as 5590b for card placement using the System Planning Tool.

CCIN	Feat. code	Description
574F	5591	Auxiliary 1.5 GB write cache card for orderable feature #5590 (#2757 PCI-X Ultra4 RAID Disk Controller with 757 MB Write cache). Shown as 5591b for card placement using the System Planning Tool.
575B	5739	Auxiliary 1.5 GB write cache card embedded with orderable feature #5739 (EXP24 controller). Shown as 5739b for card placement using the System Planning Tool
575B	5778	Auxiliary 1.5 GB write cache card embedded with orderable feature #5778 (EXP24 controller). Shown as 5778b for card placement using the System Planning Tool
575B	5781	Auxiliary 1.5 GB write cache card embedded with orderable feature #5781 (EXP24 controller)
575B	5782	Auxiliary 1.5 GB write cache card embedded with orderable feature #5782 (EXP24 controller)
575B	5799	Auxiliary 1.5 GB write cache card embedded with orderable feature #5799 (EXP24 controller)
575B	5800	Auxiliary 1.5 GB write cache card embedded with orderable feature #5800 (EXP24 controller)
5767	5767	PCIe 1Gb Ethernet UTP 2 Port
5768	5768	PCIe 1Gb Ethernet Fiber 2 Port
576A	5722	PCI-X 10Gbps Ethernet-LR IOA
576B	5749	#5749 4Gbps PCI-X Fibre Channel 2-Port
576C	2893	PCIe 2-Line WAN w/ Modem
576C	2894	PCIe 2-Line WAN w/ Modem CIM
576C	9693	Base PCIe 2-Line WAN w/ Modem
576C	9694	Base PCIe 2-Line WAN w/ Modem CIM
	5774	PCIe 4Gb Fibre Channel 2Port
5870	5870	Model 595 8/16-way Standard Edition
5871	5871	Model 595 16/32-way Standard Edition
5872	5872	Model 595 32/64-way Standard Edition
5875	5875	Model 595 2/16-way Capacity BackUp Standard Edition
5876	5876	Model 595 4/32-way Capacity BackUp Standard Edition
5890	5890	Model 595 8/16-way Enterprise Edition
5891	5891	Model 595 16/32-way Enterprise Edition
5892	5892	Model 595 32/64-way Enterprise Edition
5895	5895	Model 595 2/16-way CBU Edition
5896	5896	Model 595 4/32-way CBU Edition
6001	6001	SPCN Power Cable - 2 m
6006	6006	SPCN Power Cable - 3 m
6007	6007	SPCN Power Cable - 15 m
6008	6008	SPCN Power Cable - 6 m
6010	6010	Model 515 Express Configuration 1
6011	6011	Model 515 Express Configuration 2
6018	6018	Model 515 Base Product Config 1
6021	6021	Model 515 Express Configuration 3
6028	6028	Model 515 Base Product Config 2
6029	6029	SPCN Power Cable - 30 m

CCIN	Feat. code	Description
6040	6040	Twinaxial Workstation Controller
6041	6041	ASCII Workstation Controller
6050	6050	Twinaxial Workstation Controller
6050	9050	Base Twinaxial Workstation Controller
6053	9053	Standard Twinaxial WSC Specify
6054	6054	Local Talk Controller
6054	8054	LocalTalk Adapter
6054	9054	Standard LocalTalk Controller
6068	6068	Opt Front Door for 1.8m Rack
6080	7841	Ruggedize Rack Pack
6100	6100	Disk Unit (315 MB)
6100	9100	315 MB Disk Unit Relocation
6102	9102	Standard 320 MB Disk Unit
6103	6103	Single Disk Unit (400 MB)
6103	9103	Standard 400 MB Disk Unit
6104	6126	Base DASD Replace (988 MB)
6104	7840	Side-by-side for 1.8m Racks
6104	9104	Standard 988 MB Disk Unit
6105	1105	Single Disk Unit (320 MB) Kit
6105	1200	Single Disk Unit (320 MB) Kit
6105	6105	Single Disk Unit (320 MB)
6105	6108	Additional Dual Disk (640 MB)
6105	9106	Standard Dual Disk (640 MB)
6107	1107	Single Disk Unit (400 MB) Kit
6107	1201	Single Disk Unit (400 MB) Kit
6107	6107	Single Disk Unit (400 MB)
6107	6120	Dual Disk Unit (800 MB)
6107	6121	Additional Dual Disk (800 MB)
6107	9120	Standard Dual Disk (800 MB)
6109	1109	Single Disk Unit (988 MB) Kit
6109	1202	Single Disk Unit (988 MB) Kit
6109	1210	Additional Disk Unit (988 MB)
6109	6109	Single Disk Unit (988 MB)
6109	6123	Additional Dual Disk (1976 MB)
6109	6124	Base DASD Upgrade (1976 MB)
6109	6125	Base DASD Replace (988 MB)
6109	6127	Base DASD Replace (1976 MB)
6109	8123	Dual Disk Unit (1976 MB)
6109	9109	Standard 988 MB Disk Unit Spec
6110	6110	Magnetic Storage Dev Controller
6110	8110	Standard Magnetic Storage Controller
6111	6111	Magnetic Storage Dev Controller
6111	8111	Standard Magnetic Storage Controller
6112	6112	Magnetic Storage Device Controller
6120	1889	80 GB VXA-2 Tape Drive
6122	9122	Standard 851 MB Disk Unit (RPQ)
6134	6134	60 GB 8 mm Tape Unit
6140	6140	Twinaxial Workstation Controller
6140	9140	Twinaxial Workstation Control
6141	6141	ASCII Workstation Controller
6141	9141	ASCII Workstation Control
6146	6146	Diskette Adapter
6147	6147	Diskette Adapter
6148	6148	8-Port Twinaxial Expansion
6149	6149	16/4 Mbps Token-Ring IOA
6149	9249	Base 16/4 Mbps Token-Ring IOA
6150	6150	Three-Line Communication Controller
6151	6151	X.21 1-Line 20

CCIN	Feat. code	Description
6151	6171	X.21 1-Line 50
6152	6152	EIA 232/V.24 Adapter
6152	6154	EIA 232/V.24 1-Line 20E
6152	6155	EIA 232/V.24 1-Line 20
6152	6174	EIA 232/V.24 1-Line 50E
6152	6175	EIA 232/V.24 1-Line 50
6152	9862	EIA 232/V.24 1-Line 20E
6152	9865	EIA 232/V.24 1-Line50E
6153	6153	V.35 1-Line (20-ft Cable)
6153	6173	V.35 1-Line (50-ft Cable)
6160	6160	Token-Ring Network Adapter
6180	6180	Twinaxial Workstation IOA
6180	9280	Base Twinaxial WSC
6181	6181	Ethernet/IEEE 802.3 IOA
6181	9381	Base Ethernet/IEEE 802.3 IOA
6183	6183	6 port ASCII IOA
6202	6203	PCI Ultra3 SCSI Adapter
6204	6204	Differential SCSI Adapter
6230	0638	SSA (40 MBps) Adapter
6231	0639	128 MB DIMM & CD-ROM
6235	0640	Fast Write Cache Option
6246	6246	1.8m Rack Trim Kit
6258	6258	36 GB 4 mm Tape Unit
6258	9258	36 GB 4 mm Tape Unit
6312	6312	Quad Digital Trunk Adapter
6320	9520	Standard CD-ROM
6321	4425	CD-ROM
6321	4525	CD-ROM
6321	4625	CD-ROM
6321	6325	CD-ROM
6321	6425	CD-ROM
6330	4430	DVD-RAM
6330	4530	DVD-RAM
6330	4630	DVD-RAM
6331	5751	DVD-RAM
6331	5757	DVD-RAM
6333	4533	DVD-RAM
6333	4633	DVD
6333	5752	DVD-RAM
6335	1262	840 MB QIC-3040-MC
6335	1335	6335 External Conversion Kit
6335	6335	840 MB QIC-mini Tape Unit
6335	6365	840 MB QIC-mini Tape External
6336	4431	DVD-ROM
6336	4531	DVD-ROM
6336	4631	DVD-ROM
6337	2640	DVD-ROM - Slimline
6337	5750	DVD-ROM - Slimline
6337	5756	DVD-ROM - Slimline
6340	6340	13 GB QIC mini Tape Unit
6341	6341	120 MB ¼-inch Cartridge Tape
6341	9341	Standard 120 MB ¼-inch Tape
6342	6342	525 MB ¼-inch Cartridge Tape
6342	8342	525 MB ¼-inch Cartridge Tape
6342	9342	Standard 525 MB ¼-inch Tape
6343	5343	Base Tape Replace (1.2 GB)
6343	6343	1.2 GB ¼-inch Cartridge Tape
6343	7343	1.2 GB ¼-inch Cartridge Tape

CCIN	Feat. code	Description
6343	8343	1.2 GB ¼-inch Cartridge Tape
6343	9343	Standard 1.2 GB ¼-inch Tape
6344	6344	2.5 GB ¼-inch Cartridge Tape
6344	7344	2.5 GB ¼-inch Cartridge Tape
6344	8344	2.5 GB ¼-inch Cartridge Tape
6345	6345	13 GB ¼-inch Cartridge Tape
6345	8345	13 GB ¼-inch Cartridge Tape
6346	6346	120 MB ¼-inch Cartridge Tape
6347	6347	525 MB ¼-inch Cartridge Tape
6347	7347	Base Tape Upgrade (525 MB)
6347	8347	525 MB ¼-inch Cartridge Tape
6347	9347	Standard 525 MB ¼-inch Tape
6348	5348	Base Tape Replace (1.2 GB)
6348	6348	1.2 GB ¼-inch Cartridge Tape
6348	7348	1.2 GB ¼-inch Cartridge Tape
6348	8348	1.2 GB ¼-inch Cartridge Tape
6348	9348	Standard 1.2 GB ¼-inch Tape
6349	5349	Base Tape Replace (2.5 GB)
6349	6349	2.5 GB ¼-inch Cartridge Tape
6349	7349	2.5 GB ¼-inch Cartridge Tape
6349	8349	2.5 GB ¼-inch Cartridge Tape
6350	6350	13 GB ¼-inch Cartridge Tape
6366	6366	120 MB ¼-inch Cartridge Tape
6366	6367	525 MB ¼-inch Cartridge Tape
6368	6368	1.2 GB ¼-inch Cartridge Tape
6369	6369	2.5 GB ¼-inch Cartridge Tape
6370	6370	13 GB ¼-inch Cartridge Tape
6378	1250	525 MB ¼-inch Tape Kit
6378	1378	525 MB ¼-inch Cart Tape Kit
6379	1251	1.2 GB ¼-inch Tape Kit
6379	1349	1.2 GB ¼-inch Tape Kit
6379	1379	1.2 GB ¼-inch Cart Tape Kit
6380	1252	2.5 GB ¼-inch Tape Kit
6380	1260	2.5 GB ¼-inch Tape
6380	1350™	2.5 GB ¼-inch Tape Kit
6380	1380	2.5 GB ¼-inch Cart Tape Kit
6380	6380	2.5 GB ¼-inch Cartridge Tape
6380	6480	2.5 GB ¼-inch Cart Tape
6380	9380	2.5 GB ¼-inch Cart Tape
6385	1355	13.0 GB ¼-inch Tape Kit
6385	6385	13 GB ¼-inch Cartridge Tape
6385	6485	13 GB ¼-inch Cartridge Tape
6387	4487	50 GB ¼-inch Cartridge Tape Device
6387	4587	50 GB ¼-inch Cartridge Tape Device
6390	1261	7.0 GB 8 mm Cart Tape
6390	1360	7.0 GB 8 mm Cartridge Tape Kit
6390	6390	7 GB 8 mm Cartridge Tape Unit
6390	6490	7 GB 8 mm Cartridge Tape
63A0	4482	4 GB ¼-inch Cartridge Tape
63A0	4483	16 GB ¼-inch Cartridge Tape
63A0	4486	25 GB ¼-inch Cartridge Tape
63A0	4487	50 GB ¼-inch Cartridge Tape Device
63A0	4582	4 GB ¼-inch Cartridge Tape
63A0	4583	16 GB ¼-inch Cartridge Tape
63A0	4584	30 GB ¼-inch Cartridge Tape
63A0	4585	80 GB VXA-2 Tape Drive
63A0	4586	25 GB ¼-inch Cartridge Tape
63A0	4587	50 GB ¼-inch Cartridge Tape

CCIN	Feat. code	Description
63A0	4682	4 GB ¼-inch Cartridge Tape
63A0	4683	16 GB ¼-inch Cartridge Tape
63A0	4684	30 GB ¼-inch Cartridge Tape
63A0	4685	80 GB VXA-2 Tape Drive
63A0	4686	25 GB ¼-inch Cartridge Tape
63A0	4687	50 GB ¼-inch Cartridge Tape
63A0	5753	30 GB ¼-inch Cartridge Tape
63A0	5754	50 GB ¼-inch Cartridge Tape
63A0	5755	200 GB LTO-2 Tape Unit
63A0	6279	160 GB VXA-320 Tape Drive
63A0	6381	2.5 GB ¼-inch Cartridge Tape
63A0	6382	4 GB ¼-inch Cartridge Tape
63A0	6383	16 GB ¼-inch Cartridge Tape
63A0	6384	30 GB ¼-inch Cartridge Tape
63A0	6386	25 GB ¼-inch Cartridge Tape
63A0	6481	2.5 GB ¼-inch Cart Tape
63A0	6482	4 GB ¼-inch Cartridge Tape
63A0	6483	16 GB ¼-inch Cartridge Tape
63A0	6484	30 GB ¼-inch Cartridge Tape
63A0	6486	25 GB ¼-inch Cartridge Tape
63A0	8287	Optional Base 50 GB QIC Tape
63A0	8753	30 GB ¼-inch Cartridge Tape
63A0	8755	200GB LTO-2 Tape Unit
63A0	9284	Base 30 GB ¼-inch Cart Tape
63A0	9285	Base 80 GB VXA-2 Tape Drive
63A0	9653	Base 30 GB ¼-inch Tape
6500	6500	Disk Controller
6501	6501	Tape/Disk Device Controller
6502	6502	Disk Unit Controller for RAID
6502	6522	Disk Unit Cntrlr for RAID
6506	6516	16 MB One-Port FSIOP
6506	6517	32 MB One-Port FSIOP
6506	6518	48 MB One-Port FSIOP
6506	6519	64 MB One-Port FSIOP
6506	6526	16 MB 2-Port FSIOP
6506	6527	32 MB 2-Port FSIOP
6506	6528	48 MB 2-Port FSIOP
6506	6529	64 MB 2-Port FSIOP
6506	8716	Optional 16 MB 1-Port FSIOP
6506	8717	Optional 32 MB 1-Port FSIOP
6506	8718	Optional 48 MB 1-Port FSIOP
6506	8719	Optional 64 MB 1-Port FSIOP
6506	8726	Optional 16 MB 2-Port FSIOP
6506	8727	Optional 32 MB 2-Port FSIOP
6506	8728	Optional 48 MB 2-Port FSIOP
6506	8729	Optional 64 MB 2-Port FSIOP
6509	6509	Additional 16 MB FSIOP Memory
6512	6512	Disk Unit Controller for RAID
6513	6513	Internal Tape Device Controller
6517	9517	Standard File Server 32 MB 1 Port
6520	6520	Upgrade 1 to 2 Port FSIOP
6529	9529	Standard File Server 64 MB 2 Port
6530	6523	Disk Unit Controller
6530	6530	Storage Device Controller
6532	6532	RAID Disk Unit Controller
6533	6533	RAID Disk Unit Controller
6534	6534	Magnetic Media Controller
6535	6536	SSA Disk Unit Controller

CCIN	Feat. code	Description
6535	6537	SSA RAID Disk Unit Controller
6580	6580	Optional Rack Security Kit
6586	6586	Modem Tray for 19-inch Rack
6587	6587	Model 515, 520, 525 Rear Cover
6601	6601	Single Disk Unit (1031 MB)
6601	6701	Base Disk Replace (1.0 GB)
6601	9601	Standard 1.0 GB Disk Unit
6602	1203	Single Disk Unit (1031 MB) Kit
6602	1211	Additional Disk Unit (1.031 GB)
6602	1213	Standard Disk Unit (1.031 GB, 2 byte)
6602	1312	1-byte 1.03 GB Disk Unit Kit
6602	1322	2-byte 1.03 GB Disk Unit Kit
6602	1602	Single Disk Unit Kit (1.03 GB)
6602	4211	Additional Disk Unit (1.031 GB)
6602	4652	Single Disk Unit (1031 MB)
6602	6602	Single Disk Unit (1031 MB)
6602	6612	Dual Disk Unit (2.0 GB)
6602	6652	Additional Disk Unit (1.03 GB)
6602	6802	Base Disk Replacement (1.0 GB)
6602	6812	Base Disk Replacement (2.0 GB)
6602	8612	Base 2.0 GB Dual Disk Unit
6602	9602	Standard 1.0 GB Disk Unit
6602	9652	Standard Disk Unit (1.031 GB, 2 byte)
6603	1204	Single Disk Unit (1967 MB) Kit
6603	1212	Additional Disk Unit (1967 MB)
6603	1214	Optional Base Disk Unit (1.967 GB, 2b)
6603	1313	1-byte 1.96 GB Disk Unit Kit
6603	1323	2-byte 1.96 GB Disk Unit Kit
6603	1603	Single Disk Unit Kit (1.96 GB
6603	4212	Additional Disk Unit (1967 MB)
6603	4650	Additional Disk Unit (1.967 GB, reg)
6603	6603	Single Disk Unit (1967 MB)
6603	6613	Dual Disk Unit (4 GB)
6603	6650	Additional Disk Unit (1.96 GB)
6603	7613	Base DASD Replace (3934 MB)
6603	8613	Base DASD Upgrade (3934 MB)
6603	8650	Optional Disk Unit (1.967 GB, 2 byte)
6605	1205	Additional 1.031 GB Disk Unit
6605	1325	2-byte 1.03 GB Disk Unit Kit
6605	4205	Additional Disk Unit (1.031 GB)
6605	4605	Additional Disk Unit (1.031 GB, reg)
6605	6605	1.03 GB Disk Unit
6605	9605	Standard 1.031 Disk Unit
6605	9705	Standard 1.031 Disk Unit regulated
6606	1206	Additional 1.967 GB Disk Unit
6606	1326	2-byte 1.96 GB Disk Unit Kit
6606	1336	2-byte 1.96 GB Disk Unit Kit
6606	4206	Additional Disk Unit (1.967 GB)
6606	4606	Single Disk Unit (1967 MB)
6606	6606	1.96 GB Disk Unit
6606	6806	1.96 GB Disk Unit
6606	6906	1.96 GB Disk Unit
6606	8606	Single Disk Unit (1967 MB)
6606	8706	Optional Base Disk Unit (1.967 GB)
6606	9606	Base 1.96 GB Disk Unit
6607	1207	Additional 4.194 GB Disk Unit
6607	1327	2-byte 4.19 GB Disk Unit Kit
6607	1337	2-byte 4.19 GB Disk Unit Kit

CCIN	Feat. code	Description
6607	4207	Additional Disk Unit (4.194 GB)
6607	4308	4.19 GB Disk Unit
6607	4607	Additional Disk Unit (4.194 GB, reg)
6607	6607	4.19 GB Disk Unit
6607	6807	4.19 GB Disk Unit
6607	6907	4.19 GB Disk Unit
6607	7607	Optional Base 4.19 GB Disk Unit
6607	8607	Optional Base DASD (4.194 GB, reg)
6607	8707	Optional Base Disk Unit (4.194 GB)
6607	9707	Base 4.19 GB Disk Unit
6607	9907	Base 4.19 GB Disk Unit
6616	6616	Integrated PC Server
6617	6617	Integrated PC Server
6617	6618	Integrated Netfinity Server
6713	1333	2-byte 8.58 GB Disk Unit Kit
6713	4314	8.58 GB Disk Unit
6713	6713	8.58 GB Disk Unit
6713	6813	8.58 GB Disk Unit
6713	7500	Quantity 150 of #4314
6713	7713	Optional Base 8.58 GB Disk Unit
6713	8713	Optional Base 8.58 GB Disk Unit
6713	8813	Optional Base 8.58 GB Disk Unit
6713	9313	Base 8.58 GB Disk Unit
6714	1334	2-byte 17.54 GB Disk Unit Kit
6714	4324	17.54 GB Disk Unit
6714	6714	17.54 GB Disk Unit
6714	6824	17.54 GB Disk Unit
6714	7503	Quantity 150 of #4324
6714	8714	Optional Base 17.54 GB Disk Unit
6714	8824	Optional Base 17.54 GB Disk Unit
6714	8924	Optional Base 17.54 GB Disk Unit
6717	4317	8.58 GB 10k rpm Disk Unit
6717	6717	8.58 GB 10k rpm Disk Unit
6717	6817	8.58 GB 10k rpm Disk Unit
6717	7501	Quantity 150 of #4317
6717	8617	Optional Base 8.58 GB 10k rpm Disk
6717	8817	Optional Base 8.58 GB 10k rpm Disk
6717	8917	Optional Base 8.58 GB 10k rpm Disk
6718	4318	17.54 GB 10k rpm Disk Unit
6718	6718	17.54 GB 10k rpm Disk Unit
6718	6818	17.54 GB 10k rpm Disk Unit
6718	7502	Quantity 150 of #4318
6718	8618	Optional Base 17 GB 10k rpm Disk
6718	8818	Optional Base 17 GB 10k rpm Disk
6718	8918	Optional Base 17 GB 10k rpm Disk
6719	4319	35.16 GB 10k rpm Disk Unit
6719	7504	Quantity 150 of #4319
6731	4331	1.6 GB Read Cache Device
6731	6831	1.6 GB Read Cache Device
6750	6750	MFIOP
6751	9751	Base MFIOP with RAID
6752	6752	MFIOP
6753	6753	MFIOP
6753	9753	Base MFIOP
6754	9754	Base MFIOP with RAID
6831	6831	1.6 GB Read Cache Device
6863	6863	System i5 Slim-Line Doors
6864	6864	System i5 Acoustic Doors

CCIN	Feat. code	Description
6910	6910	Model 525 CBU Configuration 1
6913	6913	Model 525 Oracle JD Edwards
6914	6914	Model 525 SAP Applications
7000	9000	Panel Keylock Feature
7104	7104	System Unit Expansion
7116	9116	High Performance CD Enable
7117	9117	Expansion Unit 1
7126	9126	Standard Mixed Disk Enabler
7128	7128	#7128 DASD Expansion Unit
7130	7130	#7130 Expansion Unit Tape Cage
7140	7140	520 Express Configuration
7141	7141	520 Express Configuration
7142	7142	520 Express Configuration
7143	7143	520 Express Configuration
7144	7144	520 Express Configuration
7147	7147	Value Edition for #09XX
7148	7148	520 Express Configuration
7152	7152	520 Express Configuration
7154	7154	Standard Edition for #0910
7155	7155	Enterprise Edition for #0910
7180	7180	Acoustic Front Door
7181	7181	Easy-Access Front Cover
7182	7182	515, 520, 525 Rack Mount
7183	7183	550 Rack Mount
7188	7188	Power Disk Unit - Side Mount
7194	7194	Easy-Access Front Cover
7197	7197	570 Front Bezel
7198	7198	Adjustable Depth Rack Rails
7199	7199	Acoustic Front Door
7256	7256	520 Enterprise Enablement
7257	7257	550 Enterprise Enablement
7258	7258	570 Full Enterprise Enablement
7259	7259	595 Full Enterprise Enablement
7260	7260	570 Enterprise Enablement
7261	7261	595 Enterprise Enablement
7307	7307	Dual I/O Unit Enclosure
7320	7320	515, 520, 520+, 525 One Proc'r Activa'n
7323	7323	550 One Processor Activation
7341	7341	550 On/Off Proc Day Billing
7350	7350	Value Edition for #0975
7352	7352	Value Edition for #0975
7354	7354	Accelerator for System i5
7355	7355	Accelerator for System i5
7357	7357	Accelerator for System i5
7366	7366	Solution Edition for #0906
7373	7373	HA Edition for #0906
7374	7374	HA Edition for #0906
7375	7375	HA Edition for #0906
7390	7390	Model 520 Value/Express Edition
7391	7391	Model 520 Value/Express Edition
7391	7393	Model 520 Value/Express Edition
7392	7392	Model 520 Value/Express Edition
7392	7394	Model 520 Value/Express Edition
7395	7395	Model 520 Value/Express Edition
7396	7396	Model 520 Value/Express Edition
7397	7397	Model 520 Value/Express Edition
7400	7400	Model 800 Value Edition
7404	7404	Model 810 Standard Edition

CCIN	Feat. code	Description
7406	7406	Model 810 Enterprise Edition
7407	7407	Model 810 Standard/Domino Edition
7408	7408	Model 800 Advanced Edition
7409	7409	Model 810 Enterprise Edition
7410	7410	Model 810 Standard/Domino Edition
7412	7412	Model 810 Enterprise Edition
7416	7416	Model 825 Standard/Domino Edition
7418	7418	Model 825 Enterprise Edition
7418	7434	Model 825 High Availability Edition
7419	7419	Model 870 Standard Edition
7421	7421	Model 870 Enterprise Edition
7421	7436	Model 870 High Availability Edition
7422	7422	Model 890 Standard Edition
7424	7424	Model 890 Enterprise Edition
7424	7437	Model 890 High Availability Edition
7425	7425	Model 890 Standard Edition
7427	7427	Model 890 Enterprise Edition
7427	7438	Model 890 High Availability Edition
7428	7428	Model 810 Standard/Domino Edition
7429	7429	Model 520 Express Config
7430	7430	Model 810 Enterprise Edition
7431	7431	Model 870 Standard Edition
7433	7433	Model 870 Enterprise Edition
7433	7435	Model 870 High Availability Edition
7439	7439	Model 870 Capacity BackUp Edition
7440	7440	Model 870 Capacity BackUp Edition
7441	7441	Model 890 Capacity BackUp Edition
7445	7445	Model 810 High Availability Edition
7446	7446	Model 810 High Availability Edition
7447	7447	Model 810 High Availability Edition
7448	7448	Model 810 High Availability Edition
7450	7411	Model 520 Express Configuration
7450	7413	Model 520 Express Configuration
7450	7417	Model 520 Express Configuration
7450	7450	Model 520 Value/Express Edition
7451	7414	Model 520 Express Configuration
7451	7420	Model 520 Express Configuration
7451	7451	Model 520 Value/Express Edition
7452	7452	Model 520 Value/Express Edition
7452	7552	Model 520 High Availability Edition
7453	7453	Model 520 Enterprise Edition
7454	7454	Model 520 Standard Edition
7455	7455	Model 520 Enterprise Edition
7456	7456	Model 520 Standard Edition
7457	7457	Model 520 Enterprise Edition
7458	7458	Model 520 Standard Edition
7459	7459	Model 520 Enterprise Edition
7462	7462	Model 550 Standard Edition
7463	7463	Model 550 Enterprise Edition
7469	7469	Model 570 0/4-way Standard Edition
7470	7470	Model 570 0/4-way Enterprise Edition
7471	7471	Model 570 0/8-way Standard Edition
7472	7472	Model 570 0/8-way Enterprise Edition
7473	7473	Model 570 0/12-way Standard Edition
7474	7474	Model 570 0/12-way Enterprise Edition
7475	7475	Model 570 0/16-way Standard Edition
7476	7476	Model 570 0/16-way Enterprise Edition
7480	7480	Standard Edition for #8966

CCIN	Feat. code	Description
7481	7481	Enterprise Edition for #8966
7481	7580	HA Edition for #0940
7482	7482	Standard Edition for #8966
7483	7483	Enterprise Edition for #8966
7483	7581	HA Edition for #0941
7484	7484	Model 59 32/48-way Standard Edition
7485	7485	Model 595 32/48-way Enterprise Edition
7486	7486	Standard Edition for #8966
7487	7487	Enterprise Edition for 8966
7488	7488	Model 570 0/2-way Standard Edition
7489	7489	Model 570 0/2-way Enterprise Edition
7490	7490	Model 570 0/2-way Standard Edition
7491	7491	Model 570 0/2-way Enterprise Edition
7494	7494	Model 570 2/4-way Standard Edition
7495	7495	Model 570 2/4-way Enterprise Edition
7496	7496	Model 595 8/16-way Standard Edition
7497	7497	Model 595 8/16-way Enterprise Edition
7498	7498	Model 59516/32-way Standard Edition
7499	7499	Model 595 16/32-way Enterprise Edition
7530	7530	Model 5501/4-way Domino
7531	7531	Model 5501/4-way Solution E1
7532	7532	Model 5501/4-way CRM (Clear Tech w/Domino)
7533	7533	Model 5501/4-way SAP 2-way
7534	7534	Model 5501/4-way SAP 4-way
7541	7541	Model 520 Solution Edition
7551	7551	HA Edition for #0910
7553	7553	Model 520 High Availability Edition
7554	7554	Model 520 High Availability Edition
7555	7555	Model 520 High Availability Edition
7558	7558	Model 5501/4-way Solution
7559	7559	Model 570 High Availability Edition
7560	7560	Model 570 High Availability Edition
7561	7561	Model 570 High Availability Edition
7562	7562	Model 570 High Availability Edition
7563	7563	Model 570 High Availability Edition
7570	7570	Model 570 2/16-way CBU Edition
7580	7580	HA Edition for #0940
7581	7581	HA Edition for #0941
7583	7583	HA Edition for #0943
7590	7590	CBU Edition for #0944
7618	7618	570 One Processor Activation
7620	7620	520 On/Off Proc Enablement
7621	7621	520 On/Off Proc Day Billing
7622	7622	520 Reserve Capacity Prepaid
7624	7624	570 On/Off Proc Day Billing
7625	7728	570 Reserve Capacity Prepaid
7629	7629	Domino Edition for #0910
7630	7630	Solution Edition for #0910
7631	7631	Sol Ed-PeopleSoft EnterpriseOne
7632	7632	C2CRM Solution Ed w/Domino
7640	7640	2-way SAP Solution Edition
7641	7641	4-way SAP Solution Edition
7663	7663	570 1 GB Mem Activation
7680	7680	Accelerator for System i5
7681	7681	Accelerator for System i5
7682	7682	Accelerator for System i5
7687	7687	Accelerator for System i5

CCIN	Feat. code	Description
7734	7734	Enterprise Edition for #0906
7735	7735	Enterprise Edition for #0906
7736	7736	Enterprise Edition for #0906
7738	7738	570 Base Proc Activation
7741	7741	550 Reserve Capacity Prepaid
7747	7747	Enterprise Edition for #0934
7748	7748	Enterprise Edition for #0935
7749	7749	Enterprise Edition for #0936
7757	7757	Standard Edition for #0934
7758	7758	Standard Edition for #0935
7759	7759	Standard Edition for #0936
7760	7760	CBU Edition for #0937
7763	7763	HA Edition for #0934
7764	7764	HA Edition for #0935
7765	7765	HA Edition for #0936
7768	7768	CPU Power Regulator
7784	7784	Standard Edition for #0906
7785	7785	Standard Edition for #0906
7790	7790	Model 525 Express Configuration 1
7791	7791	Model 525 Express Configuration 2
7792	7792	Model 525 Express Configuration 3
7801	7801	6m HMC Attachment Cable
7802	7802	15m HMC Attachment Cable
7815	7815	595 One Processor Activation
7817	7817	SNI Fiber Adapter
7862	7862	Blind-swap Cassette (long)
7863	7863	Blind-swap Cassette (Double)
7864	7864	Blind-swap Cassette (DTXA)
7879	7879	Headless Enclosure
7884	7884	520 Rack Mount
7885	7885	515, 520, 525 Deskside
7886	7886	SF4 Rack Mount
7887	7887	SF4 Deskside
788A	7880	Model 570 Base Enclosure
7897	7897	570 CUoD Proc Activation
7950	7950	570 1 GB CUoD Mem Activation
7951	7951	570 On/Off Proc Enablement
7952	7952	570 On/Off Proc Day Billing
7954	7954	570 On/Off Mem Enablement
7956	7956	570 Res Cap PrePaid
7957	7957	570 1 GB Mem Day Billing
7971	7971	595 On/Off Proc Enablement
7972	7972	595 On/Off Proc Day Billing
7975	7975	595 Reserve Capacity Prepaid
8093	8093	Optional Base 1.8 M I/O Rack
8094	8094	Optional Base 1.8 M I/O Rack
8133	8133	RJ45 to DB25 Interposer
8136	8136	Remote ASYNC Node (Rack)
8137	8137	Remote ASYNC Node
8244	8244	PCI WS Audio Adaptor
8312	8312	550 1.9 GHz Proc 0/2-way
8325	8325	520 1.9 GHz Processor
8327	8327	520 1.9 GHz Processor
8330	8330	520 1.9 GHz Processor 0/2-way
8338	8338	570 2.2 GHz Processor 0/2-way
8410	8410	520 Base Processor Activation
8413	8413	550 Base Processor Activation
8452	8452	570 One Processor Activation
8457	8457	595 Base Proc Activation
8470	8470	570 Base 1 GB Mem Activation
9004	9004	South Hemisphere Designator
9020	9020	V.35 Cable 20-ft
9021	9021	X.21 Cable 20-ft
9022	9022	EIA232 20-ft Cable
9023	9023	V.24 20-ft Enhanced Cable
9024	9024	Token-Ring Cable (2.44 m)
9025	9025	Ethernet Cable AUI (3 m)
9026	9026	EIA 232 6 m Client Acc cable
9027	9027	EIA 232 2.5 m Clint Acc cable
9079	8079	Optional Base 1.8 M I/O Rack
9079	9079	#9079 Base I/O Tower for 840 or SB3
9094	9094	Base PCI-X I/O Enclosure
9143	9143	Twinaxial Workstation Controller
9145	9145	Standard MFIOP/ASCII WSC
9149	9149	Twinaxial passthu adapter
9152	8152	Optional Base Twinaxial
9152	9152	Standard MFIOP/Twinaxial WSC
9153	9153	Standard MFIOP wo/Twinaxial WSC
9162	8162	Optional Base MFIOP w/Twinaxial
9162	9162	Standard MFIOP w/Twinaxial WSC
9163	9163	Standard MFIOP
9164	9164	Standard MFIOP
9174	7174	Ethernet IOA
9174	9174	Base Ethernet IOA
9175	7175	Token Ring IOA
9175	9175	Base Token Ring IOA
917A	9171	Standard MFIOP/ASCII WSC
917C	9173	Standard MFIOP/LocalTalk WSC
918D	9177	Ethernet MFIOP
918E	9176	Base MFIOP
9206	1463	2m SPCN Cable
9211	9211	60m SPCN Optical cable
9212	0369	100m Optical SPCN Cable
9212	9212	100m SPCN Optical cable
9213	1465	15m SPCN Cable
9214	1466	30m SPCN Cable
9215	9215	60m SPCN Copper Cable
9219	1464	6m SPCN Cable
9243	9243	400W Availability Bulk
9299	9299	Base Enterprise Enablement
9301	9301	Upgraded 30-Disk Expansion
9570	9570	Reserved Rack Space
9613	9613	Base 70GB 15k rpm Disk Unit
9803	9803	2.5m DFCI cable
9814	9814	20-ft Antenna Cable Wireless
9815	9815	50-ft Antenna Cable Wireless
9820	9820	2nd Bus cable for Model 300
9835	9835	V.24 Cable 50-ft Enhanced
9836	9836	EIA232 Cable 50-ft
9838	9838	V.35 Cable 50-ft
9839	9839	X.21 Cable 50-ft
9853	9853	20.0m optical bus cable
9854	9854	60m optical bus cable
9865	9855	100.0 M optical bus cable
9876	9876	Base Optical Bus Adapter
9877	9877	Base HSL-2 Bus Adapter

CCIN	Feat. code	Description
9879	9879	20-ft/6m V.35 Cable
9880	9880	80-ft/24.4m V.35 Cable
9882	9882	20-ft/6m V.36 Cable
9883	9883	80-ft/24.4m V.36 Cable
9884	9884	150-ft/45.7m V.36 Cable
9895	0366	Optical Bus Cable (20 m)
9885	9885	20-ft/6m X.21 Cable
9927	9927	Channel Box and cable
9928	9928	1.7m Attachment cable
9929	9929	6.6m Attachment cable
9930	9930	24.0m Attachment cable
9980	9980	Serpentine Cable Connector
N/A	0302	Specify code for EXP24 attaching via existing disk controller
N/A	0347	RAID Hot Spare Specify
N/A	0423	Admin MMA Enclosure Count
N/A	0531	#0531 i5/OS V5R3M5 LIC
N/A	0532	V5R4 OS, V5R4M0 LIC
N/A	0533	V5R4OS, V5R4M5 Machine Code
5590	0641	Direct Attachment #2780 Controller with Auxiliary Write Cache
N/A	0719	Load Source Not in CEC
N/A	0720	Load Source in #0595/#5095
N/A	0721	Load Source in #5094/#5294
N/A	0725	Load Source in #5786/#5787
N/A	0836	#4328 Load Source Specify
N/A	0838	#3676 Load Source Specify
N/A	0839	#3677 Load Source Specify
N/A	0860	iSeries Server #2463
N/A	0861	iSeries Server #2463
N/A	0862	iSeries Server #2464
N/A	0868	iSeries Server #2465
N/A	0889	iSeries Server #2489
N/A	0900	Solution Package for #8950
N/A	0901	Solution Package for #8951
N/A	0902	Solution Package for #8952
N/A	0903	Solution Package for #8953
N/A	0904	Solution Package for #8954
N/A	0905	Solution Package for #8955
N/A	0906	1-way Server Feat 520 1 x #8327/#8330
N/A	0909	1/2-way Server Feat 525 1 x #8330
N/A	0910	1/4-way Server Feat 550 2 x #8312
N/A	0914	Solution Package for #8958
N/A	0915	Solution Package for #8958
N/A	0919	Solution package for #8961
N/A	0920	Solution Package for #8961
N/A	0921	Solution Package for #8971
N/A	0922	Solution Package for #8971
N/A	0923	Solution Package for #8962
N/A	0924	Solution Package for #8971
N/A	0926	Solution Package for #8971
N/A	0928	Capacity Backup for #8971
N/A	0930	Solution Package for #8971
N/A	0934	2/4-way Server Feat 570 2 x #8338
N/A	0935	4/8-way Server Feat 570 4 x #8338
N/A	0936	8/16-way Server Feat 570 8 x #8338
N/A	0937	2/16-way Server Feat 570 8 x #8338
N/A	0940	8/16-way Server Feat 595 1 x #8966

CCIN	Feat. code	Description
N/A	0941	16/32-way Server Feat 595 2 x #8966
N/A	0943	32/64-way Server Feat 595 4 x #8966
N/A	0944	4/32-way Server Feat 595 2 x #8966
N/A	0953	8/16-way Server Feat 595 1 x #8968
N/A	0954	16/32-way Server Feat 595 2 x #8968
N/A	0955	32/64-way Server Feat 595 4 x #8968
N/A	0958	2/16-way Server Feat 595 1 x #8968
N/A	0959	4/32-way Server Feat 595 2 x #8968
N/A	0970	1-way Server Feat 520 1 x #8325/#8327
N/A	0975	1-way Server Feat 520 1 x #8325/#8327
N/A	1614	870 POD Activation
N/A	1682	On/Off Prepaid for Model 825
N/A	1683	On/Off Prepaid for Model 825
N/A	1684	On/Off Prepaid for Model 870
N/A	1685	On/Off Prepaid for Model 870
N/A	1686	On/Off Prepaid for Model 870
N/A	1688	On/Off Prepaid for Model 890
N/A	1689	On/Off Prepaid for Model 890
N/A	1691	On/Off Prepaid for Model 890
N/A	1692	On/Off Prepaid for Model 890
N/A	1695	On/Off Prepaid for Model 870
N/A	1774	TCoD Enablement for Model 870
N/A	1784	TCoD Billing for Model 870
N/A	1829	0.6 meter 12X Cable
N/A	1830	1.5 meter 12X Cable
N/A	1834	8.0 meter 12X Cable
N/A	1840	3.0 meter 12X Cable
N/A	3646	73.4GB 15k rpm SAS Disk Unit AIX/Linux
N/A	3647	146.8GB 15k rpm SAS Disk Unit AIX/Linux
N/A	3648	300GB 15k rpm SAS Disk Unit AIX/Linux
53CF	4910	1/4W Server Feature MMA 2 x #7380
53CF	4911	2/8W Server Feature MMA 4 x #7380
53CF	4912	4/16W Server Feature MMA 8 x #7380
N/A	5403	MMA One Processor Activation
N/A	5550	Sys Console on HMC
N/A	5553	Sys Console-Ethernet w/o IOP
N/A	5554	Mirror 35 GB Disk/Controller Package
N/A	5555	Mirror 70 GB Disk/Controller Package
N/A	5556	Mirror 141.12 GB Disk/ Controller Package
N/A	5557	Sys Console-Ethernet w/o IOP
N/A	5560	Mirror 35 GB Drawer Package
N/A	5561	Mirror 70 GB Drawer Package
N/A	5562	Mirror 35 GB Tower Package
N/A	5563	Mirror 70 GB Tower Package
N/A	5564	Mirror 141.12 GB Drawer Package
N/A	5646	PCIe Blind Swap Casette Short
N/A	5647	PCIe Blind Swap Cassette Std
N/A	5648	Service Interface Card
N/A	5656	On/Off 1 Procesor One-day Billing
N/A	5657	Service processor Interface Cable - 2 Drawer
N/A	5660	Service processor Interface Cable - 4 Drawer
N/A	5680	1 GB CUoD Memory Activation
N/A	5691	On/Off 1 GB-1Day Memory Bill

CCIN	Feat. code	Description
N/A	5740	1 Gbps BaseT Ethernet (4-Port)
N/A	9548	Base 1 GB Main Storage
N/A	9549	Base 2 GB Main Storage
N/A	9553	Base 4 GB Main Storage

10

Feature code cross-reference

In this chapter, we list the feature code, Customer Card Identification Number (CCIN) and a description for many System i5 family system features. The purpose of this chapter is to assist IBM Clients and personnel in configuring Miscellaneous Equipment Specifications (MES) and upgrades. In this chapter, we provide a cross-reference for the feature code used for ordering with a CCIN reported by the Hardware Resources Listing.

The listing in this chapter is sorted by feature code. The feature code is used by marketing to report configurations and work with upgrades. The entries selected are those that are most useful when interpreting Hardware Resource Listings.

Refer to Chapter 9, “Customer Card Identification Numbers cross-reference” on page 391, for a listing of the features sorted by CCIN. The CCIN is used when working from a Hardware Resource Listing. The Hardware Resource listing is also known as the *Rack Configuration Listing*.

Changes have been made to this chapter as of 7 September 2007.

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Feat. code	CCIN	Description
0047	0047	Device Parity RAID-6 All
0121	0121	#0121 Lower Unit in Rack Specify
0122	0122	#0122 Upper Unit in Rack Specify
0135	0135	Rear Cover - CEC only
0136	0136	Rear Cover - CEC with #7116
0145	0145	AIX Partition Specify
0150	0150	820 Base Processor
0150	25BC	Model 820 Base Processor
0151	0151	820 Base Processor
0151	25BD	Model 820 Base Processor
0152	0152	820 Base Processor
0152	25BE	Model 820 Base Processor
0153	245D	Model 830 8-way Processor
0158	246F	Model 840 12-way Processor
0159	246F	Model 840 24-way Processor
0165	0165	VHDCI Attachment
0197	25D3	Model 890 24-way Processor
0198	25D5	Model 890 32-way Processor
0226	0226	1 Gbps Ethernet Specify
0272	0272	Renovated by IBM
0290	0290	Ext Tape Attached via #5736, #5775
0297	0297	Model 250 Package - #2295
0297	2295	Model 250 Package
0298	0298	Model 250 Package - #2296
0298	2296	Model 250 Package
0299	0299	MES Conversion Analysis for #5580, #5581
0302	N/A	Specify code for EXP24 attaching via existing disk controller
0327	032A	Operations Console Cable
0328	032B	Operations Console Cable
0329	0329	V.24/EIA232 80-ft Cable
0330	0330	V.24/EIA232 20-ft Cable
0331	0331	V.24/EIA232 50-ft Cable
0332	0332	V.24/EIA232 20-ft Enh Cable
0333	0333	V.24/EIA232 50-ft Enh Cable
0334	0334	V.24/EIA232 80-ft Enh Cable
0335	0335	V.36/EIA449 20-ft Cable
0336	0336	V.36/EIA449 50-ft Cable
0337	0337	V.36/EIA449 150-ft Cable
0338	0338	V.35 20-ft Cable
0339	0339	V.35 50-ft Cable
0340	0340	V.35 80-ft Cable
0341	0341	X.21 20-ft Cable
0342	0342	X.21 50-ft Cable
0344	0344	20-ft Comm Console Cable
0347	N/A	RAID Hot Spare Specify
0348	0348	V.24/EIA232 20-ft PCI Cable
0349	0349	V.24/EIA232 50-ft PCI Cable
0350	0350	V.24/EIA232 20-ft E PCI Cable
0351	0351	V.24/EIA232 50-ft E PCI Cable
0352	0352	V.24/EIA232 80-ft E PCI Cable
0353	0353	V.35 20-ft PCI Cable
0354	0354	V.35 50-ft PCI Cable
0355	0355	V.35 80-ft PCI Cable
0356	0356	V.36 20-ft PCI Cable
0357	0357	V.36 50-ft PCI Cable
0358	0358	V.36 150-ft PCI Cable

Feat. code	CCIN	Description
0359	0359	X.21 20-ft PCI Cable
0360	0360	X.21 50-ft PCI Cable
0362	0362	Comm Console PCI Cable
0364	0364	Parallel Cable
0365	0365	V.24/EIA232 80-ft PCI Cable
0366	9895	Optical Bus Cable (20 m)
0367	032C	Operations Console PCI Cable
0369	9212	100m Optical SPCN Cable
0380	0380	Remote Control Panel Cable
0381	0381	Remote Control Panel Cable
0382	0382	Remote Control Panel Cable
0383	0383	Remote Control Panel Cable
0398	2745	Operations Console Package
0423	N/A	Admin MMA Enclosure Count
0426	0446	512 MB Server Memory
0427	0447	1 GB Server Memory
0428	0448	2 GB Server Memory
0446	0446	512 MB DDR Server Memory
0447	0447	1 GB DDR Server Memory
0448	0448	2 GB DDR Server Memory
0530	0530	Software Version V5R3
0531	N/A	#0531 i5/OS V5R3M5 LIC
0532	N/A	V5R4 OS, V5R4M0 LIC
0533	N/A	V5R4 OS, V5R4M5 Machine Code
0550	0550	#0550 iSeries Rack - 830 Rack
0551	0551	#0551 iSeries Rack - 270 Rack
0553	0553	#0553 iSeries 2.0m Rack
0565	5066	#5065 Equivalent
0574	5079	#5074 Equivalent
0578	5078	PCI Expansion Unit in Rack
0588	5088	PCI-X Expansion Unit in Rack
0595	5095	PCI-X Tower Unit in Rack
0599	0599	Rack filler kit
0601	2743	Linux Direct Attach - #2743
0602	2760	Linux Direct Attach - #2760
0603	2744	Linux Direct Attach - #2744
0604	2763	Linux Direct Attach - #2763
0605	2748	Linux Direct Attach - #4748
0606	2778	Linux Direct Attach - #4778
0607	2838	Linux Direct Attach - #4838
0608	2745	Linux Direct Attach - #4745
0609	2772	Linux Direct Attach - #2772
0610	2773	Linux Direct Attach - #2773
0611	2765	Direct Attach #2765
0612	2766	Linux Direct Attach - #2766
0613	2742	Linux Direct Attach - #2742
0614	2793	Linux Direct Attach - #2793
0615	2793	Linux Direct Attach - #2794
0616	2805	Linux Direct Attach - #2805
0617	2806	Linux Direct Attach - #2806
0618	2757	Linux Direct Attach - #2757
0619	2782	Linux Direct Attach - #2782
0620	5700	Linux Direct Attach - 0
0621	5701	Linux Direct Attach - 1
0623	2849	Linux Direct Attach - #2849
0624	5702	Linux Direct Attach - #5702
0625	5704	Linux Direct Attach - 4
0626	2787	Linux Direct Attach - #2787

Feat. code	CCIN	Description
0627	2780	Linux Direct Attach - #2780
0628	5703	Linux Direct Attach - 3
0629	5758	Direct Attach #5758
0632	28EF	USB 2.0 PCI Adapter
0633	2849	LANAI+ (GXT 135P)
0634	2944	128-port ASYNC Adapter
0635	2962	SDLC/X.25 - 2-port Adapter
0636	2842	Graphics Adapter (GXT4500P)
0637	4961	100/10 Mbps 4-port Ethernet Adapter
0638	6230	SSA (40 MBps) Adapter
0639	6231	128 MB DIMM & CD-ROM
0640	6235	Fast Write Cache Option
0641	2780 574F	(#0641) - Direct Attach #5590 PCI-X Ultra320 SCSI Disk Controller
0642	2498	PCI Ultra-3 RAID Adapter
0643	5706	Linux Direct Attach - #5706
0644	5707	Linux Direct Attach - #5707
0645	5702	Direct Attach #5712
0646	5716	Direct Attach #5716
0647	571A	DIrect Attach PCI-X Disk/Tape Controller w/o IOP
0648	571B	Direct Attach PCI-X Disk Controller - 90 MB w/o IOP
0649	571E	Direct Attach PCI-X Disk Controller - 1.5 GB Linux or AIX
0650	571E	Direct Attach PCI-X Disk Controller - 1.5 GB EXP24 disk controller
0651	571F	Direct Attach PCI-X Disk Controller - 1.5 GB EXP24 disk controller with embedded auxiliary write cache
0654	571F	Direct attached #5800
0694	5094	#5094 Equivalent
0719	N/A	Load Source Not in CEC
0720	N/A	Load Source in #0595/#5095
0721	N/A	Load Source in #5094/#5294
0725	N/A	Load Source in #5786/#5787
0836	N/A	#4328 Load Source Specify
0838	N/A	#3676 Load Source Specify
0839	N/A	#3677 Load Source Specify
0860	N/A	iSeries Server #2463
0861	N/A	iSeries Server #2463
0862	N/A	iSeries Server #2464
0868	N/A	iSeries Server #2465
0889	N/A	iSeries Server #2489
0900	N/A	Solution Package for #8950
0901	N/A	Solution Package for #8951
0902	N/A	Solution Package for #8952
0903	N/A	Solution Package for #8953
0904	N/A	Solution Package for #8954
0905	N/A	Solution Package for #8955
0906	N/A	1-way Server Feat 520 1 x #8327/#8330
0909	N/A	1/2-way Server Feat 525 1 x #8330
0910	N/A	1/4-way Server Feat 550 2 x #8312
0914	N/A	Solution Package for #8958
0915	N/A	Solution Package for #8958
0919	N/A	Solution package for #8961
0920	N/A	Solution Package for #8961
0921	N/A	Solution Package for #8971
0922	N/A	Solution Package for #8971

Feat. code	CCIN	Description
0923	N/A	Solution Package for #8962
0924	N/A	Solution Package for #8971
0926	N/A	Solution Package for #8971
0928	N/A	Capacity Backup for #8971
0930	N/A	Solution Package for #8971
0934	N/A	2/4-way Server Feat 570 2 x #8338
0935	N/A	4/8-way Server Feat 570 4 x #8338
0936	N/A	8/16-way Server Feat 570 8 x #8338
0937	N/A	2/16-way Server Feat 570 8 x #8338
0940	N/A	8/16-way Server Feat 595 1 x #8966
0941	N/A	16/32-way Server Feat 595 2 x #8966
0943	N/A	32/64-way Server Feat 595 4 x #8966
0944	N/A	4/32-way Server Feat 595 2 x #8966
0953	N/A	8/16-way Server Feat 595 1 x #8968
0954	N/A	16/32-way Server Feat 595 2 x #8968
0955	N/A	32/64-way Server Feat 595 4 x #8968
0958	N/A	2/16-way Server Feat 595 1 x #8968
0959	N/A	4/32-way Server Feat 595 2 x #8968
0970	N/A	1-way Server Feat 520 1 x #8325/#8327
0975	N/A	1-way Server Feat 520 1 x #8325/#8327
1105	6105	Single Disk Unit (320 MB) Kit
1107	6107	Single Disk Unit (400 MB) Kit
1109	6109	Single Disk Unit (988 MB) Kit
1200	6105	Single Disk Unit (320 MB) Kit
1201	6107	Single Disk Unit (400 MB) Kit
1202	6109	Single Disk Unit (988 MB) Kit
1203	6602	Single Disk Unit (1031 MB) Kit
1204	6603	Single Disk Unit (1967 MB) Kit
1205	6605	Additional 1.031 GB Disk Unit
1206	6606	Additional 1.967 GB Disk Unit
1207	6607	Additional 4.194 GB Disk Unit
1210	6109	Additional Disk Unit (988 MB)
1211	6602	Additional Disk Unit (1.031 GB)
1212	6603	Additional Disk Unit (1967 MB)
1213	6602	Standard Disk Unit (1.031 GB, 2 byte)
1214	6603	Optional Base Disk Unit (1.967 GB, 2b)
1250	6378	525 MB ¼-inch Tape Kit
1251	6379	1.2 GB ¼-inch Tape Kit
1252	6380	2.5 GB ¼-inch Tape Kit
1260	6380	2.5 GB ¼-inch Tape
1261	6390	7.0 GB 8 mm Cart Tape
1262	6335	840 MB QIC-3040-MC
1266	4326	#4326 in 5786/5787
1267	4327	#4327 in 5786/5787
1268	4328	#4328 in 5786/5787
1269	4329	282.25 GB 15k rpm EXP24 Disk Unit
1292	4330	300 GB 15k rpm EXP24 Disk Unit
1307	1307	1.75m HSL-2 Cable
1308	1308	2.5m HSL-2Cable
1312	6602	1-byte 1.03 GB Disk Unit Kit
1313	6603	1-byte 1.96 GB Disk Unit Kit
1322	6602	2-byte 1.03 GB Disk Unit Kit
1323	6603	2-byte 1.96 GB Disk Unit Kit
1325	6605	2-byte 1.03 GB Disk Unit Kit
1326	6606	2-byte 1.96 GB Disk Unit Kit
1327	6607	2-byte 4.19 GB Disk Unit Kit
1333	6713	2-byte 8.58 GB Disk Unit Kit
1334	6714	2-byte 17.54 GB Disk Unit Kit

Feat. code	CCIN	Description
1335	6335	6335 External Conversion Kit
1336	6606	2-byte 1.96 GB Disk Unit Kit
1337	6607	2-byte 4.19 GB Disk Unit Kit
1349	6379	1.2 GB ¼-inch Tape Kit
1350	6380	2.5 GB ¼-inch Tape Kit
1355	6385	13.0 GB ¼-inch Tape Kit
1360	6390	7.0 GB 8 mm Cartridge Tape Kit
1378	6378	525 MB ¼-inch Cart Tape Kit
1379	6379	1.2 GB ¼-inch Cart Tape Kit
1380	6380	2.5 GB ¼-inch Cart Tape Kit
1460	0343	3m Copper HSL Cable
1461	0361	6m Copper HSL Cable
1462	0368	15 m Copper HSL Cable
1463	9206	2 m SPCN Cable
1464	9219	6 m SPCN Cable
1465	9213	15 m SPCN Cable
1466	9214	30 m SPCN Cable
1468	1468	250 m Optical SPCN Cable
1468	1469	4.3m/200V/25A HD Wired EMEA
1470	1470	6 m HSL Optical Cable
1471	1471	30 m HSL Optical Cable
1472	1472	100 m HSL Optical Cable
1473	1473	250 m HSL Optical Cable
1474	1474	6 m HSL to HSL-2 Cable
1475	1475	10 m HSL to HSL-2 Cable
1481	1481	1.2 m HSL-2 Cable
1482	1482	3.5 m HSL-2 Cable
1483	1483	10 m HSL-2 Cable
1485	1485	15 m HSL-2 Cable
1500	1500	Interactive Capacity Card
1501	1501	Interactive Capacity Card
1502	1502	Interactive Capacity Card
1503	1503	Interactive Capacity Card
1504	1504	Interactive Capacity Card
1505	1505	Interactive Capacity Card
1506	1506	Interactive Capacity Card
1507	1507	Interactive Capacity Card
1508	1508	Interactive Capacity Card
1509	1509	Interactive Capacity Card
1510	1510	Interactive Capacity Card
1511	1511	Interactive Capacity Card
1512	1512	Interactive Capacity Card
1513	1513	Interactive Capacity Card
1514	1514	Interactive Capacity Card
1516	1516	Interactive Capacity Card
1517	1517	Interactive Capacity Card
1518	1518	Interactive Capacity Card
1519	1519	Interactive Capacity Card
1520	1520	Interactive Capacity Card
1521	1521	Interactive Capacity Card
1522	1522	Interactive Capacity Card
1523	1523	Interactive Capacity Card
1524	1524	Interactive Capacity Card
1525	1525	Interactive Capacity Card
1526	1526	Interactive Capacity Card
1527	1527	Interactive Capacity Card
1531	1531	Interactive Capacity Card
1532	1532	Interactive Capacity Card

Feat. code	CCIN	Description
1533	1533	Interactive Capacity Card
1534	1534	Interactive Capacity Card
1535	1535	Interactive Capacity Card
1536	1536	Interactive Capacity Card
1537	1537	Interactive Capacity Card
1540	1540	Interactive Capacity Card
1541	1541	Interactive Capacity Card
1542	1542	Interactive Capacity Card
1543	1543	Interactive Capacity Card
1544	1544	Interactive Capacity Card
1545	1545	Interactive Capacity Card
1546	1546	Interactive Capacity Card
1547	1547	Interactive Capacity Card
1548	1548	Interactive Capacity Card
1576	1576	Interactive Capacity Card
1577	1577	Interactive Capacity Card
1578	1578	Interactive Capacity Card
1579	1579	Interactive Capacity Card
1581	1581	Interactive Capacity Card
1583	1583	Interactive Capacity Card
1585	1585	Interactive Capacity Card
1587	1587	Interactive Capacity Card
1588	1588	Interactive Capacity Card
1591	1591	Interactive Capacity Card
1602	6602	Single Disk Unit Kit (1.03 GB)
1603	6603	Single Disk Unit Kit (1.96 GB
1614	N/A	870 POD Activation
1682	N/A	On/Off Prepaid for Model 825
1683	N/A	On/Off Prepaid for Model 825
1684	N/A	On/Off Prepaid for Model 870
1685	N/A	On/Off Prepaid for Model 870
1686	N/A	On/Off Prepaid for Model 870
1688	N/A	On/Off Prepaid for Model 890
1689	N/A	On/Off Prepaid for Model 890
1691	N/A	On/Off Prepaid for Model 890
1692	N/A	On/Off Prepaid for Model 890
1695	N/A	On/Off Prepaid for Model 870
1774	N/A	TCoD Enablement for Model 870
1784	N/A	TCoD Billing for Model 870
1800	1800	HSL-2 Ports - 2 Copper
1801	1801	HSL-2 Ports - 2 Optical
1802	1802	12X Channel CEC GX Adapter IBT 2 port
1806	1806	HSL-2 Ports - 2 Copper
1807	1807	HSL-2 Ports - 2 Optical
1827	182A	Serial-UPS Conversion Cable
1829	N/A	0.6 meter 12X Cable
1830	N/A	1.5 meter 12X Cable
1834	N/A	8.0 meter 12X Cable
1840	N/A	3.0 meter 12X Cable
1846	28D4	Operator Panel - Model 570
1850	2118	VHDCI to P Converter Cable
1851	2424	0.6m SCSI P-P Cable
1852	2425	2.5m SCSI P-P Cable
1855	2861	4-port EIA 232 Cable
1857	185D	2 Enclosure SP Flex Cable
1858	185E	3 Enclosure SP Flex Cable
1859	185F	4 Enclosure SP Flex Cable

Feat. code	CCIN	Description
1873	3124	Drawer to Drawer Serial Cable
1874	3125	Rack to Rack Serial Cable
1875	3925	Serial Port Converter Cable
1876	3636	L200 Flat Panel Monitor
1889	6120	80 GB VXA-2 Tape Drive
1893	3273	36.4 GB 10k rpm Disk Unit
1894	3274	73.4 GB 10k rpm Disk Unit
1895	3275	146.8 GB 10k rpm Disk Unit
1896	3277	36.4 GB 15k rpm Disk Unit
1897	3278	73.4 GB 15k rpm Disk Unit
1898	3279	146.8 GB Disk Unit
2010	2010	1.6 SPPR CPU for Model 20S
2030	2030	0.7 SPPR CPU for Model 200
2031	2031	1.1 SPPR CPU for Model 200
2032	2032	1.6 SPPR CPU for Model 200
2040	2040	1.1 SPPR Processor
2041	2041	1.6 SPPR Processor
2042	2042	2.0 SPPR Processor
2043	2043	3.0 SPPR Processor
2044	2044	5.0 SPPR Processor
2050	2050	6.4 SPPR Processor
2051	2051	11.4 SPPR Processor
2052	2052	16.8 SPPR Processor
2061	206A	720 (240 CPW) with #1500 Interactive
2061	206B	720 (240 CPW) with #1501 Interactive
2061	206C	720 (240 CPW) with #1502 Interactive
2061	243A	Model 720 Processor
2062	206D	720 (420 CPW) with #1500 Interactive
2062	242C	Model 720 Processor
2062	206E	720 (420 CPW) with #1501 Interactive
2062	206F	720 (420 CPW) with #1502 Interactive
2062	207A	720 (420 CPW) with #1503 Interactive
2063	207B	720 (810 CPW) with #1500 Interactive
2063	207C	720 (810 CPW) with #1502 Interactive
2063	242D	Model 720 2-way Processor
2063	207D	720 (810 CPW) with #1503 Interactive
2063	207E	720 (810 CPW) with #1504 Interactive
2064	207F	720 (1600 CPW) with #1500 Interactive
2064	208A	720 (1600 CPW) with #1502 Interactive
2064	208B	720 (1600 CPW) with #1503 Interactive
2064	208C	720 (1600 CPW) with #1504 Interactive
2064	208D	720 (1600 CPW) with #1505 Interactive
2064	242B	Model 720 4-way Processor
2065	241F	Model 730 Processor
2065	2A6A	560 CPW Model 730 Processor with #1506 Interactive Feature
2065	2A6B	560 CPW Model 730 Processor with #1507 Interactive Feature
2065	2A6C	560 CPW Model 730 Processor with #1508 Interactive Feature
2065	2A6D	560 CPW Model 730 Processor with #1509 Interactive Feature
2066	2066	Model 730 2-way Processor
2066	2A6E	1050 CPW Model 730 Processor with #1506 Interactive Feature
2066	2A6F	1050 CPW Model 730 Processor with #1507 Interactive Feature
2066	2B6A	1050 CPW Model 730 Processor with #1508 Interactive Feature

Feat. code	CCIN	Description
2066	2B6B	1050 CPW Model 730 Processor with #1509 Interactive Feature
2066	2B6C	1050 CPW Model 730 Processor with #1510 Interactive Feature
2067	241C	Model 730 4-way Processor
2067	2B6D	2000 CPW Model 730 Processor with #1506 Interactive Feature
2067	2B6E	2000 CPW Model 730 Processor with #1508 Interactive Feature
2067	2B6F	2000 CPW Model 730 Processor with #1509 Interactive Feature
2067	2C6A	2000 CPW Model 730 Processor with #1510 Interactive Feature
2067	2C6B	2000 CPW Model 730 Processor with #1511 Interactive Processor
2068	241D	Model 730 8-way Processor
2068	2C6C	2890 CPW Model 730 Processor with #1506 Interactive Feature
2068	2C6D	2890 CPW Model 730 Processor with #1508 Interactive Feature
2068	2C6E	2890 CPW Model 730 Processor with #1509 Interactive Feature
2068	2C6F	2890 CPW Model 730 Processor with #1510 Interactive Feature
2068	2D6A	2890 CPW Model 730 Processor with #1511 Interactive Processor
2069	241B	Model 740 8-way Processor
2069	2D6B	3660 CPW Model 740 Processor with #1514 Interactive Feature
2069	2D6C	3660 CPW Model 740 Processor with #1510 Interactive Feature
2069	2D6D	3660 CPW Model 740 Processor with #1511 Interactive Feature
2069	2D6E	3660 CPW Model 740 Processor with #1512 Interactive Feature
2070	241B	Model 740 12-way Processor
2070	2E6A	4550 CPW Model 740 Processor with #1514 Interactive Feature
2070	2E6B	4550 CPW Model 740 Processor with #1510 Interactive Feature
2070	2E6C	4550 CPW Model 740 Processor with #1511 Interactive Feature
2070	2E6D	4550 CPW Model 740 Processor with #1512 Interactive Feature
2070	2E6E	4550 CPW Model 740 Processor with #1513 Interactive Feature
2114	2114	External SCSI Y-Cable
2159	2159	Model 170 Processor
2160	2160	Model 170 Processor
2164	2164	Model 170 Processor
2176	2176	Model 170 Processor
2183	2183	Model 170 Processor
2207	2207	Model S40 8-way Processor
2208	2208	Model S40 12-way Processor
2248	2248	Model 270 Processor
2248	22A2	270 (150 CPW) with #1517 Interactive
2250	2250	Model 270 Processor
2250	22A4	270 (370 CPW) with #1516 Interactive
2250	22A5	270 (370 CPW) with #1518 Interactive
2252	2252	Model 270 Processor

Feat. code	CCIN	Description
2252	22A7	270 (950 CPW) with #1516 Interactive
2252	22A8	270 (950CPW) with #1519 Interactive
2253	2253	Model 270 2-way Processor
2253	22AA	270 (2000 CPW) with #1516 Interactive
2253	22AB	270 (2000 CPW) with #1520 Interactive
2289	2289	Model 170 Processor
2290	2290	Model 170 Processor
2291	2291	Model 170 Processor
2292	2292	Model 170 Processor
2295	2295	Model 250 Processor
2296	2296	Model 250 Processor
2298	2290	Model 170 Processor Package 64 MB
2299	2291	Model 170 Processor Package 64 MB
2315	2315	Model SB2 8-way Processor
2316	2316	Model SB3 12-way Processor
2318	2318	Model SB3 24-way Processor
2341	2341	Model S40 ISV 12-way Processor
2349	2349	Model 830 4/8-way Processor
2349	24D8	#1531 Interactive 4/8-way 830 CUoD
2349	24D9	#1532 Interactive 4/8-way 830 CUoD
2349	24DA	#1533 Interactive 4/8-way 830 CUoD
2349	24DB	#1534 Interactive 4/8-way 830 CUoD
2349	24DC	#1535 Interactive 4/8-way 830 CUoD
2349	24DD	#1536 Interactive 4/8-way 830 CUoD
2349	24DE	#1537 Interactive 4/8-way 830 CUoD
2351	2351	Model 830 1/8-way POD
2351	26A8	Model 830 1/8-way POD with #1531
2351	26A9	Model 830 1/8-way POD with #1532
2351	26AA	Model 830 1/8-way POD with #1533
2351	26AB	Model 830 1/8-way POD with #1534
2351	26AC	Model 830 1/8-way POD with #1535
2351	26AD	Model 830 1/8-way POD with #1536
2351	26AE	Model 830 1/8-way POD with #1537
2352	2352	Model 840 8/12-way POD
2352	26B0	Model 840 8/12-way POD with #1540
2352	26B1	Model 840 8/12-way POD with #1541
2352	26B2	Model 840 8/12-way POD with #1542
2352	26B3	Model 840 8/12-way POD with #1543
2352	26B4	Model 840 8/12-way POD with #1544
2352	26B5	Model 840 8/12-way POD with #1545
2352	26B6	Model 840 8/12-way POD with #1546
2353	2353	Model 840 12/18-way POD
2353	26B8	Model 840 12/18-way POD with #1540
2353	26B9	Model 840 12/18-way POD with #1541
2353	26BA	Model 840 12/18-way POD with #1542
2353	26BB	Model 840 12/18-way POD with #1543
2353	26BC	Model 840 12/18-way POD with #1544
2353	26BD	Model 840 12/18-way POD with #1545
2353	26BE	Model 840 12/18-way POD with #1546
2353	26BF	Model 840 12/18-way POD with #1547
2354	2354	Model 840 18/24-way POD
2354	26C0	Model 840 18/24-way POD with #1540
2354	26C1	Model 840 18/24-way POD with #1541
2354	26C2	Model 840 18/24-way POD with #1542
2354	26C3	Model 840 18/24-way POD with #1543
2354	26C4	Model 840 18/24-way POD with #1544
2354	26C5	Model 840 18/24-way POD with #1545
2354	26C6	Model 840 18/24-way POD with #1546

Feat. code	CCIN	Description
2354	26C7	Model 840 18/24-way POD with #1547
2354	26C8	Model 840 18/24-way POD with #1548
2383	2383	Model 170 Processor
2384	2384	Model 170 Processor
2385	2385	Model 170 Processor
2386	2386	Model 170 Processor
2388	2388	Model 170 2-way Processor
2395	2395	Model 820 Processor
2395	23A1	820 (370 CPW) with #1521 Interactive
2395	23A2	820 (370 CPW) with #1522 Interactive
2395	23A3	820 (370 CPW) with #1523 Interactive
2395	23A4	820 (370 CPW) with #1524 Interactive
2396	2396	Model 820 Processor
2396	23A9	820 (950 CPW) with #1521 Interactive
2396	23AA	820 (950 CPW) with #1522 Interactive
2396	23AB	820 (950 CPW) with #1523 Interactive
2396	23AC	820 (950 CPW) with #1524 Interactive
2396	23AD	820 (950 CPW) with #1525 Interactive
2397	2397	Model 820 2-way Processor
2397	23B1	820 (2000 CPW) with #1521 Interactive
2397	23B2	820 (2000 CPW) with #1522 Interactive
2397	23B3	820 (2000 CPW) with #1523 Interactive
2397	23B4	820 (2000 CPW) with #1524 Interactive
2397	23B5	820 (2000 CPW) with #1525 Interactive
2397	23B6	820 (2000 CPW) with #1526 Interactive
2398	2398	Model 820 4-way Processor
2398	23B8	820 (3200 CPW) with #1521 Interactive
2398	23B9	820 (3200 CPW) with #1522 Interactive
2398	23BA	820 (3200 CPW) with #1523 Interactive
2398	23BB	820 (3200 CPW) with #1524 Interactive
2398	23BC	820 (3200 CPW) with #1525 Interactive
2398	23BD	820 (3200 CPW) with #1526 Interactive
2398	23BE	820 (3200 CPW) with #1527 Interactive
2400	2400	Model 830 2-way Processor
2400	23C1	830 (1850 CPW) with #1531 Interactive
2400	23C2	830 (1850 CPW) with #1532 Interactive
2400	23C3	830 (1850 CPW) with #1533 Interactive
2400	23C4	830 (1850 CPW) with #1534 Interactive
2400	23C5	830 (1850 CPW) with #1535 Interactive
2402	2402	Model 830 4-way Processor
2402	23D1	830 (4200 CPW) with #1531 Interactive
2402	23D2	830 (4200 CPW) with #1532 Interactive
2402	23D3	830 (4200 CPW) with #1533 Interactive
2402	23D4	830 (4200 CPW) with #1534 Interactive
2402	23D5	830 (4200 CPW) with #1535 Interactive
2402	23D6	830 (4200 CPW) with #1536 Interactive
2403	23D8	830 (7350 CPW) with #1531 Interactive
2403	23D9	830 (7350 CPW) with #1532 Interactive
2403	23DA	830 (7350 CPW) with #1533 Interactive
2403	23DB	830 (7350 CPW) with #1534 Interactive
2403	23DC	830 (7350 CPW) with #1535 Interactive
2403	23DD	830 (7350 CPW) with #1536 Interactive
2403	23DE	830 (7350 CPW) with #1537 Interactive
2403	2403	Model 830 8-way Processor
2407	2407	Dedicated Domino Processor
2408	2408	Dedicated Domino Processor
2409	2409	Dedicated Domino Processor (2-way)
2410	2410	100 Client Server Processor

Feat. code	CCIN	Description
2411	2411	3.0 SPPR Processor
2412	2412	6.1 SPPR Processor
2413	2531	E06 Processor
2414	2585	F02 Processor
2416	2416	Model 840 8/12-way POD
2416	24C0	#1540 interactive 8/12-way 840 POD
2416	24C1	#1541 interactive 8/12-way 840 POD
2416	24C2	#1542 interactive 8/12-way 840 POD
2416	24C3	#1543 interactive 8/12-way 840 POD
2416	24C4	#1544 interactive 8/12-way 840 POD
2416	24C5	#1545 interactive 8/12-way 840 POD
2416	24C6	#1546 interactive 8/12-way 840 POD
2417	2417	Model 840 12/18-way POD
2417	24C8	#1540 interactive 12/18-way 840 POD
2417	24C9	#1541 interactive 12/18-way 840 POD
2417	24CA	#1542 interactive 12/18-way 840 POD
2417	24CB	#1543 interactive 12/18-way 840 POD
2417	24CC	#1544 interactive 12/18-way 840 POD
2417	24CD	#1545 interactive 12/18-way 840 POD
2417	24CE	#1546 interactive 12/18-way 840 POD
2418	23E8	840 (10000 CPW) with #1540 Interact.
2418	23E9	840 (10000 CPW) with #1541 Interact.
2418	23EA	840 (10000 CPW) with #1542 Interact.
2418	23EB	840 (10000 CPW) with #1543 Interact.
2418	23EC	840 (10000 CPW) with #1544 Interact.
2418	23ED	840 (10000 CPW) with #1545 Interact.
2418	23EE	840 (10000 CPW) with #1546 Interact.
2418	2418	Model 840 12-way Processor
2419	2419	Model 840 18/24-way POD
2419	24D0	#1540 interactive 18/24-way 840 POD
2419	24D1	#1541 interactive 18/24-way 840 POD
2419	24D2	#1542 interactive 18/24-way 840 POD
2419	24D3	#1543 interactive 18/24-way 840 POD
2419	24D4	#1544 interactive 18/24-way 840 POD
2419	24D5	#1545 interactive 18/24-way 840 POD
2419	24D6	#1546 interactive 18/24-way 840 POD
2419	24D7	#1547 interactive 18/24-way 840 POD
2420	23F8	840 (16500 CPW) with #1540 Interact.
2420	23F9	840 (16500 CPW) with #1541 Interact.
2420	23FA	840 (16500 CPW) with #1542 Interact.
2420	23FB	840 (16500 CPW) with #1543 Interact.
2420	23FC	840 (16500 CPW) with #1544 Interact.
2420	23FD	840 (16500 CPW) with #1545 Interact.
2420	23FE	840 (16500 CPW) with #1546 Interact.
2420	23FF	840 (16500 CPW) with #1547 Interact.
2420	2420	Model 840 24-way Processor
2422	2422	Dedicated Domino Processor
2423	2423	Dedicated Domino Processor
2424	2424	Dedicated Domino 2-way Processor
2425	2425	Dedicated Domino Processor
2426	2426	Dedicated Domino 2-way Processor
2427	2427	Dedicated Domino 4-way Processor
2431	23E7	Model 270 Processor with #1518
2431	2431	Model 270 Processor
2432	23F0	Model 270 Processor with #1516
2432	23F1	Model 270 Processor with #1519
2432	25BA	Model 270 Processor
2434	23F4	Model 270 Processor with #1516
2434	23F5	Model 270 Processor with #1520
2434	2434	Model 270 2-way Processor
2435	2435	Model 820 Processor
2435	249B	Model 820 Processor with #1521
2435	249C	Model 820 Processor with #1522
2435	249D	Model 820 Processor with #1523
2435	249E	Model 820 Processor with #1524
2436	2436	Model 820 Processor
2436	24A8	Model 820 Processor with #1521
2436	24A9	Model 820 Processor with #1522
2436	24AA	Model 820 Processor with #1523
2436	24AB	Model 820 Processor with #1524
2436	24AC	Model 820 Processor with #1525
2437	2437	Model 820 2-way Processor
2437	24B0	Model 820 Processor with #1521
2437	24B1	Model 820 Processor with #1522
2437	24B2	Model 820 Processor with #1523
2437	24B3	Model 820 Processor with #1524
2437	24B4	Model 820 Processor with #1525
2437	24B5	Model 820 Processor with #1526
2438	2438	Model 820 4-way Processor
2438	24B8	Model 820 Processor with #1521
2438	24B9	Model 820 Processor with #1522
2438	24BA	Model 820 Processor with #1523
2438	24BB	Model 820 Processor with #1524
2438	24BC	Model 820 Processor with #1525
2438	24BD	Model 820 Processor with #1526
2438	24BE	Model 820 Processor with #1527
2452	2452	Dedicated Domino Processor
2452	25BA	Dedicated Domino Processor
2454	2454	Dedicated Domino 2-way Processor
2456	2456	Dedicated Domino Processor
2457	2457	Dedicated Domino 2-way Processor
2458	2458	Dedicated Domino 4-way Processor
2461	2461	Model 840 24-way Processor
2461	26D0	Model 840 24-way Processor with #1540
2461	26D1	Model 840 24-way Processor with #1541
2461	26D2	Model 840 24-way Processor with #1542
2461	26D4	Model 840 24-way Processor with #1544
2461	26D5	Model 840 24-way Processor with #1545
2461	26D6	Model 840 24-way Processor with #1546
2461	26D7	Model 840 24-way Processor with #1547
2461	26D8	Model 840 24-way Processor with #1548
2463	25B9	Model 800 1-way Processor
2464	25BA	Model 800 1-way Processor
2465	25BA	Model 800 1-way Processor
2466	25BA	Model 800 1-way Processor
2467	25F0	Model 800 1-way Processor
2469	25EB	Model 810 2-way Processor
2473	25DC	Model 825 3/6-way Processor
2486	2486	Model 870 8/16-way Processor
2487	2487	Model 890 16/24-way Processor
2488	2488	Model 890 24/32-way Processor
2495	25DC	Model 825 1/6-way Processor
2496	2486	Model 870 8/16-way Processor
2497	2487	Model 890 16/24-way Processor
2498	2488	Model 890 24/32-way Processor
2499	2488	Model 890 4/32-way Processor

Feat. code	CCIN	Description
2515	2515	C10 Floating Point Processor
2516	2516	C20 Floating Point Processor
2523	2523	D80 Processor
2525	2525	D02 Processor
2528	2528	16.8 SPPR CPU for Model F97
2530	2530	E04 Processor
2533	2533	E20 Processor
2534	2534	E25 Processor
2536	2536	E35 Processor
2537	2537	E45 Processor
2539	2539	E02 Twinaxial
2540	2540	0.7 SPPR CPU for Model D35
2541	2541	D45 Processor
2542	2542	D50 Processor
2543	2543	D60 Processor
2544	2544	D70 Processor
2552	2552	C06 Processor
2553	2553	D06 Processor
2554	2554	D04 Processor
2555	2555	D10 Processor
2556	2556	D20 Processor
2557	2557	D25 Processor
2558	2558	C04 Processor 8 MB
2559	2559	E50 Processor
2560	2560	E60 Processor
2561	2561	E70 Sort Processor
2562	2562	E80 Sort Processor
2563	2563	E90 (2way) Sort
2568	2568	E95 (2way) Sort
2582	2582	F06 Processor
2583	2583	F25 Processor
2586	2586	0.7 SPPR for F04
2587	2587	F10 Processor
2588	2588	F20 Processor
2591	2591	Ext. 1.44 GB Diskette Drive
2592	2592	F35 Processor
2593	2593	F45 Sort Processor
2594	2594	F50 Processor
2595	2595	F60 Sort Processor
2596	2596	F70 Processor 1-way
2597	2597	F80 Processor 2-way
2598	2598	F90 Processor 2-way
2599	259A	F95 Processor 2-way
2600	2600	Magnetic Storage Controller
2601	2601	9346 Mag Tape Unit Controller
2602	2602	Processor Expansion
2604	2604	3422 3430 Mag Tape Subsystem
2605	2605	ISDN Basic Rate Adapter
2607	2602	9348 Mag Tape Unit Attachment
2608	2608	2440/9348 HCD Mag Tape Attachment
2609	2609	EIA 232/V.24 2-Line Adapter
2610	2610	X.21 2-Line Adapter
2611	2611	DASD Controller
2612	2612	EIA 232/V.24 1-Line Adapter
2613	2613	V.35 1-Line Adapter
2614	2614	X.21 1-Line Adapter
2617	2617	Ethernet/IEEE 802.3 CSMA/CD
2618	2618	Fiber Distributed Data Adapter

Feat. code	CCIN	Description
2619	2619	16/4 Mbps Token-Ring Adapter
2620	2620	Cryptographic Processor
2621	2621	Removable Media Device Attachment
2622	2622	3490 Magnetic Tape Attachment
2623	2623	Six-Line Comm Controller
2624	2624	Storage Device Controller
2625	2625	Ethrnet/IEEE 802.3 CSMA/CD
2626	2626	16/4 Mbps Token-Ring Adapter
2628	2628	Cryptographic Processor - Comm
2629	2629	LAN/WAN/Workstation IOP
2634	2634	16/4 Mbps Token-Ring Adapter
2636	2636	16/4 Mbps Token-Ring Adapter
2640	6337	DVD-ROM Slimline Drive
2644	2644	34xx Magnetic Tape Attachment
2647	2647	9348 Model 2 Tape Attachment
2654	2609	EIA 232/V.24 2-Line 20E
2655	2609	EIA 232/V.24 2-Line 20
2656	2610	X.21 2-Line 20
2657	2609	EIA 232/V.24 2-Line 50E
2658	2609	EIA 232/V.24 2-Line 50
2659	2610	X.21 2-Line 50
2663	2663	I/O Attachment Processor
2664	2664	Integrated Fax Adapter
2665	2665	Copper Dist Data Interface
2666	2666	Frame Relay Adapter
2668	2668	AS/400 Wireless LAN Adapter
2669	2669	Shared Bus Interface Card
2670	2670	System Unit Expansion Tower (optical)
2671	2671	PCI Bus IOP
2672	2672	PCI Bus IOP
2673	2673	Optical Bus Adapter
2674	2674	Optical Bus Adapter
2680	2680	Optical Bus Receiver - 266 Mbps
2682	2682	Opitcal Bus Receiver (1063 Mbps)
2683	2683	266 Mbps OptiConnect Receiver
2685	2685	1063 Mbps OptiConnect Receiver
2686	2686	Optical Link Processor (266 Mbps)
2688	2688	Optical Link Processor (1063 Mbps)
2691	2691	Optical Bus Adapt w/Token Ring
2692	2692	Optional Bus Adapt w/Ethernet
2693	2693	Optional Bus Adapt w/Token Ring
2694	2694	Optional Bus Adapt w/Ethernet
2695	2695	Optical Bus Adapter
2699	2699	2-Line WAN IOA
2705	2705	M1 Filler Tray
2706	2706	M2 Terminator Tray
2713	2713	SPD I/O Regulator
2715	2715	Processor/Memory Regulator
2718	2718	PCI Magnetic Media Controller
2720	2720	PCI WAN/Twinaxial IOA
2721	2721	PCI 2-Line WAN IOA
2722	2722	PCI Twinaxial Workstation IOA
2723	2723	PCI Ethernet IOA
2724	2724	PCI 16/4 Mbps Token-Ring IOA
2726	2726	PCI RAID Disk Unit Controller
2729	2729	PCI Magnetic Media Controller
2730	2730	Programmable Regulator
2732	2732	PCI Serial HIPPI Adapter

Feat. code	CCIN	Description
2735	2735	Optical Bus Adapter
2736	2736	Optical Bus Adapter
2737	2737	PCI USB 1.1 Adapter
2738	2738	HSL Ports - 8 Copper
2739	2739	Optical Bus Adapter
2740	2740	PCI RAID Disk Unit Controller
2741	2741	PCI RAID Disk Unit Controller
2742	2742	PCI 2-Line WAN IOA
2743	2743	PCI 1 Gbps Ethernet IOA
2744	2744	PCI 100 Mbps Token-Ring IOA
2745	2745	PCI 2-Line WAN IOA
2746	2746	PCI Twinaxial Workstation IOA
2748	2748	PCI RAID Disk Unit Controller
2749	2749	PCI Ultra Mag Media Controller
2750	2750	PCI ISDN BRI U IOA
2751	2751	PCI ISDN BRI S/T IOA
2754	2754	HSL Ports - 8 Copper
2755	2755	HSL Ports -16 Copper
2757	2757	PCI-X Ultra RAID Disk Controller
2758	2758	HSL Ports - 2 Optical/ 6 Copper
2759	2759	HSL Ports - 4 Optical/12 Copper
2760	2760	PCI 1 Gbps Ethernet UTP IOA
2761	2761	PCI Integrated Analog Modem
2763	2763	PCI RAID Disk Unit Controller
2765	2765	PCI Fibre Channel Tape Controller
2766	2766	PCI Fibre Channel Disk Controller
2768	2768	PCI Magnetic Media Controller
2772	2772	PCI Dual WAN/Modem IOA
2773	2772	PCI Dual WAN/Modem IOA(ANSI)
2774	2758	HSL Ports - 2 Optical/ 6 Copper
2776	2776	HSL-2 Ports - 8 Copper
2777	2754	HSL Ports - 8 Copper
2778	2778	PCI RAID Disk Unit Controller
2780	2780	PCI Ultra 4 SCSI Disk Controller
2782	2782	PCI-X RAID Disk Unit Controller
2785	2785	HSL-2 Ports - 2 Copper
2786	2786	HSL Ports - 2 Optical
2788	2788	HSL Ports - 8 Optical
2789	2789	HSL Ports - 4 Optical
2790	2890	PCI Integrated Netfinity Server
2791	2890	PCI Integrated xSeries Server
2792	2892	PCI Integrated xSeries Server
2793	2793	PCI 2-Line WAN w/Modem
2794	2793	PCI 2-Line WAN w/Modem (CIM)
2795	2895	128 MB Server Memory
2796	2896	256 MB Server Memory
2797	2897	1 GB Server Memory
2799	2890	PCI Integrated xSeries Server
2801	2801	1.96 GB Internal Disk Unit
2802	2802	2.0 GB Internal Disk Unit
2805	2805	PCI Quad Modem IOA
2806	2805	PCI Quad Modem IOA (CIM)
2809	2809	PCI LAN/WAN/Workstation IOP
2810	2810	LAN/WAN IOP
2811	2811	PCI 25 Mbps UTP ATM
2812	2812	PCI 45 Mbps Coax T3/DS3 ATM
2813	2813	PCI 155 Mbps MMF ATM
2814	2813	PCI 100 Mbps MMF ATM

Feat. code	CCIN	Description
2815	2815	PCI 155 Mbps UTP OC3 ATM
2816	2816	PCI 155 Mbps MMF ATM
2817	2817	PCI 155 Mbps MMF ATM
2818	2818	PCI 155 Mbps SMF OC3 ATM
2819	2819	PCI 34 Mbps Coax E3 ATM
2824	2824	PCI LAN/WAN/Workstation IOP
2830	2830	Main Storage Expansion
2838	2838	PCI 100/10 Mbps Ethernet IOA
2842	2842	PCI IOP
2843	2843	PCI IOP
2844	2844	PCI IOP
2847	2847	Fibre Channel IOP for SAN load source
2849	2849	PCI 100/10 Mbps Ethernet IOA
2850	2850	Integrated PC Server 32 MB
2851	2850	PCI Integrated PC Server
2852	2850	PCI Integrated PC Server
2853	2853	3450 0.66m system to device cable
2854	2850	PCI Integrated PC Server
2855	2855	3450 1.2m system to device cable
2856	2856	3450 1.2m system to device cable
2857	2850	PCI Integrated PC Server
2858	2850	FSIOA 128 MB Memory Keyboard Mouse
2860	2860	16 MB IOP Memory
2861	2861	32 MB IOP Memory
2862	2862	128 MB IOP Memory
2863	2863	Cable, Artic960HX
2864	2864	Cable, Artic960HX
2865	2850	PCI Integrated Netfinity Server
2866	2850	PCI Integrated Netfinity Server
2867	2867	256 MB IOP Memory
2868	2850	PCI Integrated Netfinity Server
2877	2877	Cable H.100 BUS
2881	2881	Main Storage Expansion
2884	2884	Main Storage Expansion
2886	2886	Optical Bus Adapter
2887	2887	HSL-2 Bus Adapter
2888	2888	HSL-2/RIO-G Ports - 2 Copper
2890	2890	PCI Integrated Netfinity Server
2891	2890	PCI Integrated xSeries Server
2892	2892	PCI Integrated xSeries Server
2893	576C	PCIe 2-Line WAN w/Modem
2984	576C	PCIe 2-Line WAN w/Modem CIM
2895	2895	128 MB Server Memory
2896	2896	256 MB Server Memory
2897	2897	1 GB Server Memory
2899	2890	PCI Integrated xSeries Server
2934	2934	Async Term/Printer Cable
2936	2936	Async Modem Cable-EIA232/188
2943	2943	8-port EIA232/422 Adapter
2946	2946	622 MBS ADM Fiber Adpt
2947	2947	Artic960HX Adpt
2951	2951	Hermosa cable EIA232
2952	2952	Hermosa cable V.35
2953	2953	Hermosa V.36
2954	2953	Hermosa cable X.21
3000	3002	Migrated 128 MB Main Storage
3001	3001	32 MB Main Storage

Feat. code	CCIN	Description
3002	3002	128 MB Main Storage
3003	3003	256 MB Main Storage
3004	3004	256 MB Main Storage
3005	3005	512 MB Main Storage
3006	3006	512 MB Main Storage
3007	3007	1 GB Main Storage
3009	3009	128 MB Main Storage
3015	3015	8 GB Main Storage
3016	3016	8 GB Main Storage
3017	3017	32 GB Main Storage
3018	3018	32 GB Main Storage
3020	3020	4 GB Main Storage
3021	3021	4 GB Main Storage
3022	3022	128 MB Main Storage
3024	3024	256 MB Main Storage
3025	3025	512 MB Main Storage
3026	3026	512 MB Main Storage
3027	3027	1 GB Main Storage
3029	3029	128 MB Main Storage
3032	3032	256 MB Main Storage
3033	3033	512 MB Main Storage
3034	3034	1 GB Main Storage
3035	3035	16 GB Main Storage
3036	3036	16 GB Main Storage
3037	3037	64 GB Main Storage PDIMM
3038	3038	64 GB Main Storage PDIMM
3042	3042	256 MB Main Storage
3043	3043	512 MB Main Storage
3044	3044	1024 MB Main Storage
3045	3045	1024 MB Main Storage
3046	3046	2048 MB Main Storage
3054	3054	4 MB Additional Main Storage
3055	3055	8 MB Additional Main Storage
3060	3060	16 MB Additional Main Storage
3061	3061	16 MB Additional Main Storage
3062	3002	128 MB Main Storage
3064	3004	256 MB Main Storage
3065	3005	512 MB Main Storage
3066	3006	512 MB Main Storage
3067	3007	1 GB Main Storage
3092	3092	256 MB Main Storage
3093	3093	512 MB Main Storage
3094	3094	1024 MB Main Storage
3095	3095	1024 MB Main Storage
3096	3096	2048 MB Main Storage
3100	3100	16 MB Main Storage
3101	3101	32 MB Main Storage
3102	3102	16 MB Main Storage
3103	3103	32 MB Main Storage
3104	3104	64 MB Main Storage
3108	3108	8 MB Main Storage
3109	3109	32 MB Main Storage
3110	3110	64 MB Main Storage
3116	3116	MFIOP Storage Expansion
3117	3117	8 MB Main Storage
3118	3118	16 MB Main Storage
3119	3119	8 MB Main Storage
3120	3120	8 MB Main Storage

Feat. code	CCIN	Description
3121	3121	8 MB Main Storage
3122	3122	32 MB Main Storage
3130	3130	32 MB Main Storage
3131	3131	64 MB Main Storage
3132	3132	128 MB Main Storage
3133	3133	64 MB Main Storage
3134	3134	128 MB Main Storage
3135	3135	256 MB Main Storage
3136	3136	256 MB Main Storage
3138	3138	64 MB Main Storage
3140	3140	8 MB Main Storage
3141	3141	16 MB Main Storage
3142	3142	32 MB Main Storage
3144	3144	8 MB Main Storage
3145	3145	16 MB Main Storage
3146	3146	32 MB Main Storage
3147	3147	32 MB Main Storage
3149	3149	128 MB Main Storage
3152	3152	32 MB Main Storage
3153	3153	64 MB Main Storage
3154	3154	128 MB Main Storage
3155	3155	256 MB Main Storage
3156	3156	64 MB Main Storage
3157	3157	128 MB Main Storage
3158	3158	256 MB Main Storage
3159	3159	8 MB Main Storage
3160	3160	16 MB Main Storage
3161	3161	32 MB Main Storage
3162	3162	128 MB Main Storage
3163	3163	256 MB Main Storage
3164	3164	512 MB Main Storage
3165	3165	1024 MB Main Storage
3166	3166	256 MB Main Storage
3172	3172	32 MB Main Storage (2 SIMMs)
3179	3179	256 MB Main Storage
3180	3180	512 MB Main Storage
3182	3172	32 MB Main Storage
3184	3184	32 MB Main Storage
3185	3185	64 MB Main Storage
3186	3186	128 MB Main Storage
3187	3187	256 MB Main Storage
3189	3189	128 MB Main Storage
3190	3190	256 MB Main Storage
3191	3191	512 MB Main Storage
3192	3192	1024 MB Main Storage
3193	3193	2048 MB Main Storage
3195	3195	4096 MB Main Storage
3196	3196	8192 MB Main Storage
3197	3197	1024 MB Main Storage
3198	3198	2048 MB Main Storage
3585	4330	300GB 15k rpm EXP24 Disk Unit
3612	3612	1024 MB Main Storage
3613	3613	2048 MB Main Storage
3614	3614	4096 MB Main Storage
3628	3628	Black P260/P275 Color
3637	3637	T541H/L150PTFT Color
3638	3638	Black C220P Color Monitor
3639	3639	Black L170P TFT Display

Feat. code	CCIN	Description
3641	3641	T115 TFT 15-inch Color Display
3643	3643	T120 TFT 20-inch Color Display
3644	3644	T119 TFT 19-inch Color Display
3645	3645	T117 TFT 17-inch Color Display
3646	N/A	73.4 GB 15k rpm SAS Disk Drive AIX/Linux
3647	N/A	146.8 GB 15k rpm SAS Disk Drive AIX/Linux
3648	N/A	300GB 15k rpm SAS Disk Drive AIX/Linux
3660		Processor Fabric Cable - 2 Drawer
3664		Processor Fabric Cable - 3 Drawer
3665		Processor Fabric Cable - 4 Drawer
3676	433B	69.7 GB 15k rpm SAS Disk Drive
3677	433C	139.5 GB 15k rpm SAS Disk Drive
3678	433D	283.7 GB 15k rpm SAS Disk Drive
4010	4010	4 MB Write Cache
4011	4011	8 MB Data Store
4012	4012	32 MB Data Store
4103	3103	32 MB Main Storage
4104	4104	4 MB Main Storage
4114	4114	4 MB Main Storage Expansion
4117	3117	8 MB Main Storage SIMM
4118	3118	16 MB Main Storage SIMM
4120	3120	8 MB Main Storage
4121	3121	8 MB Main Storage
4122	3122	32 MB Main Storage
4133	3133	64 MB Main Storage
4134	3134	128 MB Main Storage
4135	3135	256 MB Main Storage
4136	3136	256 MB Main Storage
4138	3138	64 MB Main Storage
4144	3144	8 MB Main Storage
4145	3145	16 MB Main Storage
4146	3146	32 MB Main Storage
4147	3147	32 MB Main Storage
4149	3149	128 MB Main Storage
4156	3156	64 MB Main Storage
4157	3157	128 MB Main Storage
4158	3158	256 MB Main Storage
4161	3161	32 MB Main Storage
4172	3172	32 MB Main Storage
4204	3104	64 MB Main Storage
4205	6605	Addt Disk Unit (1.031 GB)
4206	6606	Addt Disk Unit (1.967 GB)
4207	6607	Addt Disk Unit (4.194 GB)
4211	6602	Addt Disk Unit (1.031 GB)
4212	6603	Addt Disk Unit (1967 MB)
4263	4263	Direct Attach Tape Cables
4270	292C	#4270 - Controller to External Port Cable
4308	6607	4.19 GB Disk Unit
4314	6713	8.58 GB Disk Unit
4317	6717	8.58 GB 10k rpm Disk Unit
4318	6718	17.54 GB 10k rpm Disk Unit
4319	6719	35.16 GB 10k rpm Disk Unit
4324	6714	17.54 GB Disk Unit
4326	4326	35.16 GB 15k rpm Disk Unit
4327	4327	70.56 GB 15k rpm Disk Unit

Feat. code	CCIN	Description
4328	4328	141.12 GB 15k rpm Disk Unit
4331	6731	1.6 GB Read Cache Device
4332	4332	Fibre Channel Loop Controller
4400	313A	1 GB DDR2 Main Storage
4425	6321	CD-ROM
4430	6330	DVD-RAM
4431	6336	DVD-ROM
4443	309B	512 MB DDR
4444	309B	1 GB DDR DIMMs
4445	30D3	4 GB DDR DIMMs
4447	30D2	2 GB DDR DIMMs
4449	30D5	8 GB DDR DIMMs
4450	30AC	16 GB DDR DIMMs
4452	309D	2 GB Memory (4 x 512 MB DIMMs)
4453	309F	4 GB Memory (4 x 1 GB DIMMs)
4454	30AA	8 GB Memory (4 x 2 GB DIMMs)
4474	313B	2 GB DDR2 Main Storage
4475	313D	4 GB DDR2 Main Storage
4477	313E	8 GB DDR2 Main Storage
4482	63A0	4 GB ¼-inch Cartridge Tape
4483	63A0	16 GB ¼-inch Cartridge Tape
4486	63A0	25 GB ¼-inch Cartridge Tape
4487	63A0	50 GB ¼-inch Cartridge Tape Device
4487	63A0	50 GB ¼-inch Cartridge Tape
4490	309E	4 GB Memory (4 x 1 GB DIMMs)
4491	30B3	16 GB Memory (4 x 4 GB DIMMs)
4492	30F7	32 GB Memory (4 x 8 GB DIMMs)
4495	316F	4/8 GB DDR2 Main Storage
4496	314E	8/16 GB DDR2 Main Storage
4497	312F	16 GB DDR2 Main Storage
4498	314C	32 GB DDR2 Main Storage
4500	316A	0/4GB 533 MHz DDR2 Memory
4501	316B	0/8GB 533 MHz DDR2 Memory
4502	316C	0/16GB 533 MHz DDR2 Memory
4503	316D	0/32GB 400 MHz DDR2 Memory
4525	6321	CD-ROM
4530	6330	DVD-RAM
4531	6336	DVD-ROM
4533	6333	DVD-RAM
4582	63A0	4 GB ¼-inch Cartridge Tape
4583	63A0	16 GB ¼-inch Cartridge Tape
4584	63A0	30 GB ¼-inch Cartridge Tape
4585	63A0	80 GB VXA-2 Tape Drive
4685	63A0	80 GB VXA-2 Tape Drive
4586	63A0	25 GB ¼-inch Cartridge Tape
4587	63A0	50 GB ¼-inch Cartridge Tape
4605	6605	Additional Disk Unit (1.031 GB, reg)
4606	6606	Single Disk Unit (1967 MB)
4607	6607	Additional Disk Unit (4.194 GB, reg)
4625	6321	CD-ROM
4630	6330	DVD-RAM
4631	6336	DVD-ROM
4633	6333	DVD
4650	6603	Additional Disk Unit (1.967 GB, reg)
4652	6602	Single Disk Unit (1031 MB)
4682	63A0	4 GB ¼-inch Cartridge Tape
4683	63A0	16 GB ¼-inch Cartridge Tape
4684	63A0	30 GB ¼-inch Cartridge Tape

Feat. code	CCIN	Description
4685	63A0	80 GB VXA-2 Tape Drive
4686	63A0	25 GB ¼-inch Cartridge Tape
4687	63A0	50 GB ¼-inch Cartridge Tape
4690	4690	Rack Status Beacon Assembly
4691	4691	Rack Status Beacon Cable
4692	4692	Junction Box Cable
4693	4693	Rack Beacon Junction box
4710	2892	#4710 PCI Integrated xSeries Server
4723	2723	PCI 10 Mbps Ethernet IOA
4745	2745	PCI 2-Line WAN IOA
4746	2746	PCI Twinaxial Workstation IOA
4748	2748	PCI RAID Disk Unit Controller
4750	2750	#4750 PCI ISDN BRI U IOA
4751	2751	PCI ISDN BRI S/T IOA
4761	2761	PCI Integrated Analog Modem
4778	2778	PCI RAID Disk Unit Controller
4800	4758	PCI Crypto Coprocessor (-001)
4801	4758	PCI Crypto Coprocessor (-023)
4802	4758	PCI Crypto Coprocessor (-023)
4803	4758	PCI Crypto Coprocessor (-002)
4804	4758	PCI Crypto Coprocessor (-002)
4805	2058	PCI Crypto Accelerator
4806	4764	PCI-X Cryptographic Coprocessor
4810	2892	#4810 PCI Integrated xSeries Server
4811	4812	#4811 PCI Integrated xSeries Server
4812	4812	#4812 PCI Integrated xSeries Server
4813	4812	#4813 PCI Integrated xSeries Server
4815	2815	PCI 155 Mbps UTP OC3 ATM
4816	2816	PCI 155 Mbps MMF ATM
4818	2818	PCI 155 Mbps SMF OC3 ATM
4838	2838	PCI 100/10 Mbps Ethernet IOA
4910	53CF	1/4W Server Feature MMA 2 x #7380
4911	53CF	2/8W Server Feature MMA 4 x #7380
4912	53CF	4/16W Server Feature MMA 8 x #7380
4953	4953	155 MBps ATM UTP Adapter
4957	4957	155 MBps ATM Fiber Adapter
4959	4959	4/16 Token-ring Adapter
4960	4960	Crypto SSL HW Accelerator
4961	4961	240V, 6ft, 30A Line Cord
4962	4962	Ethernet/LAN Encryption
4963	4963	Cryptographic Coprocessor
5033	5033	#5033 Migration Tower I
5034	5034	#5034 Migration Tower I
5035	5035	#5035 Migration Tower I
5066	5066	1.8 M I/O Tower
5078	5078	PCI Expansion Unit
5079	5079	1.8 M I/O Tower
5088	5088	PCI-X Expansion Unit
5094	5094	PCI-X Expansion Tower
5097	5097	1.8M I/O Rack
5111	5111	#5111 30 Disk Expansion with Dual Line Cord
5121	5121	Power Regulator Card
5130	5130	Tower Attach Power (RISC)
5133	5133	Feature Power Supply
5134	5133	Feature Power Supply
5135	5135	Feature Power Supply
5136	5136	Feature Power Supply

Feat. code	CCIN	Description
5138	515F	Redundant Power and Cooling
5140	5140	Regulator
5141	5141	3.6V I/O Regulator
5142	5142	Tower Attach Power
5143	5143	Feature Power Supply (400W)
5144	5144	BBU External (Optional)
5145	5145	BBU Internal (Optional)
5146	5146	Redundant Power (Bulk Reg)
5147	5147	Feature Power -560W
5148	5148	Additional Battery Backup Internal
5149	5149	Redundant Power (Bulk Reg)
5150	5150	Battery Backup (External)
5151	5151	Power Supply (650 Watts)
5152	5152	Feature Power Supply (500W)
5153	5153	Redundant Power Supplies
5156	5156	#5156 Redundant Power and Cooling
5157	5157	#5157 Feature Power Supply
5158	51B6	850 W Power Supply
5159	5159	850 W Power Supply
5160	5160	#5160 Power Distribution Unit
5161	5161	#5161 Power Distribution Unit
5162	5162	#5162 Power Distribution Unit
5163	5163	Power Dist Unit 3 Phase PDU
5229	5229	Model 520 2-way Processor
5230	522A	Model 520 1-way Processor
5343	6343	Base Tape Replace (1.2 GB)
5348	6348	Base Tape Replace (1.2 GB)
5349	6349	Base Tape Replace (2.5 GB)
5403	N/A	MMA One Processor Activation
5404	N/A	Utility Billing 100 Processor Minutes
5460	N/A	Base Edition for #4910 1/4W
5461	N/A	Base Edition for #4911 2/8W
5462	N/A	Base Edition for #4912 4/16W
5490	N/A	MMA Enterprise Enablement
5491	N/A	MMA Full Enterprise Enablement
5550	N/A	System Console on HMC
5553	N/A	System Console-Ethernet w/o IOP
5554	N/A	Mirror 35 GB Disk/Controller Package
5555	N/A	Mirror 70 GB Disk/Controller Package
5556	N/A	Mirror 141.12 GB Disk/ Controller Package
5557	N/A	Sys Console-Ethernet w/o IOP
5559	4327	Quantity 16 of #4327
5560	N/A	Mirror 35 GB Drawer Package
5561	N/A	Mirror 70 GB Drawer Package
5562	N/A	Mirror 35 GB Tower Package
5563	N/A	Mirror 70 GB Tower Package
5564	N/A	Mirror 141.12 GB Drawer Package
5570	573D	#5727 Cache
	4327	2-#4327 70.56GB Disks
5571	573D	#5727 Cache
	4327	6-#4327 70.56GB Disks
5572	4327	Quantity 4 of #4327 Package
5580	2780 5708	RAID Disk Unit Controller with auxiliary Write Cache. Shown as 5580b in the System Planning Tool.

Feat. code	CCIN	Description
5581	2757 5708	RAID Disk Unit Controller with auxiliary Write Cache. Shown as 5581b in the System Planning Tool.
5582	571E	#5738 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches with IOP
	574F	Aux Write Cache. Shown as 5582b in the System Planning Tool.
5583	571E	#5777 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches without IOP
	574F	Auxiliary Write Cache Shown as 5583b in the System Planning Tool.
5590	2780	#2780 Controller w/Auxiliary Write Cache
	574F	1.5 GB Auxiliary Write Cache. Shown as 5590b in the System Planning Tool.
5591	2757	#2757 Controller w/Auxiliary Write Cache
	574F	1.5 GB Auxiliary Write Cache. Shown as 5591b in the System Planning Tool.
5592	292D 571B	4 Disk Slot Exp PCI-X Disk Controller - 90 MB No IOP
5593	292D 571B	4 Disk Slot Exp PCI-X Disk Controller - 90 MB No IOP
5629		DVD Enclosure and Backplane
5636	181A	#5636 - IVE - 2 x 1 Gb Ethernet
5639	181C	#5639 - IVE - 4 x 1 Gb Ethernet
5646		PCIe Blind Swap Casette Short
5647		PCIe Blind Swap Cassette Standard
5648		Service Interface Card
5656		On/Off 1Procesor -1-day Billing
5657		Service processor Interface Cable - 2 Drawer
5660		Service processor Interface Cable - 4 Drawer
5679	57B8/	SAS RAID Enablement with 175 MB write cache
	57B7	Auxiliary Write Cache. Shown as 5679b in the System Planning Tool.
5680		1 GB CUoD Memory Activation
5691		On/Off 1GB-1Day Memory Bill
5692	319B/ 31B5	0/2 GB 667 MHz DDR2 Memory
5693	31B6/ 319C	0/4 GB 667 MHz DDR2 Memory
5694	31B7/ 319E	0/8 GB 667 MHz DDR2 Memory
5695	31B9/ 319D	0/16 GB 533 MHz DDR2 Memory
5696	31BD/ 319F/ 31BA 31BC	0/32 GB 400 MHz DDR2 Memory
5700	5700	#5700 PCI 1 Gbps Ethernet IOA
5701	5701	PCI 1 Gbps Ethernet UTP IOA
5702	5702	#5702 PCI-X Ultra Tape Controller
5703	5703	PCI-X RAID Disk Controller
5705	5702	#5705 PCI-X Tape/DASD Controller
5706	5706	Dual Port 10/100/1000 Mbps Ethernet

Feat. code	CCIN	Description
5707	5707	Dual Port 1Gbps Ethernet-SX IOA
5707	5707	PCI 1 Gbps Ethernet 2- port
5709	5709	Ultra320 SCSI Raid
5712	5702	Ultra320 SCSI
5713	573B	PCI-X 1 Gbps iSCSI TOE-Copper
5714	573C	PCI-X 1 Gbps iSCSI
5715	5702	PCI-X Tape/DASD Controller
5718	5718	10 GB Ethernet (Fiber)
5721	573A	PCI-X 10Gbps Ethernet-SR IOA
5722	576A	PCI-X 10Gbps Ethernet-LR IOA
5727	573D	Integrated Cache - 40 MB Models 515, 520, 525, or 550
5728	573D	Integrated Cache - 40 MB Model 570
5736	571A	PCI-X Disk/Tape Controller w/IOP
5737	571B	PCI-X Disk Controller - 90 MB w/IOP
5738	571E	PCI-X Disk Controller - 1.5 GB w/IOP
5739	571F	PCI-X EXP24 Controller - 1.5 GB w/IOP
	575B	Aux Write Cache. Shown as 5739b in the System Planning Tool.
5740		1 Gbps BaseT Ethernet (4-Port)
5741	506E	EXP24 6 Disk Slot Enabler
5742	506D	EXP24 6/12 Disk Slot Enabler
5749	576B	#5749 4Gbps PCI-X Fibre Channel 2-Port
5750	6337	DVD-ROM - Slim Line
5751	6331	DVD-RAM
5752	6333	DVD-RAM
5753	63A0	30 GB ¼-inch Cartridge Tape
5754	63A0	50 GB ¼-inch Cartridge Tape
5755	63A0	200GB LTO-2 Tape Unit
5756	6337	DVD-ROM Drive IDE Slimline
5757	6331	DVD-RAM Drive IDE Slimline
5758	280D	#5758 PCI-X 4Gbps Fibre Channel 1-Port
5760	280E	PCI-X Fibre Channel Disk Controller
5761	280D	PCI-X Fibre Channel Tape Controller
5766	571A	PCI-X Tape Controller
5767	5767	PCIe 1Gb Ethernet UTP 2Port
5768	5768	PCIe 1Gb Ethernet Fiber 2Port
5773		PCIe 4Gb Fibre Channel 1Port
5774	5774	PCIe 4Gb Fibre Channel 2Port
5775	571A	PCI-X Disk/Tape Controller-No IOP
5776	571B	PCI-X Disk Controller-90 MB No IOP
5777	571E	PCI-X Disk Controller-1.5 GB No IOP
5778	571F	PCI-X EXP24 Controller-1.5 GB No IOP
	575B	Auxiliary Write Cache. Shown as 5778b in the System Planning Tool.
5781	571F	PCI-X EXP24 Controller-1.5 GB w/IOP
	575B	Auxiliary Write Cache. Shown as 5781b in the System Planning Tool.
5782	571F	PCI-X EXP24 Controller-1.5 GB No IOP
	575B	Auxiliary Write Cache. Shown as 5782b in the System Planning Tool.
5783	573B	PCI-X 1 Gbps iSCSI HBA Copper
5784	573C	PCI-X 1 Gbps iSCSI HBA Fiber
5786		#5786 TotalStorage Expansion 24 Disk Drawer
5796		PCI-DDR 12X Expansion Drawer

Feat. code	CCIN	Description
5799	571F	PCI-X EXP24 Controller-1.5 GB w/IOP
	575B	Auxiliary Write Cache. Shown as 5799b in the System Planning Tool.
5800	571F	PCI-X EXP24 Controller-1.5 GB No IOP
	575B	Auxiliary Write Cache. Shown as 5800b in the System Planning Tool.
5801		1/4W MMA Processor Enclosure Drawer
5870	5870	Model 595 8/16-way Standard Edition
5871	5871	Model 595 16/32-way Standard Edition
5872	5872	Model 595 32/64-way Standard Edition
5875	5875	Model 595 2/16-way Capacity BackUp Standard Edition
5876	5876	Model 595 4/32-way Capacity BackUp Standard Edition
5890	5890	Model 595 8/16-way Enterprise Edition
5891	5891	Model 595 16/32-way Enterprise Edition
5892	5892	Model 595 32/64-way Enterprise Edition
5895	5895	Model 595 2/16-way CBU Edition
5896	5896	Model 595 4/32-way CBU Edition
6001	6001	SPCN Power Cable - 2 m
6006	6006	SPCN Power Cable - 3 m
6007	6007	SPCN Power Cable - 15 m
6008	6008	SPCN Power Cable - 6 m
6010	6010	Model 515 Express Configuration 1
6011	6011	Model 515 Express Configuration 2
6018	6018	Model 515 Base Product Config 1
6021	6021	Model 515 Express Configuration 3
6028	6028	Model 515 Base Product Config 2
6029	6029	SPCN Power Cable - 30 m
6040	6040	Twinaxial Workstation Controller
6041	6041	ASCII Workstation Controller
6050	6050	Twinaxial Workstation Controller
6054	6054	Local Talk Controller
6068	6068	Opt Front Door for 1.8m Rack
6100	6100	Disk Unit (315 MB)
6103	6103	Single Disk Unit (400 MB)
6105	6105	Single Disk Unit (320 MB)
6107	6107	Single Disk Unit (400 MB)
6108	6105	Additional Dual Disk (640 MB)
6109	6109	Single Disk Unit (988 MB)
6110	6110	Magnetic Storage Dev Controller
6111	6111	Magnetic Storage Dev Controller
6112	6112	Magnetic Storage Device Controller
6120	6107	Dual Disk Unit (800 MB)
6121	6107	Additional Dual Disk (800 MB)
6123	6109	Additional Dual Disk (1976 MB)
6124	6109	Base DASD Upgrade (1976 MB)
6125	6109	Base DASD Replace (988 MB)
6126	6104	Base DASD Replace (988 MB)
6127	6109	Base DASD Replace (1976 MB)
6134	6134	60 GB 8 mm Tape Unit
6140	6140	Twinaxial Workstation Controller
6141	6141	ASCII Workstation Controller
6146	6146	Diskette Adapter
6147	6147	Diskette Adapter
6148	6148	8-Port Twinaxial Expansion
6149	6149	16/4 Mbps Token-Ring IOA
6150	6150	Three-Line Communication Controller

Feat. code	CCIN	Description
6151	6151	X.21 1-Line 20
6152	6152	EIA 232/V.24 Adapter
6153	6153	V.35 1-Line (20-ft Cable)
6154	6152	EIA 232/V.24 1-Line 20E
6155	6152	EIA 232/V.24 1-Line 20
6160	6160	Token-Ring Network Adapter
6171	6151	X.21 1-Line 50
6173	6153	V.35 1-Line (50-ft Cable)
6174	6152	EIA 232/V.24 1-Line 50E
6175	6152	EIA 232/V.24 1-Line 50
6180	6180	Twinaxial Workstation IOA
6181	6181	Ethernet/IEEE 802.3 IOA
6183	6183	6 port ASCII IOA
6203	6202	PCI Ultra3 SCSI Adapter
6204	6204	Differential SCSI Adapter
6246	6246	1.8 m Rack Trim Kit
6258	6258	36 GB 4 mm Tape Unit
6279	63A0	160 GB VXA-320 Tape Drive
6312	6312	Quad Digital Trunk Adapter
6325	6321	CD-ROM
6335	6335	840 MB QIC-mini Tape Unit
6340	6340	13 GB QIC mini Tape Unit
6341	6341	120 MB ¼-inch Cartridge Tape
6342	6342	525 MB ¼-inch Cartridge Tape
6343	6343	1.2 GB ¼-inch Cartridge Tape
6344	6344	2.5 GB ¼-inch Cartridge Tape
6345	6345	13 GB ¼-inch Cartridge Tape
6346	6346	120 MB ¼-inch Cartridge Tape
6347	6347	525 MB ¼-inch Cartridge Tape
6348	6348	1.2 GB ¼-inch Cartridge Tape
6349	6349	2.5 GB ¼-inch Cartridge Tape
6350	6350	13 GB ¼-inch Cartridge Tape
6365	6335	840 MB QIC-mini Tape External
6366	6366	120 MB ¼-inch Cartridge Tape
6367	6366	525 MB ¼-inch Cartridge Tape
6368	6368	1.2 GB ¼-inch Cartridge Tape
6369	6369	2.5 GB ¼-inch Cartridge Tape
6370	6370	13 GB ¼-inch Cartridge Tape
6380	6380	2.5 GB ¼-inch Cartridge Tape
6381	63A0	2.5 GB ¼-inch Cartridge Tape
6382	63A0	4 GB ¼-inch Cartridge Tape
6383	63A0	16 GB ¼-inch Cartridge Tape
6384	63A0	30 GB ¼-inch Cartridge Tape
6385	6385	13 GB ¼-inch Cartridge Tape
6386	63A0	25 GB ¼-inch Cartridge Tape
6390	6390	7 GB 8 mm Cartridge Tape Unit
6417	28E7	HSL-2/RIOG Bus Adapter
6425	6321	CD-ROM
6446		12X Short Run 5796 Attach
6457		12X Long Run 5796 Attach
6480	6380	2.5 GB ¼-inch Cart Tape
6481	63A0	2.5 GB ¼-inch Cart Tape
6482	63A0	4 GB ¼-inch Cartridge Tape
6483	63A0	16 GB ¼-inch Cartridge Tape
6484	63A0	30 GB ¼-inch Cartridge Tape
6485	6385	13 GB ¼-inch Cartridge Tape
6486	63A0	25 GB ¼-inch Cartridge Tape
6490	6390	7 GB 8 mm Cartridge Tape

Feat. code	CCIN	Description
6500	6500	Disk Controller
6501	6501	Tape/Disk Device Controller
6502	6502	Disk Unit Controller for RAID
6509	6509	Additional 16 MB FSIOP Memory
6512	6512	Disk Unit Controller for RAID
6513	6513	Internal Tape Device Controller
6516	6506	16 MB One-Port FSIOP
6517	6506	32 MB One-Port FSIOP
6518	6506	48 MB One-Port FSIOP
6519	6506	64 MB One-Port FSIOP
6520	6520	Upgrade 1 to 2 Port FSIOP
6522	6502	Disk Unit Cntrlr for RAID
6523	6530	Disk Unit Controller
6526	6506	16 MB 2-Port FSIOP
6527	6506	32 MB 2-Port FSIOP
6528	6506	48 MB 2-Port FSIOP
6529	6506	64 MB 2-Port FSIOP
6530	6530	Storage Device Controller
6532	6532	RAID Disk Unit Controller
6533	6533	RAID Disk Unit Controller
6534	6534	Magnetic Media Controller
6536	6535	SSA Disk Unit Controller
6537	6535	SSA RAID Disk Unit Controller
6574	28D2	#6574 - 4-Disk Slot Exp - Base Controller
6580	6580	Optional Rack Security Kit
6584	28DF	#6584 - 4-Disk Slot Exp - PCI-X Controller
6586	6586	Modem Tray for 19-inch Rack
6587	6587	Model 515, 520, 525 Rear Cover
6592	28F6	#6592 - 4-Disk Slot Exp - Base Controller
6593	28F7	#6593 - 4-Disk Slot Exp - PCI-X Controller
6594	292D	#6594 - 4-Disk Slot Exp-PCI-X Controller
6601	6601	Single Disk Unit (1031 MB)
6602	6602	Single Disk Unit (1031 MB)
6603	6603	Single Disk Unit (1967 MB)
6605	6605	1.03 GB Disk Unit
6606	6606	1.96 GB Disk Unit
6607	6607	4.19 GB Disk Unit
6612	6602	Dual Disk Unit (2.0 GB)
6613	6603	Dual Disk Unit (4 GB)
6616	6616	Integrated PC Server
6617	6617	Integrated PC Server
6618	6617	Integrated Netfinity Server
6650	6603	Additional Disk Unit (1.96 GB)
6652	6602	Additional Disk Unit (1.03 GB)
6701	6601	Base Disk Replace (1.0 GB)
6713	6713	8.58 GB Disk Unit
6714	6714	17.54 GB Disk Unit
6717	6717	8.58 GB 10k rpm Disk Unit
6718	6718	17.54 GB 10k rpm Disk Unit
6750	6750	MFIOP
6752	6752	MFIOP
6753	6753	MFIOP
6800	5700	PCI 1 Gbps Ethernet IOA
6801	5701	PCI 1 Gbps Ethernet UTP IOA
6802	6602	Base Disk Replacement (1.0 GB)
6803	2793	PCI WAN for ECS

Feat. code	CCIN	Description
6804	2793	PCI WAN for ECS (CIM)
6805	2742	PCI 2-Line WAN IOA No IOP
6806	6606	1.96 GB Disk Unit
6807	6607	4.19 GB Disk Unit
6808	2805	PCI 4-Modem WAN IOA No IOP
6809	2805	PCI 4-Modem WAN IOA No IOP CIM
6812	6602	Base Disk Replacement (2.0 GB)
6813	6713	8.58 GB Disk Unit
6817	6717	8.58 GB 10k rpm Disk Unit
6818	6718	17.54 GB 10k rpm Disk Unit
6824	6714	17.54 GB Disk Unit
6831	6731	1.6 GB Read Cache Device
6833	2793	PCI 2-Line WAN w/Modem No IOP
6834	2793	PCI 2-Line WAN w/Modem No IOP CIM
6863	6863	System i5 Slim-Line Doors
6864	6864	System i5 Acoustic Doors
6906	6606	1.96 GB Disk Unit
6907	6607	4.19 GB Disk Unit
6910	6910	Model 525 CBU Configuration 1
6913	6913	Model 525 Oracle JD Edwards
6914	6914	Model 525 SAP Applications
7053		CBU Edition for #4922
7058		CBU Edition for #4923
7063		CBU Edition for #4924
7104	7104	System Unit Expansion
7123	283F	DASD Expansion Unit
7124	28BC	DASD Expansion Unit - 5 slot
7127	283F	DASD Expansion Unit
7128	7128	#7128 DASD Expansion Unit
7130	7130	#7130 Expansion Unit Tape Cage
7133	283F	DASD Concurrent Maint Cage
7135	3135	Optional 256 MB Main Storage
7136	28CD	DASD Expansion Unit - 6 slot
7137	28CD	DASD Concurrent Maintenance
7140	7140	520 Express Configuration
7141	7141	520 Express Configuration
7142	7142	520 Express Configuration
7143	7143	520 Express Configuration
7144	7144	520 Express Configuration
7147	7147	Value Edition for #09XX
7148	7148	520 Express Configuration
7152	7152	520 Express Configuration
7154	7154	Standard Edition for #0910
7155	7155	Enterprise Edition for #0910
7157	3157	Optional Base 128 MB Main Storage
7158	3158	Optional Base 256 MB Main Storage
7174	9174	Ethernet IOA
7175	9175	Token Ring IOA
7180	7180	Acoustic Front Door
7181	7181	Easy-Access Front Cover
7182	7182	515, 520, 525 Rack Mount
7183	7183	550 Rack Mount
7186	3186	Optional Base 128 MB Main Storage
7187	3187	Optional Base 256 MB Main Storage
7188	7188	Power Disk Unit - Side Mount
7194	7194	Easy-Access Front Cover
7197	7197	570 Front Bezel
7198	7198	Adjustable Depth Rack Rails

Feat. code	CCIN	Description
7199	7199	Acoustic Front Door
7255	3155	Optional Base 256 MB Main Storage
7256	7256	520 Enterprise Enablement
7257	7257	550 Enterprise Enablement
7258	7258	570 Full Enterprise Enablement
7259	7259	595 Full Enterprise Enablement
7260	7260	570 Enterprise Enablement
7261	7261	595 Enterprise Enablement
7262	N/A	Quantity 150 of #1292
7263	3163	Optional Base 256 MB Main Storage
7264	3164	Optional Base 512 MB Main Storage
7265	3165	Optional Base 1024 MB Main Storage
7266	3166	Optional Base 256 MB Main Storage
7307	7307	Dual I/O Unit Enclosure
7314	N/A	Dual 5796 Unit Enclosure
7320	7320	515, 520, 520+, 525 One Proc'r Activa'n
7323	7323	550 One Processor Activation
7341	7341	550 On/Off Proc Day Billing
7343	6343	1.2 GB ¼-inch Cartridge Tape
7344	6344	2.5 GB ¼-inch Cartridge Tape
7347	6347	Base Tape Upgrade (525 MB)
7348	6348	1.2 GB ¼-inch Cartridge Tape
7349	6349	2.5 GB ¼-inch Cartridge Tape
7350	7350	Value Edition for #0975
7352	7352	Value Edition for #0975
7354	7354	Accelerator for System i5
7355	7355	Accelerator for System i5
7357	7357	Accelerator for System i5
7366	7366	Solution Edition for #0906
7373	7337	HA Edition for #0906
7374	7374	HA Edition for #0906
7375	7375	HA Edition for #0906
7380	53CF	4.7 GHz Proc Card 0/2-way
7390	7390	Model 520 Value/Express Edition
7391	7391	Model 520 Value/Express Edition
7392	7392	Model 520 Value/Express Edition
7393	7391	Model 520 Value/Express Edition
7394	7392	Model 520 Value/Express Edition
7395	7395	Model 520 Value/Express Edition
7396	7396	Model 520 Value/Express Edition
7397	7397	Model 520 Value/Express Edition
7400	7400	Model 800 Value Edition
7404	7404	Model 810 Standard Edition
7406	7406	Model 810 Enterprise Edition
7407	7407	Model 810 Standard/Domino Edition
7408	7408	Model 800 Advanced Edition
7409	7409	Model 810 Enterprise Edition
7410	7410	Model 810 Standard/Domino Edition
7411	7450	Model 520 Express Configuration
7412	7412	Model 810 Enterprise Edition
7413	7450	Model 520 Express Configuration
7414	7451	Model 520 Express Configuration
7416	7416	Model 825 Standard/Domino Edition
7417	7450	Model 520 Express Configuration
7418	7418	Model 825 Enterprise Edition
7419	7419	Model 870 Standard Edition
7420	7451	Model 520 Express Configuration
7421	7421	Model 870 Enterprise Edition

Feat. code	CCIN	Description
7422	7422	Model 890 Standard Edition
7424	7424	Model 890 Enterprise Edition
7425	7425	Model 890 Standard Edition
7427	7427	Model 890 Enterprise Edition
7428	7428	Model 810 Standard/Domino Edition
7429	7429	Model 520 Express Configuration
7430	7430	Model 810 Enterprise Edition
7431	7431	Model 870 Standard Edition
7433	7433	Model 870 Enterprise Edition
7434	7418	Model 825 High Availability Edition
7435	7433	Model 870 High Availability Edition
7436	7421	Model 870 High Availability Edition
7437	7424	Model 890 High Availability Edition
7438	7427	Model 890 High Availability Edition
7439	7439	Model 870 Capacity BackUp Edition
7440	7440	Model 870 Capacity BackUp Edition
7441	7441	Model 890 Capacity BackUp Edition
7445	7445	Model 810 High Availability Edition
7446	7446	Model 810 High Availability Edition
7447	7447	Model 810 High Availability Edition
7448	7448	Model 810 High Availability Edition
7450	7450	Model 520 Value/Express Edition
7451	7451	Model 520 Value/Express Edition
7452	7452	Model 520 Value/Express Edition
7453	7453	Model 520 Enterprise Edition
7454	7454	Model 520 Standard Edition
7455	7455	Model 520 Enterprise Edition
7456	7456	Model 520 Standard Edition
7457	7457	Model 520 Enterprise Edition
7458	7458	Model 520 Standard Edition
7459	7459	Model 520 Enterprise Edition
7462	7462	Model 550 Standard Edition
7463	7463	Model 550 Enterprise Edition
7469	7469	Model 570 0/4-way Standard Edition
7470	7470	Model 570 0/4-way Enterprise Edition
7471	7471	Model 570 0/8-way Standard Edition
7472	7472	Model 570 0/8-way Enterprise Edition
7473	7473	Model 570 0/12-way Standard Edition
7474	7474	Model 570 0/12-way Enterprise Edition
7475	7475	Model 570 0/16-way Standard Edition
7476	7476	Model 570 0/16-way Enterprise Edition
7480	7480	Standard Edition for #8966
7481	7481	Enterprise Edition for #8966
7482	7482	Standard Edition for #8966
7483	7483	Enterprise Edition for #8966
7484	7484	Model 59 32/48-way Standard Edition
7485	7485	Model 595 32/48-way Enterprise Edition
7486	7486	Standard Edition for #8966
7487	7487	Enterprise Edition for #8966
7488	7488	Model 570 0/2-way Standard Edition
7489	7489	Model 570 0/2-way Enterprise Edition
7490	7490	Model 570 0/2-way Standard Edition
7491	7491	Model 570 0/2-way Enterprise Edition
7494	7494	Model 570 2/4-way Standard Edition
7495	7495	Model 570 2/4-way Enterprise Edition
7496	7496	Model 595 8/16-way Standard Edition
7497	7497	Model 595 8/16-way Enterprise Edition
7498	7498	Model 595 16/32-way Standard Edition

Feat. code	CCIN	Description
7499	7499	Model 595 16/32-way Enterprise Edition
7500	6713	Quantity 150 of #4314
7501	6717	Quantity 150 of #4317
7502	6718	Quantity 150 of #4318
7503	6714	Quantity 150 of #4324
7504	6719	Quantity 150 of #4319
7508	4326	Quantity 150 of #4326
7509	4327	Quantity 150 of #4327
7510	4328	Quantity 150 of #4328
7511	4329	Quantity 150 of #4329
7516	4329	Quantity 150 of #1269
7530	7530	Model 5501/4-way Domino
7531	7531	Model 5501/4-way Solution E1
7532	7532	Model 5501/4-way CRM (Clear Tech w/Domino)
7533	7533	Model 5501/4-way SAP 2-way
7534	7534	Model 5501/4-way SAP 4-way
7541	7541	Model 520 Solution Edition
7551	7551	HA Edition for #0910
7552	7452	Model 520 High Availability Edition
7553	7553	Model 520 High Availability Edition
7554	7554	Model 520 High Availability Edition
7555	7555	Model 520 High Availability Edition
7558	7558	Model 5501/4-way Solution
7559	7559	Model 570 High Availability Edition
7560	7560	Model 570 High Availability Edition
7561	7561	Model 570 High Availability Edition
7562	7562	Model 570 High Availability Edition
7563	7563	Model 570 High Availability Edition
7570	7570	Model 570 2/16-way CBU Edition
7580	7580	HA Edition for #0940
7581	7581	HA Edition for #0941
7583	7583	HA Edition for #0943
7590	7590	CBU Edition for #0944
7607	6607	Optional Base 4.19 GB Disk Unit
7613	6603	Base DASD Replace (3934 MB)
7618	7618	570 One Processor Activation
7620	7620	520 On/Off Processor Enablement
7621	7621	520 On/Off Processor Day Billing
7622	7622	520 Reserve Capacity Prepaid
7624	7624	570 On/Off Processor Day Billing
7629	7629	Domino Edition for #0910
7630	7630	Solution Edition for #0910
7631	7631	Sol Ed-PeopleSoft EnterpriseOne
7632	7632	C2CRM Solution Ed w/Domino
7640	7640	2-way SAP Solution Edition
7641	7641	4-way SAP Solution Edition
7663	7663	570 1 GB Mem Activation
7680	7680	Accelerator for System i5
7681	7681	Accelerator for System i5
7682	7682	Accelerator for System i5
7687	7687	Accelerator for System i5
7713	6713	Optional Base 8.58 GB Disk Unit
7728	7625	570 Reserve Capacity Prepaid
7734	7734	Enterprise Edition for #0906
7735	7735	Enterprise Edition for #0906
7736	7736	Enterprise Edition for #0906
7738	7738	570 Base Proc Activation

Feat. code	CCIN	Description
7741	7741	550 Reserve Capacity Prepaid
7747	7747	Enterprise Edition for #0934
7748	7748	Enterprise Edition for #0935
7749	7749	Enterprise Edition for #0936
7757	7757	Standard Edition for #0934
7758	7758	Standard Edition for #0935
7759	7759	Standard Edition for #0936
7760	7760	CBU Edition for #0937
7763	7763	HA Edition for #0934
7764	7764	HA Edition for #0935
7765	7765	HA Edition for #0936
7768	7768	CPU Power Regulator
7784	7784	Standard Edition for #0906
7785	7785	Standard Edition for #0906
7790	7790	Model 525 Express Configuration 1
7791	7791	Model 525 Express Configuration 2
7792	7792	Model 525 Express Configuration 3
7801	7801	6m HMC Attachment Cable
7802	7802	15m HMC Attachment Cable
7813	528C	0/8 GR 1.8 GHz CUoD MCM
7814	30DC	4 GB Main Storage
7815	7815	595 One Processor Activation
7816	303E	2/4 GB CUoD Main Storage
7817	7817	SNI Fiber Adapter
7818	28D8	HSL-2/RIO-G 2-Ports Copper
7819	28EB	HSL/RIO 2-Ports Optical
7828	304E	CUoD 8/16 GB (4 x 4 GB)
7840	6104	Side-by-side for 1.8m Racks
7841	6080	Ruggedize Rack Pack
7862	7862	Blind Swap Cassette (long)
7863	7863	Blind Swap Cassette (Double)
7864	7864	Blind Swap Cassette (DTXA)
7865	27AE	L/ML CEC Backplane
7866	28DA	I/O PCI Backplane
7867	28D9	L/ML Mid-backplane
7868	28DB	L/ML DASD Backplane
7869	28DC	Removable Media Backplane
7870	28DD	Power Supply Dist Backplane
7875	28E8	L/ML CPU Regulator
7876	291E	Model 520 Media Backplane Card
7877	27AF	Model 520 Power Regulator
7878	25F8	Serial/VPD PCI Card
7879	7879	Headless Enclosure
7880	788A	Model 570 Base Enclosure
7881	28EA	Service Processor
7882	180A	SCSI to IDE Converter Card
7883	28D7	Model 520 SP Card
7884	7884	520 Rack Mount
7885	7885	515, 520, 525 Deskside
7886	7886	SF4 Rack Mount
7887	7887	SF4 Deskside
7890	30DE	4/8 GB CUoD DDR1 Memory
7891	30DF	8/16 GB DDR-1 Main Storage
7892	30F0	512 MB Main Storage DDR2 DIMM
7893	30F2	4 GB Main Storage DDR2 DIMM
7894	30F3	8 GB Main Storage DDR2 DIMM
7897	7897	570 CUoD Processor Activation
7935	30F8	16/32 GB DDR-1 Main Storage

Feat. code	CCIN	Description
7950	7950	570 1 GB CUoD Mem Activation
7951	7951	570 On/Off Processor Enablement
7952	7952	570 On/Off Processor Day Billing
7954	7954	570 On/Off Memory Enablement
7956	7956	570 Res Cap PrePaid
7957	7957	570 1 GB Memory Day Billing
7971	7971	595 On/Off Processor Enablement
7972	7972	595 On/Off Processor Day Billing
7975	7975	595 Reserve Capacity Prepaid
8052	5052	Optional 16 Disk Unit Expansion
8054	6054	LocalTalk Adapter
8079	9079	Optional Base 1.8 M I/O Rack
8093	8093	Optional Base 1.8 M I/O Rack
8094	8094	Optional Base 1.8 M I/O Rack
8110	6110	Standard Mag Storage Controller
8111	6111	Standard Mag Storage Controller
8123	6109	Dual Disk Unit (1976 MB)
8133	8133	RJ45 to DB25 Interposer
8135	3135	Optional Base 256 MB Main Storage
8136	8136	Remote ASYNC Node (Rack)
8137	8137	Remote ASYNC Node
8152	9152	Optional Base Twinaxial
8156	3156	Optional Base 64 MB Main Storage
8157	3157	Optional Base 128 MB Main Storage
8158	3158	Optional Base 256 MB Main Storage
8160	3160	Optional Addtl 16 MB Main Storage
8162	9162	Optional Base MFIOP w/Twinaxial
8172	3172	Delt Price 32 MB
8180	3180	Optional Base 512 MB Main Storage
8185	3185	Optional Base 64 MB Main Storage
8186	3186	Optional Base 128 MB Main Storage
8187	3187	Optional Base 256 MB Main Storage
8191	3191	Optional Base 512 MB Main Storage
8192	3192	Optional Base 1024 MB Main Storage
8193	3193	Optional Base 2048 MB Main Storage
8210	3110	Optional 64 MB Main Storage
8244	8244	PCI WS Audio Adapter
8253	3153	Optional Base 64 MB Main Storage
8254	3154	Optional Base 128 MB Main Storage
8255	3155	Optional Base 256 MB Main Storage
8264	3164	Optional Base 512 MB Main Storage
8265	3165	Optional Base 512 MB Main Storage
8287	63A0	Optional Base 50 GB QIC Tape
8312	8312	550 1.9 GHz Proc 0/2-way
8325	8325	520 1.9 GHz Processor
8327	8327	520 1.9 GHz Processor
8330	8330	520 1.9 GHz Processor 0/2-way
8338	8338	570 2.2 GHz Processor 0/2-way
8342	6342	525 MB ¼-inch Cartridge Tape
8343	6343	1.2 GB ¼-inch Cartridge Tape
8344	6344	2.5 GB ¼-inch Cartridge Tape
8345	6345	13 GB ¼-inch Cartridge Tape
8347	6347	525 MB ¼-inch Cartridge Tape
8348	6348	1.2 GB ¼-inch Cartridge Tape
8349	6349	2.5 GB ¼-inch Cartridge Tape
8410	8410	520 Base Processor Activation
8413	8413	550 Base Processor Activation
8452	8452	570 One Processor Activation

Feat. code	CCIN	Description
8457	8457	595 Base Processor Activation
8470	8470	570 Base 1 GB Mem Activation
8478	8478	256GB CUoD Memory Activate
8505	2630	I/O Card Unit Conversion
8606	6606	Single Disk Unit (1967 MB)
8607	6607	Optional Base DASD (4.194 GB, reg)
8609	2654	EIA 232/V.24 2-Line
8612	6602	Base 2.0 GB Dual Disk Unit
8613	6603	Base DASD Upgrade (3934 MB)
8617	6717	Optional Base 8.58 GB 10k rpm Disk
8618	6718	Optional Base 17 GB 10k rpm Disk
8650	6603	Optional Disk Unit (1.967 GB, 2 byte)
8664	2618	Optional Base Fiber DD Interface
8665	2665	Optional Base Shielded DD Interface
8706	6606	Optional Base Disk Unit (1.967 GB)
8707	6607	Optional Base Disk Unit (4.194 GB)
8713	6713	Optional Base 8.58 GB Disk Unit
8714	6714	Optional Base 17.54 GB Disk Unit
8716	6506	Optional 16 MB 1-Port FSIOP
8717	6506	Optional 32 MB 1-Port FSIOP
8718	6506	Optional 48 MB 1-Port FSIOP
8719	6506	Optional 64 MB 1-Port FSIOP
8726	6506	Optional 16 MB 2-Port FSIOP
8727	6506	Optional 32 MB 2-Port FSIOP
8728	6506	Optional 48 MB 2-Port FSIOP
8729	6506	Optional 64 MB 2-Port FSIOP
8753	63A0	30 GB ¼-inch Cartridge Tape
8755	63A0	200GB LTO-2 Tape Unit
8813	6713	Optional Base 8.58 GB Disk Unit
8817	6717	Optional Base 8.58 GB 10k rpm Disk
8818	6718	Optional Base 17 GB 10k rpm Disk
8824	6714	Optional Base 17.54 GB Disk Unit
8847		Base Service Interface Cable-2 Drawer
8849		Base Service Interface Cable-4 Drawer
8863	2609	EIA 232/V.24 Two line 20E
8866	2609	EIA 232/V.24 Two line 50E
8877		Base Proc Fabric Cable-2 Drawer
8917	6717	Optional Base 8.58 GB 10k rpm Disk
8918	6718	Optional Base 17 GB 10k rpm Disk
8924	6714	Optional Base 17.54 GB Disk Unit
8950	522A	Model 520 1-way Processor
8951	522A	Model 520 1-way Processor
8952	522A	Model 520 1-way Processor
8953	522A	Model 520 1-way Processor
8954	5228	Model 520 1-way Processor
8955	5229	Model 520 2-way Processor
8958	5237	Model 550 1/4-way Processor
8961	26EA	Model 570 0/2-way Processor
8961	26EA	Model 570 2/4-way Processor
8966	528C	595 1.9 Ghz Proc 0/16-way
8968	53BE	595 2.3 Ghz Proc 8/16-way
8971	26F2	570 Model 2/4-way Processor
8971	26F2	570 Model 4/8-way Processor
8971	26F2	570 Model 9/12-way Processor
8971	26F2	Model 570 13/16-way Processor
8971	26F2	570 CUoD 0/2way 1.65HZ Processor
8972	522A	Model 520 1-way Processor
8977		Base Processor Fabric Cable-3 Drawer

Feat. code	CCIN	Description
8979		Base Processor Fabric Cable-4 Drawer
8981	52A4	Model 595 Processor Book
9000	7000	Panel Keylock Feature
9004	9004	South Hemisphere Designator
9020	9020	V.35 Cable 20-ft
9021	9021	X.21 Cable 20-ft
9022	9022	EIA232 20-ft Cable
9023	9023	V.24 20-ft Enhanced Cable
9024	9024	Token-Ring Cable (2.44 m)
9025	9025	Ethernet Cable AUI (3 m)
9026	9026	EIA 232 6m Client Access cable
9027	9027	EIA 232 2.5m Client Access cable
9050	6050	Base Twinaxial Workstation Controller
9053	6053	Standard Twinaxial WSC Specify
9054	6054	Standard LocalTalk Controller
9079	9079	#9079 Base I/O Tower for 840 or SB3
9094	9094	Base PCI-X I/O Enclosure
9100	6100	315 MB Disk Unit Relocation
9102	6102	Standard 320 MB Disk Unit
9103	6103	Standard 400 MB Disk Unit
9104	6104	Standard 988 MB Disk Unit
9106	6105	Standard Dual Disk (640 MB)
9109	6109	Standard 988 MB Disk Unit Specify
9110	3110	Standard 64 MB Main Storage
9116	7116	High Performance CD Enable
9117	7117	Expansion Unit 1
9120	6107	Standard Dual Disk (800 MB)
9122	6122	Standard 851 MB Disk Unit (RPQ)
9126	7126	Standard Mixed Disk Enabler
9140	6140	Twinaxial Workstation Controller
9141	6141	ASCII Workstation Controller
9143	9143	Twinaxial Workstation Controller
9144	2637	ASCII Workstation Controller
9145	9145	Standard MFIOP/ASCII WSC
9146	2638	Standard MFIOP/Twinaxial WSC
9147	2637	Standard MFIOP/ASCII WSC
9148	2661	Standard MFIOP/Twinaxial WSC
9149	9149	Twinaxial passthu adapter
9150	2637	Standard MFIOP/ASCII WSC
9151	2661	Standard MFIOP/Twinaxial WSC
9152	9152	Standard MFIOP/Twinaxial WSC
9153	9153	Standard MFIOP w/o Twinaxial WSC
9156	3156	Standard 64 MB Main Storage
9159	3159	Standard 8 MB Main Storage
9160	3160	Standard 16 MB (2 SIMM)
9161	3161	Standard 32 MB Main Storage
9162	9162	Standard MFIOP w/Twinaxial WSC
9163	9163	Standard MFIOP
9164	9164	Standard MFIOP
9171	917A	Standard MFIOP/ASCII WSC
9172	2661	Twinaxial MFIOP
9173	917C	Standard MFIOP/LocalTalk WSC
9174	9174	Base Ethernet IOA
9175	9175	Base Token Ring IOA
9176	918E	Base MFIOP
9177	918D	Ethernet MFIOP
9179	3179	Base 256 MB Main Storage
9184	3184	Standard 32 MB Main Storage
9185	3185	Standard 64 MB Main Storage
9190	3190	Base 256 MB Main Storage
9211	9211	60m SPCN Optical cable
9212	9212	100m SPCN Optical cable
9215	9215	60m SPCN Copper Cable
9231	3131	Optional Base 64 MB Main Storage
9232	3132	Optional Base 128 MB Main Storage
9234	3134	Standard 128 MB Main Storage
9243	9243	400W Availability Bulk
9249	6149	Base 16/4 Mbps Token-Ring IOA
9252	3152	Standard 32 MB Main Storage
9254	3154	Standard 128 MB Main Storage
9258	6258	36GB 4mm Tape Unit
9262	3162	Standard 128 MB Main Storage
9263	3163	Standard 256 MB Main Storage
9266	3166	Standard 256 MB Main Storage
9272	3172	Standard 32 MB Main Storage
9280	6180	Base Twinaxial WSC
9282	3172	Standard 32 MB Main Storage
9284	63A0	Base 30 GB ¼-inch Cart Tape
9285	63A0	Base 80 GB VXA-2 Tape Drive
9299	9299	Base Enterprise Enablement
9301	9301	Upgraded 30-Disk Expansion
9304	3104	Standard 64 MB Main Storage
9313	6713	Base 8.58 GB Disk Unit
9341	6341	Standard 120 MB ¼-inch Tape
9342	6342	Standard 525 MB ¼-inch Tape
9343	6343	Standard 1.2 GB ¼-inch Tape
9347	6347	Standard 525 MB ¼-inch Tape
9348	6348	Standard 1.2 GB ¼-inch-inch Tape
9369	5095	#0595 PCI-X Expansion Unit in Rack in disk package #5568
9370	4327	1267 (4327) disk in disk package 5569
9371	2888	#2888 HSL-2/RIO-G Ports - 2 Copper in disk packages 5567, 5568
9372	5095	#5095 PCI-X Expansion Tower in disk package 5567
9374	506E	#5741 EXP24 6 Disk Slot Enabler in disk package 5569
9375	506D	#5742 EXP24 6/12 Disk Slot Enabler in disk package 5569
9376	571F 575B	#5778 PCI-X EXP24 Controller-1.5 GB No IOP with auxiliary write cached in disk package 5569
9377	571F 575B	#5782 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP in disk package 5569
9378	5786	#5786 TotalStorage Expansion 24 Disk Drawer in disk package 5569
9379	571F 575B	#5800 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP in disk package 5569
9380	6380	2.5 GB ¼-inch Cart Tape
9381	6181	Base Ethernet/IEEE 802.3 IOA
9397	571E 574F	#5583 Controller with 1.5GB Auxiliary Write Cache without IOP in disk package 55569
9493	2793	Base PCI WAN for ECS
9494	2793	Base PCI WAN for ECS (CIM)

Feat. code	CCIN	Description
9510	5727	Base Integrated Cache - 40 MB
9517	6517	Standard File Server 32 MB 1 Port
9517	28E7	Base HSL-2/RIOG Bus Adapter
9520	6320	Standard CD-ROM
9529	6529	Standard File Server 64 MB 2 Port
9548		Base 1 GB Main Storage
9549		Base 2 GB Main Storage
9553		Base 4 GB Main Storage
9570	9570	Reserved Rack Space
9584	2584	ASCII Workstation Controller
9585	2585	Twinaxial Workstation Controller
9601	6601	Standard 1.0 GB Disk Unit
9602	6602	Standard 1.0 GB Disk Unit
9605	6605	Standard 1.031 Disk Unit
9606	6606	Base 1.96 GB Disk Unit
9609	2654	Standard EIA 232/V.24 2-line
9612	2612	Standard EIA 232/V.24 1-Line/Ad
9613	9613	#4327 70GB 15k rpm Disk Unit in disk packages #5567, #5568
9617	2617	Base Ethernet IOP
9619	2619	Base 16/4 Mbps Token-Ring IOP
9623	2623	Standard Six Line Comm Controller
9624	2624	Store Device Control Spec
9651	2651	Storage Device Controller
9652	6602	Standard Disk Unit (1.031 GB, 2 byte)
9653	63A0	Base 30 GB ¼-inch Tape
9673	2673	Standard Optical Bus Adapter
9691	2691	#9691 Base Bus Adapter HSL Copper
9693	576C	Base PCIe 2-Line WAN w/Modem
9694	576C	Base PCIe 2-Line WAN w/ Modem CIM
9696	2696	Base Optical Bus Adapter
9699	2699	Base 2-Line WAN IOA
9705	6605	Standard 1.031 Disk Unit regulated
9707	6607	Base 4.19 GB Disk Unit
9720	2720	Base PCI WAN/Twinaxial IOA
9721	2721	Base PCI 2-Line WAN IOA
9723	2723	Base Ethernet IOA
9724	2724	Base 16/4 Mbps Token-Ring IOA
9726	0446	Base 512 MB Server Memory
9728	2728	Base PCI Disk Unit Controller
9730	273B	Base HSL-2 Ports - 4 Copper
9732	2732	Base HSL Ports - 8 Copper
9733	2732	Base HSL Ports - 8 Copper
9737	2737	Base HSL Ports - 16 Copper
9738	2838	Base PCI 100/10 Mbps Ethernet
9739	2739	Base Optical Bus Adapter
9740	2740	Base PCI RAID Disk Unit Controller
9745	2745	Base PCI 2-Line WAN IOA
9746	2746	Base PCI Twinaxial Workstation IOA
9748	2748	Base PCI Disk Unit Controller
9749	2849	Base PCI 100/10 Ethernet IOA
9751	6751	Base MFIOP with RAID
9752	2754	Base HSL Ports - 8 Copper
9753	6753	Base MFIOP
9754	6754	Base MFIOP with RAID
9755	2755	Base HSL Ports -16 Copper
9758	2758	Base HSL Ports - 2 Optical/6 Copper
9759	2759	Base HSL Ports - 4 Optical/12 Copper

Feat. code	CCIN	Description
9767	2767	Base PCI Disk Unit Controller
9771	2771	Base PCI 2-Line WAN w/Modem
9774	2758	Base HSL Ports - 2 Optical/6 Copper
9777	2754	Base HSL Ports - 8 Copper
9778	2778	Base PCI RAID Disk Unit Controller
9785	2785	Base HSL-2 Ports - 2 Copper
9786	2786	Base HSL Ports - 2 Optical
9787	28B3	Base HSL-2 Ports - 2 Copper
9789	2789	Base HSL Ports - 4 Optical
9792	2892	Base PCI Integrated xSeries Server
9793	2793	Base PCI 2-Line WAN w/Modem
9794	2793	Base PCI 2-Line WAN w/Modem (CIM)
9800	2800	Internal Disk Unit (640 MB)
9801	2801	Internal Disk Unit (1 GB)
9802	2802	Standard 2.0 GB Int Disk Unit
9803	9803	2.5m DFCI cable
9814	9814	20-ft Antenna Cable Wireless
9815	9815	50-ft Antenna Cable Wireless
9820	9820	2nd Bus cable for Model 300
9835	9835	V.24 Cable 50-ft Enhanced
9836	9836	EIA232 Cable 50-ft
9838	9838	V.35 Cable 50-ft
9839	9839	X.21 Cable 50-ft
9844	2844	Base PCI IOP
9853	9853	20.0m optical bus cable
9854	9854	60m optical bus cable
9855	9865	100.0 M optical bus cable
9862	6152	EIA 232/V.24 1-Line 20E
9865	6152	EIA 232/V.24 1-Line 50E
9876	9876	Base Optical Bus Adapter
9877	9877	Base HSL-2 Bus Adapter
9879	9879	20-ft/6m V.35 Cable
9880	9880	80-ft/24.4m V.35 Cable
9882	9882	20-ft/6m V.36 Cable
9883	9883	80-ft/24.4m V.36 Cable
9884	9884	150-ft/45.7m V.36 Cable
9885	9885	20-ft/6m X.21 Cable
9886	2886	Base Optical Bus Adapter
9887	2887	Base HSL-2 Bus Adapter
9904	4104	4 MB Main Storage
9907	6607	Base 4.19 GB Disk Unit
9927	9927	Channel Box and cable
9928	9928	1.7m attach cable
9929	9929	6.6m attach cable
9930	9930	24.0m attach cable
9933	2793	PCI 2-Line WAN w/Modem NoIOP
9934	2793	PCI 2-Line WAN w/Modem NoIOP CIM
9943	2843	Base PCI IOP
9980	9980	Serpentine Cable Connector

11

Software enhancements

In this chapter, we provide information about new and enhanced i5/OS and program products for V5R4 announced January 2007 through October 2007. Specifically, we cover the following items:

- An important new and more flexible i5/OS V5R4 licensing approach, with the introduction of the 9407-515 and 9406-525, to meet the changing needs of innovative companies
- Additional i5/OS licensing flexibility on 9406-550, 9406-570, 9406-MMA, and 9406-595 models with the introduction of a lower priced i5/OS entitlement on 9406-MMA models and environments specified as application serving (running i5/OS V5R4, but do not use DB2 for i5/OS)
- A new Secure Perspective for System i product to ease setting up and managing i5/OS and other operating systems security, with a focus on easing security auditing
- A set of capabilities for “Web enablement under i5/OS made easier” to get a Web application server environment up and running faster

  Also provided are a *Web Performance Advisor* and *Web Performance Monitor* that minimize the amount of IBM WebSphere Application Server expertise required for good performance. Other enhancements in this category include an IBM-provided example i5/OS 5250 application that can be run from a browser workstation by using interfaces that are enabled by the IBM WebFacing Tool and WebSphere Host Access Transformation Services (HATS).

  Related to the new Web application serving capabilities, new and expanded Web services and service-oriented architecture (SOA)-related capabilities are available in 4Q 2007. In addition, an integrated Web application server was introduced that can run many inhouse and IBM Web applications. This server can reduce the need to run more robust IBM WebSphere Application Server servers, which can require more system resources.

  Depending upon the specific capability, support includes both i5/OS V5R3 and V5R4.
- A new version for WebSphere Development Studio Client for iSeries that delivers enhanced modernization tools with IBM ClearCase® integration and improved RPG support for i5/OS

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- A new MySQL Enterprise for i5/OS product, which is a popular open source database software and has high Affinity with PHP

  This was announced from MySQL AB and IBM in July 2007.
- The new licensed program, DB2 Web Query for System i, which delivers a graphical, Web-based query and report writing function
- “Value Packs for Popular i5/OS Software Products”, which includes “DB2 Value Pack for i5/OS” and “Operations Value Pack for i5/OS”

  These value packs became available exclusively on 9406-MMA models. The Zend and MySQL Value Pack for i5/OS product was also made available for POWER5, POWER6, and older technology systems running i5/OS V5R4.

Also in this chapter, we include a summary of IBM Systems Workload Estimator (WLE) enhancements that were made available between April 2007 and September 2007 for the System i platform.

11.1 Secure Perspective for System i

Secure Perspective for System i (5733-SP1) is a tool that significantly eases security and compliance. It enables you to create a data centric security policy using a nontechnical language interface and then to apply that policy selectively to i5/OS, Microsoft Windows systems, AIX systems, and DB2 databases from one central location. Then the tool configures the operating system (system or partition) to use that policy after informing you of potential impacts. The tool produces a compliance report to show an auditor that the data-centric security implementation represents the given policy. In general, data centric is a rigorous type of security, but is also difficult to deploy and maintain. Secure Perspective for System i answers this issue, enabling clients to protect their system to the object or folder level.

The outstanding feature of Secure Perspective is that the configuration of security policies is done, managed, and viewed via a natural language interface, with the implementation using security constructs that are unique to the supported operating systems. With Secure Perspective, you can manage security of data on multiple hardware platforms and operating systems from a central location. The central location can either be an i5/OS instance or a Microsoft system.

Originally announced as supporting only i5/OS partitions, support for AIX and Windows was announced and generally available during October 2007.

The remainder of this topic is focused only on i5/OS because support on the other operating systems was not available at the time of writing this paper about how the Secure Perspective constructs map to the other operating systems.

11.1.1 Secure Perspective features and benefits

Secure Perspective for System i enables organizations to create enforceable security policies using natural language. Business leaders know how information should be protected. They can create policies without needing to know where that information is stored or details about i5/OS. Data owners and system administrators can then map the terms from the policies to digital assets. The organization’s policies can then be enforced or compliance checked.

Secure Perspective for System i provides proof of compliance for auditors in a straightforward manner. Secure Perspective for System i offers tools to create organizationally appropriate

security. Because of the natural language approach, the policies that define security are understandable and mindful to all parties. You can verify compliance with the policies automatically. Additionally, natural language policies fit well in implementing the dictates of regulation. Changes to the security policies in response to an auditor's request can be quickly made and applied instantly, minimizing the effort to make changes.

Secure Perspective for System i uses the security and auditability features of the i5/OS operating system.

Features and benefits

- Creates well-structured natural language security policies
- Facilitates the mapping of policy to digital assets
- Allows policy application or compliance check with the click of a button
- Keeps a record of policy applications and compliance activity
- Shows how applying a policy affects business processes
- Enables a policy to be undone if undesired consequences occur
- Enables executives and data owners to define a security policy as it pertains to securing business assets with a human language interface
- The tool implementing the given policy to the i5/OS partition
  - Notifies the system administrator of the impact of the policy before executing
  - Generates a compliance report on demand
  - Reports all security policy changes or deviations

11.1.2 Ordering and installing IBM Secure Perspective for System i

The ordering and charging details for 5733-PS1 are as follow:

- It is supported on i5/OS V5R3, V5R4, and later.
- A charge is per managed processor within each partition.

You can have 5733-PS1 an a CD or DVD media inserted into the i5/OS partition's optical device. To install 5733-PS1:

1. Ensure the i5/OS HTTP Administration server (*ADMIN) is not active.
2. Perform `GO LICPGM` or use the `RSTLICPGM LICPGM(5733PS1)` command.
3. Start the HTTP Adminstration Server:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

Since Secure Perspective for System i runs as a Web application under the integrated Web application server of the i5/OS HTTP Server Administration Server (*ADMIN), you must have this ADMIN server up and running. To run this Web application, enter the following URL from your browser workstation using either Internet Explorer or FireFox:

`http://`*`host name /IP address`*`:port number/SecurePerspective`

Consider the following example:

```
http://rchas55:2001/SecurePerspective
```

You must do some detailed planning regarding your security policies. You must identify a meaningful naming convention for your policies, actions and so forth as summarized in the remainder of this topic.

For more information about Secure Perspective for System i, refer to the following resources:

- Secure perspectives tab on the System i Security Web page

  http://www.ibm.com/systems/i/security

- IBM Systems Information Center

  http://publib.boulder.ibm.com/infocenter/systems/scope/i5os/index.jsp

- IBM Rochester Lab Services by telephone at 704-594-4015
- IBM Global Business Services by telephone at 512-823-0665 for customized business services
- IBM System i Business Partners who specialize in security

Before you start setting up your policies through the Secure Perspective Web interface, you must do adequate planning. You must also identify the i5/OS user ID who initially has the responsibility for setting up your polices and associating them with i5/OS user profiles and objects (within QSYS.LIB and the i5/OS integrated file systems folders). For example, select the primary i5/OS user profile that has all object authority that you want to be the first user to sign on to Secure Perspective.

The Secure Perspective Home page running on your i5/OS partition provides a list in an easy to follow format that takes you through the configuration and implementation of the policies, when followed in order.

Secure Perspective for System i configuration and usage examples

In this section, we briefly explain the terminology and the process of configuring Secure Perspective for System i to illustrate its interface and capabilities. We show some product windows so that you can see how to use Secure Perspective's capabilities.

The following key terms are used with Secure Perspective for System i:

Term dictionary Contains the building blocks of policies. The dictionary has a set of Actors, Resources, Actions, and Purposes.

Policy Contains statements about which actions and access should be allowed on a partition; can be created, edited, or deleted.

Security domain configuration

Identifies managed systems (i5/OS partition TCP/IP host names) that should comply with your policies.

Term mapping Manages systems that should comply with the policy.

Policy actions Create and edit term mappings that have information about how terms in the dictionary (Actors, Resources, and so on) correspond to system objects.

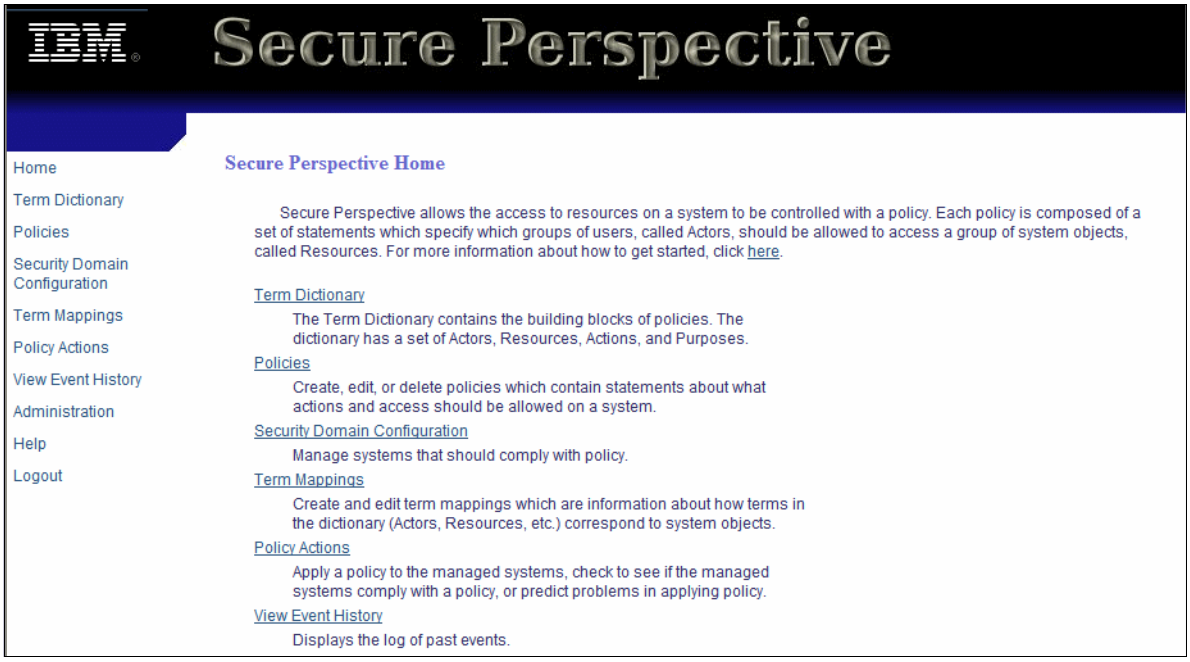
View Event History Contains logs on all activities associated with policies established under Secure Perspectives. Selecting this option makes it easy to meet the auditing requirement.

Administration

Manage user: Allows the addition or removal of allowed users. Users can also be granted authorization to use features of secured perspectives.

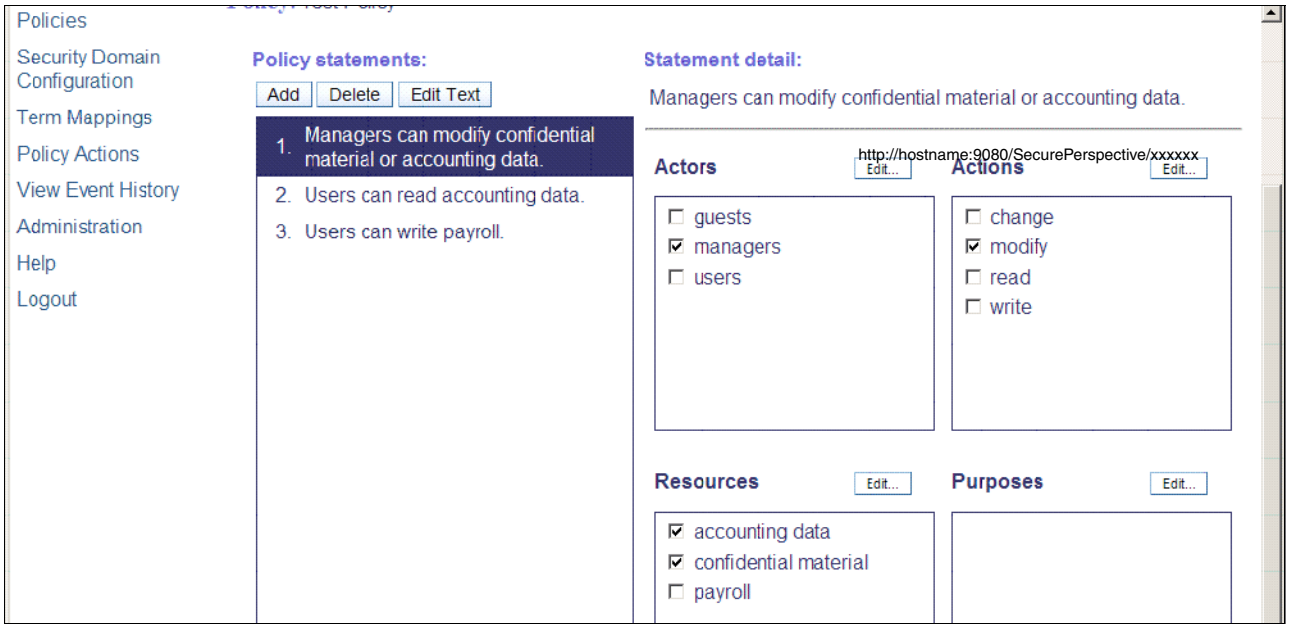
Manage sessions: Allows locked objects to be released and user sessions to be terminated.

The Secure Perspective Home page, which is shown in the following figure, allows the configuration or change of any feature of the product by selecting any of the items. Each item has a brief description of its functions associated with it. You select an item and then double-click it to open the configuration pages.

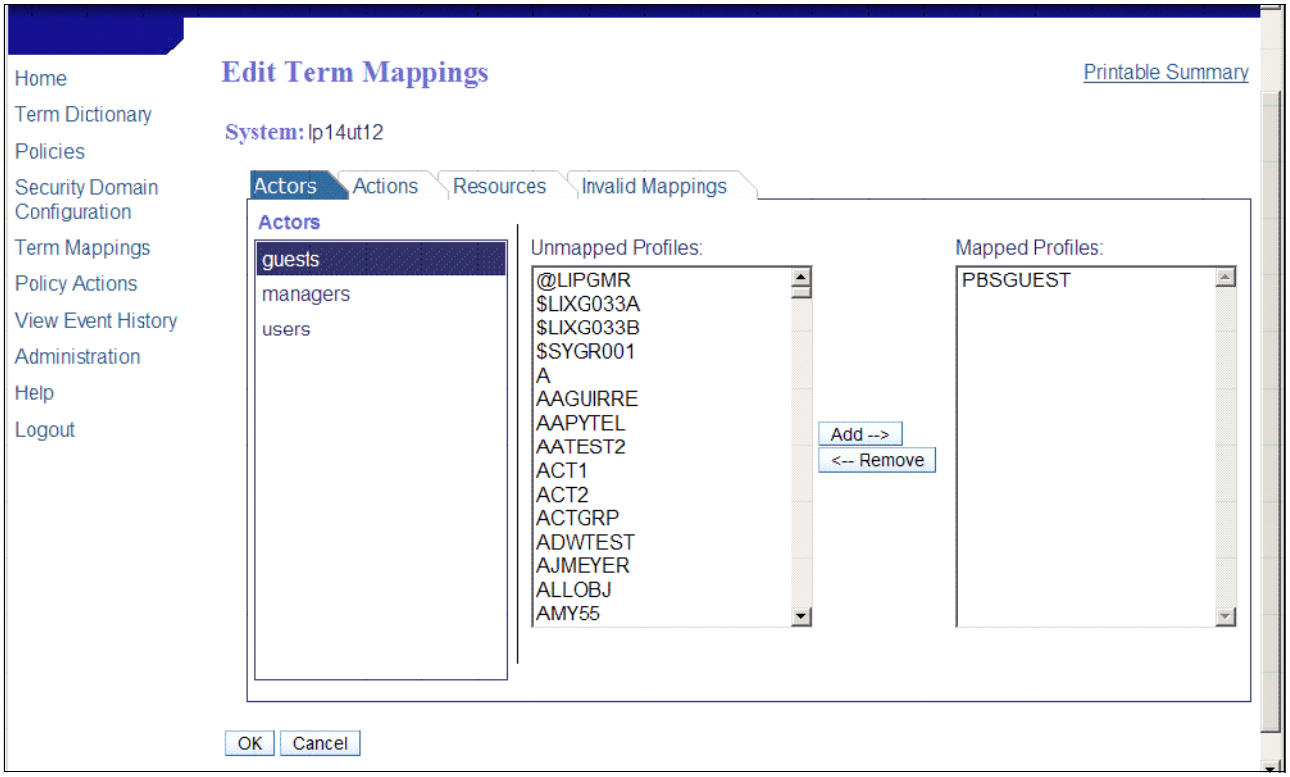


In the following examples, we show how you can define, deploy and audit with Secure Perspective for System i.

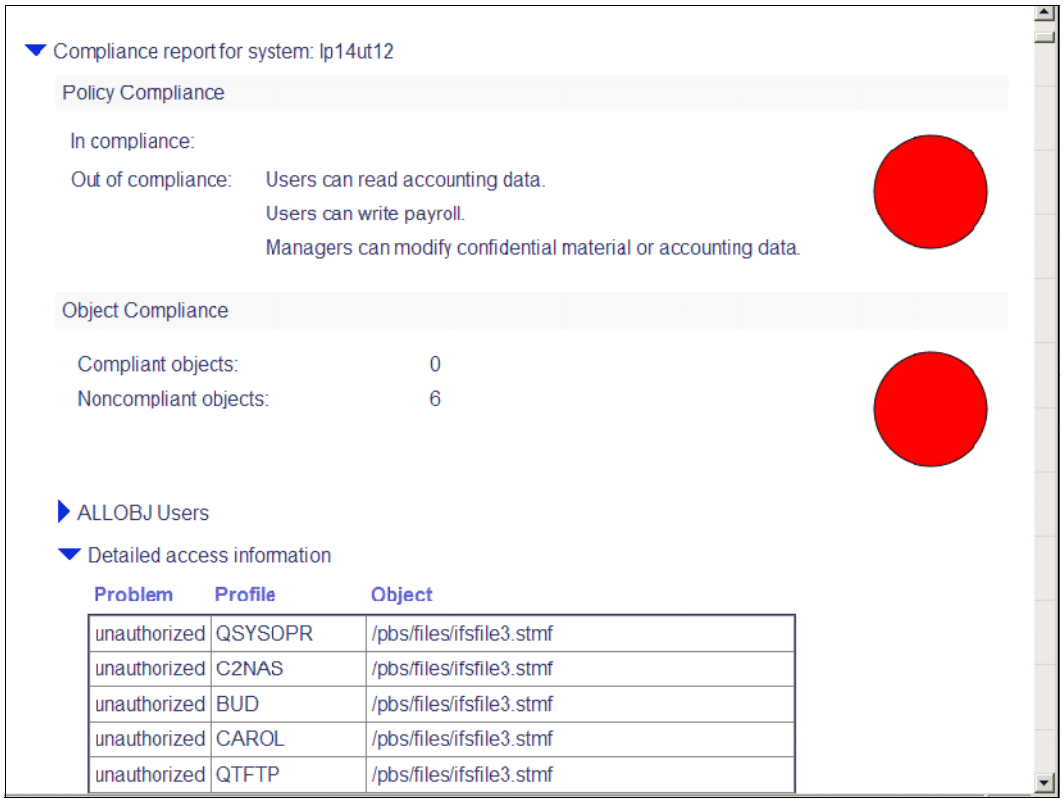
The Policy Text Screen example illustrates the natural language approach to define and implement data security policies of a company. It shows how the policies can be mapped to actors (users) and the actions they are allowed to perform. In the following figure, we show an example of Secure Perspective Resource Access Statements page. In our example, we defined the three natural language policy statements that are shown. This example also gives you an indication of the possible actors, actor actions, and resource classifications that you can define.



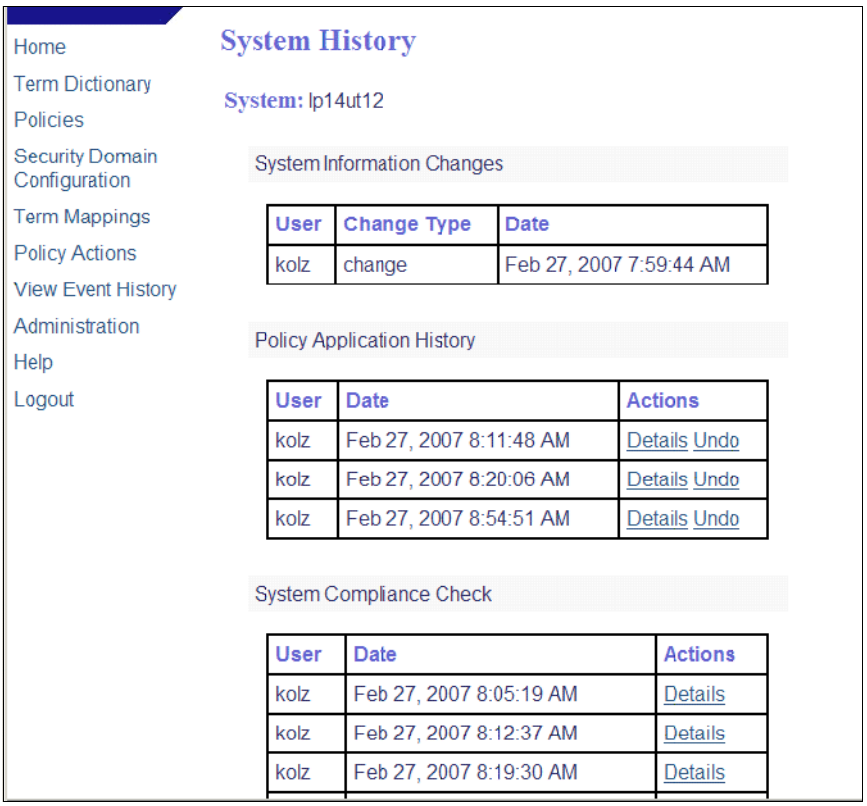
The Secure Perspective Edit Term Mappings page example, shown in the following figure, illustrates how an actor is associated with the user profiles of the system, enabling the implementation of the defined security policies established in Secure Perspective.



After you perform a few other steps, you see a preview of the actions that you have set up. After you set up the policies and deploy them, you can track the status of your security compliance. The following figure shows an example of a Compliance Report for System xxxxxx page, which indicates policy and object compliance information. The red circles indicate additional action that should be taken. See the problems listed under Detailed access information.



In the following figure, we show an example of a System History page, which shows change, history, and compliance information. Options are available to view the details of the actions and to undo the changes.



The previous figures provide only a sampling of the pages that are used to configure and maintain security policies and to view an auditing of security events under Secure Perspective for System i.

Before you start using Secure Perspective for System i, refer to the System i Information Center for more information to help get you started:

http://publib.boulder.ibm.com/infocenter/systems/scope/i5os/index.jsp

11.2 i5/OS licensing by user

i5/OS licensing by concurrent user delivers a more flexible licensing approach to meet the changing needs of innovative companies. Small-to-medium business clients can now tap into the full performance of POWER5 technology, enabling the deployment of additional solutions, while benefiting from the legendary capabilities of the System i platform. i5/OS licensing by concurrent user enables you to better align the cost of i5/OS with the value it delivers by purchasing the software for the number of users on your system. In the April 2007 announcements, i5/OS licensing by user is offered for the new Models 515 and 525.

For additional i5/OS licensing by user information, refer to:

- System i Information Center

  http://www.ibm.com/systems/i/infocenter/

  Select **i5/OS and related software → Maintaining and managing i5/OS and related software → Working with software agreements and licenses**.

- *System i Express i5/OS Licensing by User Frequently Asked Questions*

  This paper is available on the IBM System Sales Web page. From this page, select the **System i Sales Kit**, which itself has links to additional information.

  – IBM Business Partner System Sales

    http://w3-1.ibm.com/sales/systems/portal/_s.155/254?navID=f340s240&geoID=All&prodID=IBM%20Systems????

  – IBM System Sales

    http://w3-1.ibm.com/sales/systems/portal/_s.155/253?navID=Home&geoID=All&prodID=IBM%20eServer%20And%20TotalStorage%20Products&x=7&y=10

    On the general System Sales Web page, follow these steps:

    i. Select **System i** in the Product field. Click **GO**.

    ii. On the next Web page, under Featured content, click the **System i master sales kit** link.

    iii. On System i master sales kit page, scroll down to the Frequently Asked Question (FAQ) List section. Under that heading, click the link for **i5/OS Licensing by User Frequently Asked Questions**.

  Alternatively, at the time of at which this paper was published, the paper was directly available at the following Web address:

  http://w3-1.ibm.com/sales/systems/portal/_s.155/254?navID=f220s240&geoID=AM&prodID=System%20i&docID=sitli50SLicensingUserFAQ

11.2.1 i5/OS entitlements

This new licensing approach is currently supported only on System i Models 515 and 525. It aligns software value with an associated i5/OS price (separate from hardware). It enables you to license the i5/OS software specifically for the number of users who derive value from the i5/OS operating system and the applications running under i5/OS.

For the Models 515 and 525, i5/OS licensing is now available as processor entitlements and user entitlements:

- Each i5/OS processor must have one i5/OS Processor Entitlement.

  This entitlement is identical to i5/OS Processor Entitlements on other System i5 models.

- Each i5/OS user must have one i5/OS user entitlement.

  This entitlement by i5/OS users on Models 515 and 525 is separate and distinct from i5/OS Processor Entitlement.

11.2.2 i5/OS Processor Entitlements

i5/OS Processor Entitlement has been available prior to April 2007. You must obtain one i5/OS Processor Entitlement for each processor that is used for the i5/OS operating system by purchasing a feature to authorize (SW Key) a processor.

The requirement for an i5/OS Processor Entitlement is consistent with previous entitlement requirements on other System i models. i5/OS Processor Entitlements can be included in a hardware and software package or can be purchased as needed. With the introduction of i5/OS licensing by users, the price of i5/OS Processor Entitlements is significantly reduced on Models 515 and 525. This new entitlement structure on these new System i models allows customers to purchase licensing for the appropriate number of users and align the total price with the value that is delivered.

11.2.3 i5/OS user entitlement details

In this section, we provide i5/OS user entitlement details for Models 515 and 525 for:

- Unlimited collaboration users for 515 and 525.
- Standard 515 and 525 i5/OS user entitlements.

Model 525 Solution Editions: The following Model 525 Solution Editions have unique i5/OS user entitlement that is not described in this section:

- System i 525 Solution Edition for Oracle JD Edwards Enterprise One (#6913)
- System i 525 Solution Edition for SAP Applications (#6914)

See 3.10.4, “Solution Editions” on page 76, for more information about these editions.

Unlimited Collaboration Users for Models 515 and 525

For Models 515 and 525, the i5/OS Unlimited Collaboration Users feature offers a cost-effective option for adding IBM Lotus collaboration solutions. The feature includes entitlement for an unlimited number of users who access i5/OS solely for the use of IBM Lotus collaboration products. A license for the IBM Lotus product is also required. The following collaboration products are available:

- Lotus Domino
- Lotus Sametime
- Lotus Quickr™
- Lotus QuickPlace®

i5/OS licensing by users is generally identified by order number 5722-SSC on Models 515 and 525. i5/OS Unlimited Collaboration Users require the following One-time Charge feature numbers:

- Model 515: #1650
- Model 525: #1651

For additional information, visit the 5/OS licensing Web page at:

`http://www.ibm.com/systems/i/os/i5os/licensinginformation`

Standard i5/OS user entitlement details for Models 515 and 525

In this section, we describe the user entitlement details for Models 515 and 525 that apply outside of any of the following areas:

- Models 515 and 525 Solution editions (see 3.10.4, “Solution Editions” on page 76)
- Unlimited collaboration users for use with Lotus Collaboration products (see “Unlimited Collaboration Users for Models 515 and 525.”

Effective 17 May 2007, i5/OS user entitlement on a System i5 Model 515 or 525 is based upon the *number of concurrently authenticated i5/OS users across all currently active i5/OS partitions*. An i5/OS user is a person who accesses the i5/OS operating system through one

or more connections. The user becomes authenticated by exchanging credentials (user identifications) either directly with the operating system or indirectly through an application or middleware software that is supported by i5/OS. Examples include the IBM middleware WebSphere Application Server Version 6.1 for i5/OS (5733-W61) or Lotus Domino 7, licensed program 5733-LD7.

Although closely associated with i5/OS licensing per processor, i5/OS user entitlement accounting does not consider the number of processors that being used by each i5/OS partition. For example, adding processor capacity to an i5/OS partition has no affect on i5/OS user entitlement accounting.

On System i Models 9407-515 and 9406-525, you must acquire entitlement for the maximum number of i5/OS users who are simultaneously authenticated on the system (concurrent i5/OS users). To authorize users to the i5/OS operating system who are either employees or similar personnel of your enterprise or individuals to whom you provide hosted services, you need one i5/OS user entitlement for each concurrent i5/OS user.

The following tables summarize the i5/OS user entitlement licensing choices that are available. i5/OS licensing by users is generally identified by order number 5722-SSC. The following table shows the base and maximum user entitlements for Models 515 and 525.

i5/OS users	**Model 515**	**Model 525**
Base (no charge)	5	30/150/unlimited
Maximum	40[a]	Unlimited

a. Some geographies might also support an unlimited number of users on the Model 515. Contact your IBM representative to determine if this is available in your country (region). You should always size your workloads to evaluate whether the maximum hardware configuration can sustain a large number of users.

The following table shows the optional entitlements for Models 515 and 525.

i5/OS user entitlements	**Model 515**	**Model 525**
Blocks of users	Yes (5 per block)	Yes (10 per block)
Unlimited users	No[a]	Yes
i5/OS external access entitlements	**Model 515**	**Model 525**
External access	Yes	Yes

a. Some geographies might also support an unlimited number of users on the Model 515. Contact your IBM representative to determine if this is available in your country (region). You should always size your workloads to evaluate whether the maximum hardware configuration can sustain a large number of users.

i5/OS user entitlements: Block of users

On the Model 515, users are sold in a block of five users, with a maximum of seven blocks orderable for the Model 515. On the Model 525, users are sold in a blocks of 10 users. The Model 525 does not have a maximum amount of users. Blocks of users can be purchased to equal the amount of users on the 525 system, or the Unlimited Users offering can be purchased for the Model 525.

i5/OS user entitlements: Unlimited Users

Purchase an i5/OS user entitlement for Unlimited Users. With this option, you can authorize an unlimited number of users to the 5/OS operating system on a Model 525.

i5/OS external access entitlements

You can authorize i5/OS users, such as customers or business partners, to access to i5/OS if such users are not employees or similar personnel of your enterprise or individuals to whom you provide hosted services. You have three licensing options for doing this:

- Acquire the i5/OS User Entitlement option for each concurrent i5/OS user who is external to the enterprise, in blocks of a fixed number of users.
- Acquire the i5/OS External Access option for your Model 515 or 525.
- Acquire the Unlimited i5/OS User Entitlements option on your Model 525.

Some i5/OS user license entitlement considerations

IBM might audit your compliance with User Entitlement terms with reasonable advance notice. In this topic, we list key considerations of Model 515 and 525 i5/OS user license entitlement. Refer to *System i Express i5/OS Licensing by User Frequently Asked Questions*, which is available from the IBM System Sales Web site, for additional considerations:

`http://w3-1.ibm.com/sales/systems/portal/_s.155/254?navID=f220s240&geoID=AM&prodID=System%20i&docID=sitli5OSLicensingUserFAQ`

- A concurrent i5/OS user is a person who is authenticated with i5/OS or an application on i5/OS.
- i5/OS User Entitlement gives a user the right to access i5/OS either directly or via an application accessing i5/OS.
- You must acquire i5/OS User Entitlement for the maximum number of concurrent i5/OS users who are authenticated to the i5/OS.
- IBM provides several tools for estimating the number of concurrent users for whom you need a user entitlement. These tools help you assess the number of concurrent user entitlements that you should purchase. The number of user entitlements that you purchase is based upon “good faith” usage of these tools. See “Tools available for estimating the number of concurrent i5/OS users” on page 446.
- Exchanging credentials (authentication) can be performed in several ways. The most commonly used functions that exchange credentials with i5/OS include:
  - 5250 workstation signon process
  - File Transfer Protocol (FTP) signon
  - Signing on to i5/OS through a browser interface to a Web application
  - Use of Kerberos authentication
  - Using i5/OS as a file server, for example, a Windows workstation with a network drive to the i5/OS integrated file server
  - A remote application accessing the i5/OS database via, for example, the i5/OS database server jobs providing ODBC, .Net, or Java Database Connectivity (JDBC™) interfaces.

  If no user authentication (exchange of credentials) is performed, user license entitlement is not required.
- i5/OS User License Entitlement applies across all active i5/OS partitions on the same system. That is, a *single user license entitlement* is “accounted” when that person has been authenticated in any active i5/OS partition on the system.
- You do not need an i5/OS User Entitlement for every i5/OS user profile that is defined on the system. i5/OS User Entitlements are required for the number of concurrent i5/OS users.

- You need an i5/OS User Entitlement for the system administrator and the operator, that is for people, not for specific user profiles, such as QSECOFR and QSYSOPR.
- If one person signs onto multiple i5/OS applications from *one device*, one i5/OS User Entitlement is required.
- If one person signs onto i5/OS multiple times from *multiple devices*, one i5/OS User Entitlement is required.
- If 20 people, for example, use one i5/OS user profile to concurrently exchange credentials with i5/OS, an i5/OS application, or middleware, you require 20 i5/OS User Entitlements, because 20 different persons are authenticated through their credentials.
- In cases where it is unknown how many authenticated users will be active at the same time, consider selecting the Unlimited Entitlements option.
- A batch job that was submitted by an i5/OS user is not accounted toward the current licensed User Entitlement number.
- When considering upgrading from a System i model, such as a Model 810, which has no limit to the number of i5/OS users, to a Model 525, consider the number of active 525 users and the cost of its user entitlement options. For example, the Model 525 might come with user license entitlement of 30 i5/OS users. If the Model 525 environment requires more than 30 i5/OS users, you must purchase an additional 150 or unlimited i5/OS user entitlements. You might find that upgrading to a Model 520 is a lower-cost solution.

  Remember both Models 520 and 525 have the same I/O attachment and maximum configuration capabilities.
- The i5/OS External Access option provides an unlimited number of concurrent i5/OS User Entitlements for i5/OS users who are external to the enterprise on the system. For example, if you have multiple i5/OS partitions on the System i, one i5/OS External Access option provides access for an unlimited number of concurrent i5/OS User Entitlements for i5/OS users who are external to the enterprise across one or multiple i5/OS partitions.
- You do not need to purchase the i5/OS External Access option if you have already purchased the Unlimited i5/OS User Entitlement option. The Unlimited i5/OS User Entitlement option provides an unlimited number of concurrent i5/OS User Entitlements for a system for i5/OS Users within and external to the enterprise.
- The Unlimited User feature of iSeries Access Family (5722-XW1) is included with System i 515 and 525 Express configurations. Each i5/OS entitled user is also entitled to use any client in the iSeries Access Family at no additional charge.

Tools available for estimating the number of concurrent i5/OS users

In the following sections, we describe the 5/OS tools that are available for estimating, monitoring, and identifying the number of concurrent i5/OS authenticated users. None of these tools count 100% of all authenticated concurrent users because of the various application-specific and middleware-specific authentication implementations.

The information reported by these tools helps you identify those users who might possibly be authenticated concurrently and thus are accounted toward your currently licensed user value.

i5/OS Work with License Information command

The Work with License Information (WRKLICINF) is used to show the number of enabled i5/OS user profiles for a single i5/OS partition as well as for all active i/OS partitions. Knowing the number of enabled user profiles relative to your i5/OS User License Entitlement value serves as a base for how many concurrent active users there might be. Use of the WRKLICINF output and associated messages does not assist in estimating the actual the number of currently authenticated i5/OS users at a particular time period.

The i5/OS software key licensing information is visible to customers on installed systems that use the Work with License Information (WRKLICINF) command. The keys are:

- 5050 - Version and Release.

  The 5050 is the software license key for the i5/OS operating system with 70-day trial periods.

- 5051 - Processor Quantity.

  The 5051 is the processor entitlement key, which indicates the number of processors used by the operating system.

- 5052 - User Quantity (only seen on Models 9407-515 and 9406-5525 with V5R4 or later).

  The 5052 is the user entitlement key, which indicates the number of users authorized to use the i5/OS operating system. The 5052 displays under the WRKLICINF command only on System i Models 515 and 525.

The i5/OS internal component Software License Manager/400 assists you with license compliance. i5/OS messages are issued to indicate when you approach and exceed your user entitlement number. Using the i5/OS WRKLICINF command, you can view your currently licensed entitlement number (usage limit) and the users accounted toward that entitlement number (usage count).

The following figure shows an example of the initial WRKLICINF PRDID(*ALL) display on a Model 515. i5/OS user entitlement information is associated with 5722-SS1 feature 5052, which appears only on a Model 515 or 525.

```
                        Work with License Information                SYSTEMX
                                                                03/23/07  12:46:15
System serial number . . . . . . . . . :   10XXXXX
Processor group  . . . . . . . . . . . :   P05

Type options, press Enter.
  1=Add license key   2=Change   5=Display detail   6=Print detail
  8=Work with license users  ...

              License
Opt  Product   Term    Feature  Description
     5722SS1  V5R4M0    5050    i5/OS
     5722SS1  V5        5051    i5/OS
_5_  5722SS1  V5        5052    i5/OS
     5722SS1  V5R4M0    5103    Media and Storage Extensions
     5722SS1  V5        5109    NetWare Enhanced Integration
     5722SS1  V5R4M0    5112    PSF 1-45 IPM Printer Support
     5722SS1  V5R4M0    5113    PSF 1-100 IPM Printer Support
                                                                      More...
Parameters or command
===>
F3=Exit           F5=Refresh   F11=Display Usage Information   F12=Cancel
```

WRKLICINF Option 5 shows the usage limit and a count of all user profiles across all i5/OS partitions that are accounted against your usage limit. See the Usage limit field for 5722-SS1, 5052 feature code, in the following figure.

Under Usage Count Information, you see the Local partition field. The value shown indicates the number of i5/OS user profiles that are accounted against your user entitlement for this partition. On a system with no i5/OS partitions, you do not see the All partitions field.

```
                        Display License Information                SYSTEMX
                                                              03/23/07  12:51:16
 Product ID  . . . . . . . . :   5722SS1
 License term  . . . . . . . :   V5
 Feature . . . . . . . . . . :   5052
 Description . . . . . . . . :   i5/OS

 Compliance type . . . . . . :   *KEYED
 Usage type  . . . . . . . . :   *REGISTERED

 Usage limit . . . . . . . . :   15
 Last update . . . . . . . . :   02/22/07  13:56:13

 Threshold . . . . . . . . . :   14

Usage Count Information:
   All partitions . . . . . :   12.00  << SHOWN ONLY ON A PARTITIONED SYSTEM
   Local partition . . . . .:  . 3.00

 Peak Usage Information:
   Peak usage  . . . . . . . :   12.00
   Last peak . . . . . . . . :   03/12/07  12:08:36

Log violations  . . . . . . :   *NO

Message queue/Library . . . :    ADMIN QUSRSYS

Keyed compliance information:
  Expiration date . . . . . :   *NONE
  Grace period  . . . . . . :   0
  Date grace period expires :   *NONE
```

Remember that your user entitlement number is for users who are active in all partitions. In our example, we have a system-wide entitlement number of 15 users. In this partition, we have three user profiles that are “accounted” and system-wide. We have a total of 12 user profiles “accounted” against the user entitlement number (Usage limit value).

From an auditing viewpoint, i5/OS currently “accounts” an i5/OS user as part of the user entitlement count based upon the i5/OS user profile’s “enabled” (*ENABLED on system screens) status. Accounting is not done at the time of user authentication.

IBM i5/OS user profiles, such as QSECOFR, QSYSOPR, QUSER, QNOTES, QBRMS, and so forth, are not counted toward the number of enabled user entitlement licenses. There is no distinction at the i5/OS accounting level between internal or external i5/OS users.

Messages are issued when a user profile is created in the enabled status or enabled (previously disabled) and the number of enabled i5/OS users when either of the following situations are true:

- A user “enablement” causes the current count to *reach* the current user license entitlements threshold number.

  CPI9E19: Usage limit threshold exceeded for product 5722SS1.

- A user “enablement” causes the current count to *exceed* the current user license entitlements number.

  CPF9E17: Usage limit exceeded - operator action required.

The associated user profile is identified in the message.

You can use the WRKLICINF for 5052 Peak Usage information to determine whether you have gone over your entitlement number. You can use the Change License Information function to set the threshold value different than the default.

Use the WRKLICINF command for 5722-SS1, option 8 for 5052, to see the enabled user profiles that are currently holding a license (accounting toward your entitlement number). See the following example.

```
                          Work with License Users                    SYSTEMX
                                                              03/23/07  13:00:11
Product ID . . . . . . . . . :   5722SS1
License Term . . . . . . . . :   V5
Feature  . . . . . . . . . . :   5052
Description  . . . . . . . . :   i5/OS
Usage type . . . . . . . . . :   *REGISTERED

Type options, press Enter.
  5=Display Detail

      License                    Number   ------Request------
Opt   User                        Uses    Date       Time       User
      CWILK                        1.00   02/22/07   13:56:13   CWILK
      FRED                         1.00   03/13/07   14:04:53   CWILK
      GMHDDBDHHM                   1.00   03/15/07   07:52:59   CWILK


Parameters or command
===>
F3=Exit   F5=Refresh   F12=Cancel   F15=Sort by date/time   F17=Position to
```

You are responsible for monitoring your compliance by using the WRKLICINF command and the reviewing the messages we have shown here. IBM may audit your compliance with the licensing terms or provide additional auditing tools upon reasonable advance notice to you.

Notes:

- As previously described, the WRKLICINF Usage Count Information count and License User user profiles shown are only those that are currently in the *ENABLED status. You can change i5/OS user profiles to *DISABLED status or delete *ENABLED user profiles to stay within your license entitlement number.
- Any number of users can be signed on as one of the accounted user profiles. The count (number uses) shown for that same profile is one.

Display Estimated Users command

The Display Estimated Users (DSPESTUSR) command takes a snapshot of the number of distinct active users on the system in order to provide an estimate of the concurrent user licenses required.

To learn how to download and run this command, go the Licensing tab of the i5/OS Web page at the following address and look for the “System i 515 and 525” heading:

http://www.ibm.com/systems/i/os/i5os/licensing.html

The DSPESTUSR command counts the distinct active users on the system in two different categories:

- Category 1 includes all interactive (running 5250 workstation jobs) users and the current users of prestart jobs, such as those used by iSeries Navigator.
- Category 2 includes all other users.

This command does not count any profiles that begin with the letter Q.

Read the DSPESTUSR.PDF document for more information about using the tool. The i5/OS library save file and this Portable Document Format (PDF) are included in the downloaded material from the i5/OS licensing Web site from the “Download this tool” link.

Other tools for estimating the concurrently authenticated users

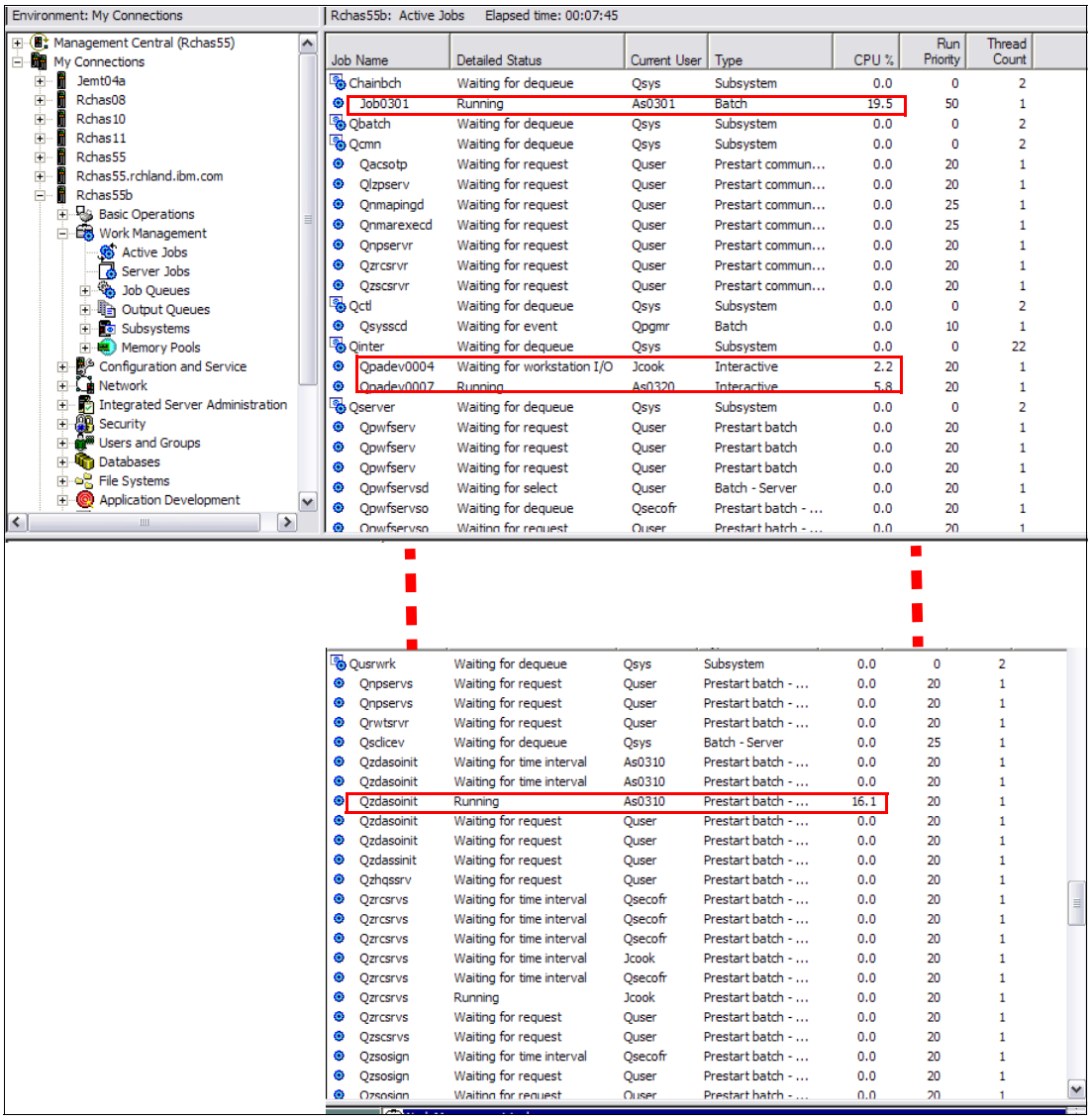
The following tools or methods are offered to estimate the number of concurrently authenticated users that is not processed by the DSPESTUSR command. If you have other tools or methods for the following applications or for other applications, use those instead.

- For active Domino users, use the appropriate Domino release-level interfaces to view active users over the time period that you select. For example, you might simply look at the highest number of active users over the time period and use that number as your active Domino users to account for.
- For active WebSphere Application Server instances or profiles, use the appropriate WebSphere Application Server level interfaces to view active users over the time period that you select. Some parameters might show the highest number of active threads, which can include one thread per active authenticated user or multiple threads per single active user.
- Use i5/OS Collection Services and associated performance database files over the time period that you select. Either write your own queries against the QAPMJOBSL file or print the Performance Tools for iSeries, 5722-PT1, Component Report. Examine the output for jobs that consumed CPU utilization during the selected time period.
- For users that are directly authenticated to i5/OS, use the Work with Active Jobs (WRKACTJOB) command or its generally corresponding iSeries Navigator function **Work Management** → **Active Jobs**. Periodically refresh the display or window output over the time period that you select.

Using the previously listed tools and interfaces or others that you might know about, you can come up with your best estimate of the number of concurrent user entitlements that you should purchase.

The following figure shows an example using Work Management → Active Jobs in iSeries Navigator. The window was refreshed over 7 minutes and 45 seconds. Using this tool, you estimate the number of concurrent authenticated users to be 3:

- AS0301
- JCook
- AS0310



11.3 Initial Software Maintenance for Model 515

For Model 515, there is a new initial Software Maintenance (SWMA) product number in addition to already available SWMA product numbers on System i Models 515 Express Config 1 and Base Config 1 and 2. It is an initial order only SWMA for the 9407-515 configuration.

	Program number
3 Months - Standard on 515	5733-SPN
1 - YR. EXTENDED SWMA	5733-SPM
3 - YR. EXTENDED SWMA	5733-SPO

On the Model 515 after the initial new SWMA, renewals to continue the SWMA coverage are done with the existing per processor-based SWMA products. The Model 525 does not have a new SWMA number. It uses the existing per processor SWMA numbers.

The following table shows by model (515 and 525 only) the SWMA that will be used depending on whether it is an initial registration or a renewal.

Type-model	SWMA type-model
9407-515	5733-SPN 3 months initial registration
9407-515	5733-SPM 1 year initial registration
9407-515	5733-SPO 3 year initial registration
9407-515	5733-SPP 1 year initial reg. or renewal
9407-515	5733-SPE 3 year initial registration
9407-515	5733-SP3 3 year renewal
9406-525	5733-SPP 1 year initial reg. or renewal
9406-525	5733-SPE 3 year initial registration
9406-525	5733-SP3 3 year renewal

11.4 i5/OS Application Server, 5722-SSB

IBM adds flexibility by offering application server licensing by processor on System i Models 550, 570, 9406-MMA, and 595. This introduces a lower priced i5/OS entitlement that can be used when the work within an i5/OS partition is application serving. This means that applications run under i5/OS V5R4 in a partition, but do not use DB2 for i5/OS in that partition.

The new i5/OS Application Server entitlement offers a reduced charge specifically for i5/OS partitions doing non-database work. This option can be purchased for processors that are assigned to logical partitions (LPARs) that host applications that access DB2 for i5/OS data residing in a different i5/OS partition or system. It also can be used for applications that are running in a partition that simply to do not execute DB2 for i5/OS functions anywhere.

The new i5/OS Application Server Processor Entitlement option enables you to leverage the benefits of i5/OS work management, security, and scalability in new applications even more

economically. Additionally you can manage these applications with the same resources and skills that support all other i5/OS business applications.

In general, the i5/OS Application Server license entitlement is designed to support partitions that run products, such as Lotus Domino and Sametime, that do not require DB2 Universal Database™ to execute. It is also ideal for Web application serving workloads such as Java language business applications that run under WebSphere Application Server.

This i5/OS Application Server license entitlement can also apply to partitions that run PHP or Apache-based applications that run on i5/OS, all of which might typically access only DB2 data in other i5/OS partitions or servers.

Program name	PID number	Charge metric
i5/OS Application Server	5722-SSB	Per Processor

11.4.1 i5/OS Application Server Processor Entitlement details

An i5/OS Application Server Processor Entitlement allows the use of i5/OS, except for restrictions on the use of the integrated database, DB2 for i5/OS. Under this entitlement, you are entitled to use DB2 for i5/OS only if it is used:

- By an IBM software product that already includes DB2 entitlement in its license agreement.
- By i5/OS itself to perform its functions.
- For minor, incidental purposes and is not intended for productive use of DB2 for i5/OS for the storage, retrieval, and management of data by your applications.

The use of this i5/OS Application Server Processor Entitlement for a partition restricts any other i5/OS entitlements for that partition in the same manner as this entitlement.

To obtain an i5/OS Application Server entitlement for a processor that does not use the function DB2 for i5/OS, purchase the i5/OS Application Server Processor Entitlement feature under product identifier (PID) 5722-SSB. Refer to the following tables for normal i5/OS Processor Entitlement features and i5/OS Application Server processor entitlements for the 550, 570, and 595 application server.

The following table is for the Model 550.

KEY	PID	No charge entitlement feature	Priced entitlement feature	Entitlement description
5051	5722-SS1	1507	----	i5/OS Processor Entitlements
5051	5722-SSA	----	1538	Additional i5/OS Processor Entitlements
NA	5722-SSB	----	1592	i5/OS Application Server processor entitlements

The following table is for Models 570 and POWER6 570.

KEY	PID	No charge entitlements feature	Priced entitlement feature	Entitlement description
5051	5722-SS1	1516	----	i5/OS Processor Entitlements
5051	5722-SSA	----	1540	Additional i5/OS Processor Entitlements
NA	5722-SSB	----	1598	i5/OS Application Server processor entitlements

The following table is for Model 570 (POWER6).

KEY	PID	No charge entitlements feature	Priced entitlement feature	Entitlement description
5051	5722-SS1	1618	----	i5/OS Processor Entitlements
5051	5722-SSA	----	1540	Additional i5/OS Processor Entitlements
NA	5722-SSB	----	1598	i5/OS Application Server processor entitlements

The following table is for Model 595.

KEY	PID	No charge entitlement feature	Priced entitlement feature	Entitlement description
5051	5722-SS1	1526	----	i5/OS Processor Entitlements
5051	5722-SSA	----	1540	Additional i5/OS Processor Entitlements
NA	5722-SSB	----	1598	i5/OS Application Server processor entitlements

License key considerations include:

- Partitions that use DB2 for i5/OS entitlements.

  For those customers who purchase i5/OS Processor Entitlements, a key (5051) is generated by IBM that contains the quantity of processors that are entitled for DB2 use.

  The i5/OS Processor Entitlement key (5051) is entered in each partition that requires DB2 function. i5/OS internal component Software License Manager (SLM) assists with license compliance by counting the number of activated processors available to a partition that will be used for DB2 work. This value is compared to the 5051 key quantity to determine license compliance.

- Partitions that do not use DB2 for i5/OS entitlements.

  For those customers who purchase i5/OS Processor Entitlements and i5/OS Application Server Processor Entitlements, only one key (5051)is generated by IBM that contains the total quantity of processors that are entitled for both DB2 and non-DB2 use.

  The i5/OS Processor Entitlement key (5051) must be entered in every partition, those partitions that require DB2 function and those that do not require DB2 function.

  SLM assists license compliance by counting the number of activated processors that are available to a partition that will not be used for DB2 work. This value is compared to the

key quantity (total quantity of i5/OS Processor Entitlements plus i5/OS Application Server Processor Entitlements), to determine license compliance.

For example, you might have the following networked partitions on the same Model 570 that all need to be entitled for i5/OS:

- Partition AP1 (does not require DB2 for i5/OS) has two processors assigned.

  In this partition, an order entry application runs that accesses database data on partition DB1. Alternatively, no applications running in this partition access DB2 for i5/OS data anywhere.

- Partition AP2 (does not require DB2 for i5/OS) has three processors assigned.

  In this partition, the order entry application also runs as well as a sales tracking application. Both of these applications access DB2 for i5/OS data in partition DB1. Alternatively, no applications running in this partition access DB2 for i5/OS data anywhere.

- Partition DB1 (uses DB2 for i5/OS) has three processors assigned.

The following table shows the entitlement results of our example for i5/OS Processor Entitlements and i5/OS Application Server Entitlements. One 5051 key is provided that entitles eight processors on the system: three of the processors are entitled to use i5/OS for DB2, and five of the processors are not entitled.

Partition	Base i5/OS Processor Entitlements (5722-SS1)		Additional i5/OS Processor Entitlements (5722-SSA)		i5/OS Application Server Processor Entitlements	
	Key/number of processors	Feature/ purchased quantity	Key/number of processors	Feature/ purchased quantity	Key/number of processors	Feature/ purchased quantity
AP1					5051/2	1595/2
AP2					5051/3	1595/3
DB1	5051/1	1516/1	5051/2	1539/2		

As of April 2007, the WRKLICINF command interface has not been updated to show this entitlement information after you successfully enter the license key. An update was planned to be available in 3Q 2007.

11.4.2 Software Maintenance for entitlements

SWMA for System i is sold on a per-processor basis. You are encouraged to purchase SWMA for each i5/OS Processor Entitlement and i5/OS Application Server Processor Entitlement on the System i server.

One year of Software Maintenance for i5/OS is included with an i5/OS Application Server Processor Entitlement. Renewals and three-year extensions are done under the normal SWMA for i5/OS and Selected Programs offering.

11.5 System x and BladeCenter integration for i5/OS

System i integration with iSCSI-attached BladeCenter and System x servers, introduced with i5/OS V5R4, was enhanced during July 2007 and October 2007:

- Multipath I/O (MPIO) on iSCSI-attached BladeCenter and System x servers running Windows Server 2003

  A single target iSCSI host bus adapter (HBA) installed in the iSeries system and assigned to an i5/OS partition is capable of supporting several servers or hosted systems. Each initiator HBA in the System x or blade system is also capable of connecting to multiple target iSCSI HBAs that are assigned to an i5/OS partition.

  You can configure the iSCSI environment to support multiple target iSCSI HBAs, multiple iSCSI initiator HBAs, and multiple storage connections.

  Paths are connection points between virtual devices and iSCSI HBAs that are owned by an i5/OS partition. A virtual device that is being hosted by i5/OS is said to be linked to a path. Initiator iSCSI HBA ports access the virtual device through the path:

  - **Single path**: Virtual storage or devices that are linked to a specific iSCSI HBA can only be accessed through that adapter by a hosted system.
  - **Multipath I/O**: A hosted system can use multiple iSCSI data paths to access virtual disks hosted by i5/OS. You can configure a multipath group of two or more target iSCSI HBAs and then specify that a virtual disk be accessed using the multi-path group instead of a single iSCSI HBA. With this configuration, the data on the virtual disk can be accessed using any of the iSCSI HBAs in the multipath group.

    The advantage of the multipath configuration is that, in case of a problem with a target iSCSI HBA, an initiator iSCSI HBA, or a switch, the hosted system can continue to access the virtual disks that are configured to use another path (HBA) within the multipath group.

    For more information about which BladeCenter and System x models are supported over iSCSI, how to obtain the i5/OS PTFs for this support, and additional multipath configuration documentation, refer to the links to this information provided on the System i integration with BladeCenter and System x Web page at:

    `http://www.ibm.com/systems/i/bladecenter`

- VMware ESX Server on iSCSI-attached BladeCenter and System x servers

  Integrated support of i5/OS V5R4 iSCSI-attached System x and BladeCenter was enhanced to support virtual storage for VMware ESX server V3.0.1. VMware is one of the leading virtualization products for x86 processor-based servers.

  VMware ESX Server is the host server for abstracting processor, memory, storage, and networking resources of a physical server into multiple virtual machines. The ESX Server is part of the VMware Infrastructure. It has been demonstrated to help reduce the number of physical servers through virtualization. It also enables multiple virtual machines, each with an installed network operating system running on a single server.

  VMware ESX supports Windows, Linux, NetWare, and Solaris virtual machines. You can install the ESX server on an iSCSI-attached BladeCenter or System x server and use the System i disks of an i5/OS partition for all of the storage for the ESX server, extending the value of the i5/OS storage management. VMware ESX is enabled through a program temporary fix (PTF) to i5/OS V5R4.

For more information about which BladeCenter and System x models are supported for VMware ESX over iSCSI, how to obtain the i5/OS PTFs for this support, and additional information about VMware ESX Server support, refer to the links to this information provided on the System i integration with BladeCenter and System x Web page:

http://www.ibm.com/systems/i/bladecenter

To learn more about the VMware Infrastructure, refer to the VMware Web site:

http://www.vmware.com

11.6 Web Enablement Made Easy

On 10 April 2007, the Web Enablement Made Easy announcement letter 207-064 included a set of capabilities that help you to get up and running in a Web-enabled environment in a minimum time period. The enhancements in this announcement letter include and build upon a similar set of Web-enablement enhancements that were announced October 2006 in announcement letter 206-256.

The objective of these kinds of enhancements is to get you up and running with good performance in an IBM WebSphere Application Server-based environment with a minimum of expertise in the WebSphere Application Server versions. The enhancements also enable you to familiarize yourself with use of the IBM WebFacing Tool and HATS products capabilities. These products make your existing 5250-based applications accessible to Web users, without first installing and using the WebSphere Development Studio Client for iSeries product running on a PC workstation.

The capabilities that were available October 2006 through December 2006 were re-announced with the April 2007 Web Enablement Updates announcement and new capabilities were added. Refer to *IBM System i5 V5R4 Technical Overview Redbook*, SG24-7271, which highlights the capabilities announced in October 2006 through December 2006 with examples. The capabilities announced in October 2006 and April 2007 were available for both i5/OS V5R3 and V5R4 in June 2007. Most capabilities were already available as of April 2007.

Some enhancements are made available through specific product ordering numbers and others via specific PTFs. The set of enhancements includes the following features:

- Ordering PID Web Enablement for i5/OS (5722-WE2)

  The 5722-WE2 and its associated software features offer no-charge capabilities and are available with each order of i5/OS V5R3 or V5R4 delivered as either CD or DVD media:

  - You can get media that contains each the following Application Server - Express for i5/OS versions 5.1, 6.0, and 6.1 or select version. By default, V6.0 is shipped.
  - WebSphere Express Runtime V1R1M0 or V1R2M0 on CD or DVD media includes media containing HTTP Server for i5/OS, 5722-DG1, a WebSphere Application Server version and a set of unique i5/OS applications that you can run under a WebSphere Application Server profile configured on your i5/OS partition. As discussed later, specifying V1R1M0 or V1R2M0 determines which WebSphere Application Server version you receive.
- With WebSphere Express Runtime software, a set of installation wizards and unique IBM-provided i5/OS Web applications that include:
  - A wizard to install, if not already installed, HTTP Server for i5/OS, 5722-DG1.
  - A wizard to install, if not already installed, the provided WebSphere Application Server Version 5.1, 6.0, or 6.1.

- The ability to install associated i5/OS group PTFs for these products.
- A wizard to install, if not already installed, iSeries Access for the Web, 5722-XH2.
- Configuration of a matched paired HTTP server and WebSphere Application Server profile (instance).
- The ability to install (deploy) unique i5/OS Web applications into your named WebSphere Application Server profile (instance), in addition to other IBM-provided WebSphere Application Server applications that already come with each specific WebSphere Application Server version on all supported operating systems:
  - iSeries Access for Web
  - A 5250-based example flight reservation application, *flght400*
  - HATS-enabled, WebFaced enabled, and Web Services-enabled versions of the flght400 application

- HTTP Server for i5/OS, 5722-DG1 enhancements

  HTTP Server for i5/OS already provides its IBM Web Administration for i5/OS interface to configure and start and stop all HTTP servers and WebSphere Application Server profile (formerly called an *instance*) application servers that you want. This includes ones that you might have configured outside of the new wizards as well as new ones that you might have created with the wizards that we previously described.

  Announced in April 2007, the IBM Web Administration for i5/OS interface also helps you set up instances of IBM WebSphere Portal Express for i5/OS instances on i5/OS V5R3 and V5R4. The IBM Web Administration for i5/OS interface also has links to the Web Performance Advisor and Web Performance Monitor, if installed, which are provided in separate PTFs:

  - Web Performance Advisor assists in viewing and modifying (with advice) several i5/OS system values and WebSphere Application Server parameter settings that affect performance.

    As of April 2007, support is available on i5/OS V5R3 and for WebSphere Application Server V6.1. WebSphere Application Server V6.1 support includes support for using both IBM Technology for Java (32-bit) and classic (64-bit) Java virtual machines (JVMs).

  - Web Performance Monitor provides a look at transaction counts and average response times of your WebSphere Application Server applications, including the unique i5/OS Web applications that you installed with the new wizards.

    As of April 2007, support is available on i5/OS V5R3 and for WebSphere Application Server V6.1. WebSphere Application Server V6.1 support includes support for using both IBM Technology for Java (32-bit) and classic (64-bit) JVMs.

- General WebSphere Application Server on i5/OS enhancements
  - i5/OS Collection Services collects partition performance data.

    New Collection Services support collects performance data for WebSphere Application Server V6.0 (and new in April 2007 V6.1) Express, Base, and Network Deployment editions. Normal Collection Services functions “create performance database files,” places the collected performance data, including the new WebSphere performance data into specific i5/OS QAPMxxxx database file members. The performance data in these files can be input to sizing tools, such as the IBM Systems Workload Estimator, through the use of the Performance Manager for System i product and service.

– WebSphere Application Server 6.1 for i5/OS can run with Classic JVM™ and IBM Technology for JVM.

  WebSphere Application Server 6.1 for i5/OS includes an i5/OS Qshell script than can switch between JVMs. This *enableJVM* script sets a desired JVM for one or more WebSphere Application Server profiles.

All of these Web-enablement capabilities assist you in getting an operational Web application server environment up and running with a minimum of expertise required. The following topics provide additional information.

11.6.1 Web Enablement for i5/OS, 5722-WE2

Web Enablement for i5/OS is an orderable feature number (PID) only. The following table lists the orderable features and associated installation on i5/OS PID that are available under 5722-WE2 as of April 2007.

Feature	Order feature	PID after i5/OS installation	Media	Default
WAS-Express V5.1	#5901	5733-W51	CD	No
WAS-Express V6.0	#5902	5733-W60	CD	Yes
WAS-Express V6.1	#5903 #5904	5733-W61	CD and DVD	No
Express Runtime Web Environments V1R1M0	#5905 #5906	5733-SO1	CD and DVD	Yes
Express Runtime Web Environments V1R2M0	#5907 #5908	5733-SO1	CD and DVD	No

Refer to the IBM e-Config for the specific ordering process and information about how the CD or DVD media is packaged upon delivery. Alternatively, the WE2 features can be ordered electronically through the IBM Electronic Software Delivery Web page at:

http://www.ibm.com/servers/eserver/ess

11.6.2 Express Runtime Web Environment for i5/OS capabilities overview

IBM Express Runtime Web Environments for i5/OS is distributed by via CD or DVD. These CDs or DVDs can be run only on a Windows workstation. The Windows workstation must be connected to the installation target i5/OS partition. After starting IBM Express Runtime Web Environments for i5/OS on the workstation, you must specify the IP address or host name of the target i5/OS partition.

IBM Express Runtime Web Environments for i5/OS provides an integrated package of software products that you install and configure to your i5/OS, according to your needs, using the provided wizard.

The main advantage of using IBM Express Runtime Web Environments for i5/OS is that it is an easy way to install all of the components necessary for a working Web environment. Only a basic understanding of how an HTTP server and a WebSphere Application Server profile (instance) operates is required. Using this tool is an ideal way to get someone who is considering or just starting to run a WebSphere Application Server-based application, quickly up and running with an example environment.

IBM Express Runtime Web Environments for i5/OS is offered as a feature of IBM Web Enablement for i5/OS (5722-WE2), which is shipped by default when you order i5/OS V5R4. All WebSphere Application Server for i5/OS - Express products can be ordered through the 5722-WE2 product or separately under IBM Passport Advantage®.

IBM Express Runtime Web Environments for i5/OS is available free of charge, because you are already entitled to V5R4 embedded products at no cost.

You can select to install and configure the following Web serving products using Express Runtime Web Environments for i5/OS. If the product is already installed, the corresponding fix level that shipped with the 5722-WE2 media is applied, if necessary.

- HTTP Server for i5/OS (5722-DG1)
- WebSphere Application Server for i5/OS - Express V5.0 (5733-W51)
- WebSphere Application Server for i5/OS - Express V6.0 (5733-W60)

  This is currently the default version provided.
- WebSphere Application Server for i5/OS - Express V6.1 (5733-W61)
- iSeries Access for Web (5722-XH2)

  Note: IBM Express Runtime Web Environments for i5/OS does not include an iSeries Access Family 5722-XW1 license. This means formally you have 70 days of use until you must purchase a 5722-XW1 user license.

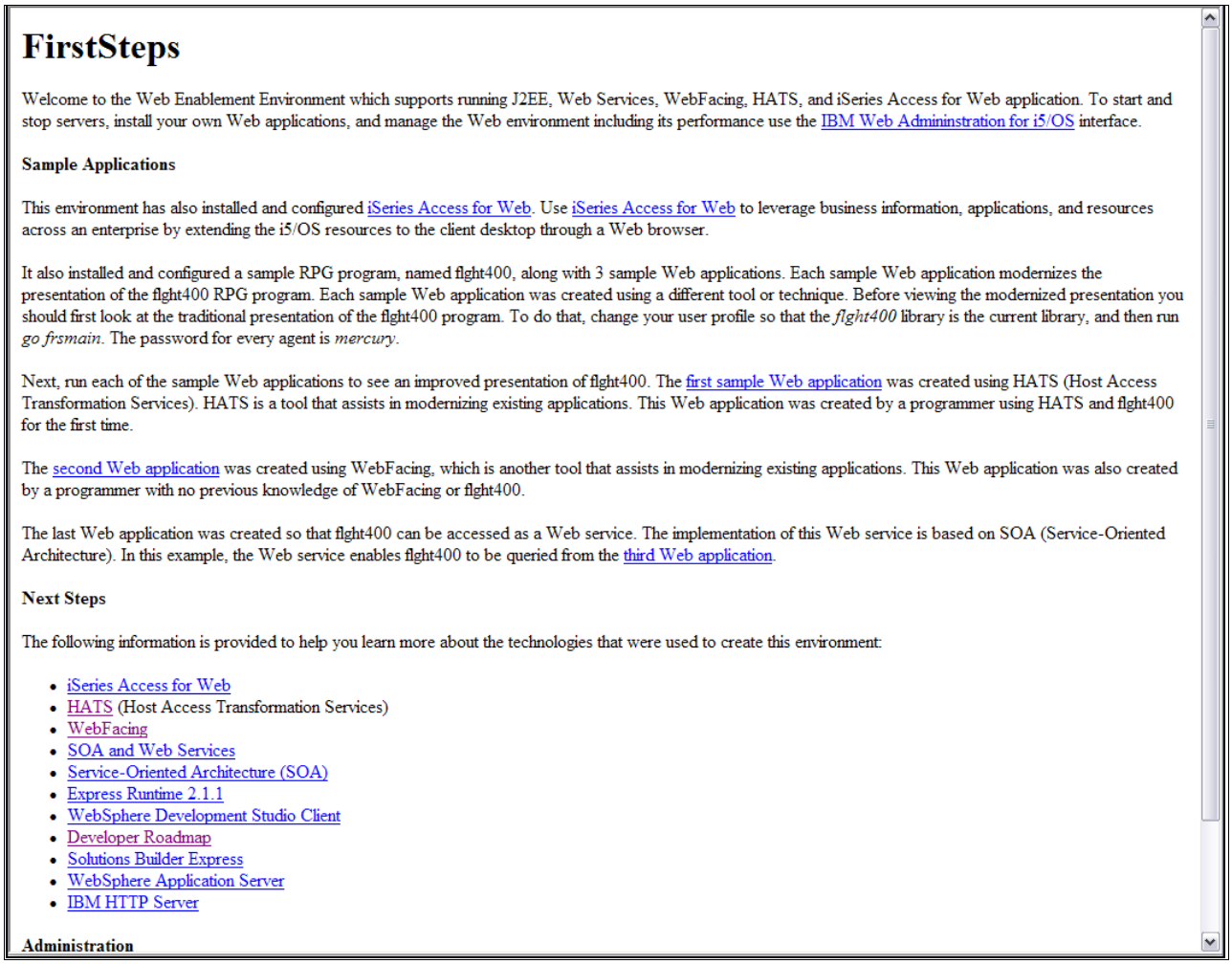
- The IBM-provided i5/OS flght400 5250-based application, which you can run from a 5250 workstation interface as well as a WebFaced application, a HATS application, and as a Web Services application

The unique sample RPG program (flght400) 5250-based application has already been processed by IBM to illustrate ways in which you can use the IBM technologies and products such as WebSphere Development Studio Client, IBM WebFacing Tool, and the WebFacing Deployment Tool with HATS Technology and as a Web Service.

When the installation has completed, you have an up and running matched HTTP server and Web application server profile that is ready for you to run the applications installed.

As part of this automated set up, a desktop icon labeled “first steps” is on your installation workstation’s desktop. You can click this icon to begin a browser session to the FirstSteps Web application page. You can continue to used this icon for later use or note the associated URL and use the URL later in a browser on any workstation.

The FirstSteps Web page, as shown in the following figure, helps you get started running the i5/OS applications.



11.6.3 Web Performance Advisor

Web Performance Advisor retrieves specific i5/OS system values and unique parameter values to supported releases of WebSphere Application Server 5.0.x, 5.1.x, 6.0.x, and 6.1.x and Portal Server and Workplace™. You get the current values, text that explains them, and, for certain parameters, a recommended value for improved performance. Some parameter value changes can be made in real time, while for others, you have to shut down the server, make the change, and start the server to put them into effect.

The advisor interfaces to the performance parameters of WebSphere Application Server and their values. Therefore, you do not have to know how to use the Administration Console interface of WebSphere Application Server to find the parameter settings. This is especially important when various software versions of WebSphere Application Server might each have a unique interface to these parameters.

You can easily restore changed settings while you try different configurations for performance improvements.

Use this support as an additional tool for improving your Web serving needs for HTTP, WebSphere Application Server - Express V6.0 and V6.1, both 32-bit and 64-bit JVMs, and portal and collaboration servers.

Support for WebSphere Application Server V6.0 using classic (64-bit) JVM is currently available for i5/OS V5R4 with the currently available level of the HTTP Server group PTF SF99114. Support for i5/OS V5R3 became available on 1 June 2007 and requires group PTF SF99099 to be installed.

Support for WebSphere Application Server V6.1 using both IBM Technology for Java (32-bit) and classic (64-bit) JVMs on i5/OS V5R3 and V5R4 became available on 1 June 2007 and requires PTF SF99099 for V5R3 and PTF SF99114 for V5R4, level 8.

After WebSphere Application Server 6.1 fix level 6.1.0.7 is loaded and its update installer has been run, 32-bit Java (“J9”) is supported.

See also special instructions for PTF SI26736, which lists several other fix levels for WebSphere Application Server that might need to be installed.

The Web Performance Advisor, after it is installed, is displayed as an option under the IBM Web Administration for i5/OS interface as part of the no-charge HTTP Server i5/OS Administration Server (*ADMIN), which can be started by using the following command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

Select the **IBM Web Administration for i5/OS Application Servers** tab to access the Web page that shows the Web Performance Advisor link.

11.6.4 Web Performance Monitor

Support is provided for monitoring the performance usage of the application transactions of Web Application Server that transverse several i5/OS jobs (and, possibly multiple i5/OS partitions). The transaction monitoring encompasses programs that are running under multiple i5/OS jobs, such as HTTP server WebSphere Application Server, and DB2 for i5/OS server and Integrated Language Environment® (ILE) applications.

This real-time i5/OS performance monitoring and statistics reporting is an i5/OS higher level version of detailed performance monitoring and reporting that is available using the Tivoli® Performance Viewer. Tivoli Performance Viewer requires significant knowledge of WebSphere Application Server and can be included with the WebSphere Application Server products that are available on several operating systems, including i5/OS.

After Web Performance Monitor is installed, the i5/OS Web performance monitor function can be selected from a Web Administration for i5/OS window. You select a specific HTTP server instance or a WebSphere Application Server profile (instance) to be monitored. The monitored and reported information includes CPU utilizations, transaction counts, and average response times.

Support for i5/OS V5R4 is currently available via the current level (6 or higher) of the HTTP Server for i5/OS group PTF SF99114.

Support for monitoring supported WebSphere Application Server products on i5/OS V5R3 became available on 1 June 2007, and requires V5R3 HTTP Server for i5/OS group PTF SF99099. Check the Fix Central Web page for a description of SF99099 to determine the level that supports the Web Performance Monitor on V5R3 and SF99114 for V5R4 level 8.

After you install the Web Performance Monitor, it is displayed as an option under the IBM Web Administration for i5/OS interface as part of the no charge HTTP Server i5/OS Administration Server (*ADMIN) server, which you can start by entering the following command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

11.6.5 WebSphere performance data collected by i5/OS Collection Services

In December 2006, Collections Services, which is a component of i5/OS V5R4, was enhanced to collect performance data for active WebSphere Application Server instances. Collection Services collects performance data at specific time intervals, providing a snapshot of activity during the time interval. As with other Collection Services data collected in this manner, to be useful to i5/OS users, the collected data must be exported to a set of performance database files. These files are commonly known by their file names starting with the prefix *QAPMxxxxx*. The performance database files can be specified to be created (exported) via an option on the Start Collection Services function or the Create Performance Data (CRTPFRDTA) command.

A WebSphere Application Server V6.0 or V6.1 profile (instance) must be active for Collection Services to retrieve the performance data. The performance database file names or WebSphere Application Server are as follows:

- QAPMWASCFG - WebSphere server configuration
- QAPMWASSVR - WebSphere servers
- QAPMWASAPP - WebSphere applications
- QAPMWASEJB - WebSphere Enterprise JavaBean (EJB™) data
- QAPMWASRSC - WebSphere pooled resource data

Refer to V5R4 Information Center for the field definitions for these files:

`http://publib.boulder.ibm.com/iseries/`

Support for WebSphere Application Server V6.0 is currently available with WebSphere Application Server fix pack V6.0.2.17 or later. This is i5/OS WebSphere Application Server V6.0 on V5R4 group PTF SF99312, level 14. For planned availability of WebSphere Application Server V6.1 with fix pack V6.1.0.9 (i5/OS WebSphere Application Server V6.0 on V5R4 group PTF SF99323), refer to the WebSphere Application Server Web page:

`http://www.ibm.com/servers/eserver/iseries/software/websphere/wsappserver/`

Follow the links there for each WebSphere Application Server version that is supported under i5/OS. One of the links takes you to PTF information.

WebSphere Application Server V6.0.2.15 (already available on i5/OS) supports the utility *processStats*. Collection Services uses this utility to collect performance data from a running WebSphere Application Server application.

Starting in November 2006 Performance Manager for System i (PM/400) collects, if available, the WebSphere performance data in the QAPMxxxx files listed previously. You can import its summarization of that data into the IBM Systems Workload Estimator to be used as input into sizing a WebSphere Application Server workload.

You must use the Performance Manager for System i Web page to take advantage of this capability. For additional information about Workload Estimator, see 11.11, “IBM Systems Workload Estimator enhancements” on page 486.

11.6.6 Web Administration for i5/OS configuration for a portal server

The Web Administration for i5/OS interface, which is available with the HTTP Server for i5/OS Administration (*ADMIN) server, includes a wizard to set up and configure a portal server on i5/OS. The Web browser-based interface quickly guides you through the setup of WebSphere Portal Server V6.0 and WebSphere Portal - Express V6.0.

Support for these portal products on i5/OS V5R4 became available on 1 May 2007. It requires HTTP Server for i5/OS group PTF SF99114 at the latest level available. See the Fix Central description of SF99114 to ensure that the appropriate level is identified.

11.7 i5/OS and Web services related enhancements

i5/OS, in conjunction with Web services capabilities under the application development product WebSphere Development Studio for System Client V7 (see 11.9, “IBM WebSphere Development Studio Client V7.0” on page 477), has provided a base Web Services environment for i5/OS-based applications.

With the October 2007 announcement letter (207-242), Web services integration and SOA capabilities are extended in the following ways:

- Simplifying the implementation of Web services for ILE products
- Integrating a Web services server and client
- Extending SOA enablement with new SOA-related offerings

The suite under the title Web Services and SOA for i5/OS (5722-SS1, Option 3, Extended Base Directory Support) includes the following services, components, and products:

- i5/OS Integrated Web Services Server for ILE (5722-SS1 Option 3) V1.0
- WebSphere Application Server V6.1 Feature Pack for Web Services
- WebSphere Enterprise Service Bus V6.1
- WebSphere Process Server V6.1
- WebSphere Integration Developer V6.1
- i5/OS Integrated Web Application Server V7.1

SOA is an approach to define integration architectures based on the concept of a service. Applications collaborate by invoking each others’ services, typically across a network. Services can be composed into larger sequences to implement business process functions.

The following Web services and SOA overview information is extracted from *Getting Started with WebSphere Enterprise Service Bus V6*, SG24-7212.

The most commonly agreed-on aspects of a Web service are that it:

- Encapsulates reusable business functions.
- Is defined by explicit, implementation-independent interfaces.
- Is invoked through communication protocols that stress location transparency and interoperability.

The following core technologies are used for Web services:

- *Extensible Markup Language* (XML) underlies most of the specifications used for Web services. XML is a generic language that can describe any kind of content in a structured way, separated from its presentation to a specific device.
- *SOAP* is a network, transport, and programming language and platform-neutral protocol that allows a client to call a remote service. The message format is XML.

- *Web Services Description Language* (WSDL) is an XML-based interface and implementation description language. The service provider uses a WSDL document to specify the operations that a Web service provides, and the parameters and data types of these operations, as well as how to access or invoke the service.
- *Web Services Inspection Language* (WSIL) is an XML-based specification that locates Web services without using Universal Description, Discovery, and Integration (UDDI). While WSIL and UDDI are distinct, WSIL can be used with UDDI and does not replace UDDI.
- *Universal Description, Discovery, and Integration* is both a client-side API and a SOAP-based server implementation that can be used to store and retrieve information about service providers and Web services.

The following sections present an overview of the capabilities of the services, components, and products that were announced in October 2007 as now available or enhanced on i5/OS V5R4.

Note: In addition to the basic Web services enablement provided in the October 2007 announcement and described in this section, consider WebSphere Development Studio Client for iSeries for getting applications up and running as a service (runs the Web server module) or as a consumer (requester of the Web service).

WebSphere Development Studio Client for iSeries provides application development and deployment tools for applications running under i5/OS and in conjunction with i5/OS. It helps you develop ILE RPG, ILE COBOL, or ILE C/C++ applications that run under i5/OS. It also helps you to develop modern Web and GUI front ends to i5/OS business logic to integrate applications using Web services.

For information about these application development tools, go to the System i software Web page at the following address and search under the Application development category:

`http://www.ibm.com/systems/i/software/`

For information about IBM and non-IBM application development tools for the System i platform, refer to the System i Network Web site at:

`http://www.systeminetwork.com/`

Click the **Article Archive** link and search on “web enablement.”

Some ISVs included on that Web site provide Web Services links for RPG, COBOL, and C/C++ i5/OS programs and Web Services links between other ISV products, such as between Oracle JD Edwards OneWorld applications and CRM applications.

11.7.1 i5/OS integrated Web services server for ILE

The integrated Web services server offers a basic “starting step” for ILE applications to use Web services and SOA under i5/OS. The Web services server supports the consumption and externalization of services within the ILE programming environment. The Web services server includes Web services engine and runtime components that support, for example ILE RPG and COBOL applications that are slightly modified to use SOA interfaces that enable them to be either a server or a client application.

The Web services server includes base Web services capabilities. Other components and products that are provided under the i5/OS and Web services-related technologies and

products included in the October 2007 announcements extend these capabilities. We explain these components and products in the following sections.

Integrated Web services server

The integrated Web services server greatly simplifies the process of externalizing ILE business logic as a service via the Web Administration for i5/OS GUI. You configure and manage this server under this interface similar to the way in which you manage HTTP servers and WebSphere Application Server technology-based servers. This method significantly simplifies the complexities of using Web services, essentially making the externalization of RPG and COBOL business logic as a Web service simply an administrative task under the Web Administration for i5/OS GUI.

Under this server, i5/OS integrates Web services run time into the operating system and enables SOA technologies directly for interaction with the operating system. This integration opens the i5/OS system to a variety of Web service client implementations, including RPG, COBOL, C, C++, Java, .NET, PHP, WebSphere Process Server, enterprise service bus, and Web 2.0.

Highlights of this integrated Web services server include:

- Acts as easy initial step on path toward Web services and SOA on the System i platform
- Supports enablement of the ILE service program and programs as services
- Automatically generates and binds service information when compiling the ILE program or service program
- Uses the Web Administration for i5/OS GUI with PTFs included in HTTP Server for i5/OS, 5722-DG1, V5R4 group PTF SF99114, planned for December 2007 availability

  The capabilities include:

  - Create a Web services server with a few easy steps
  - Select and deploy ILE programs and service programs as services
  - Easily view and manage all services available on the system
- Uses an administrative task to export ILE (RPG,COBOL) program or service program business logic
- Externalizes business tasks as a Web service natively on ILE (services provider)
- Opens ILE (RPG and COBOL) to business logic for a variety of Web service clients, including RPG, COBOL, C, C++, Java, .NET, PHP, and more
- Enables i5/OS to be SOA ready for service deployment
- Does not require new skills or tools for ILE enablement
- Uses and enhances existing i5/OS development skills to interact with Web services and integrate SOA
- Dynamically generates WSDL representation for client invocation of an ILE program or service program

  WSDL is a document written in XML. The document describes the Web service. It specifies the location of the service, the operations (or methods) that can be performed, and the parameters that are expected by the service (program).
- Helps ILE programmers externalize a program or service program as a service
- Uses fast interoperability of ILE programming architecture for minimal consumption of i5/OS resources

- Integrates into i5/OS with PTFs planned for December 2007 availability for:
  - 5722-SS1 Option 3 PTFs
  - December 2007 level of group PTF SF99114

  The Web services server runs under the i5/OS integrated Web application server V7.1 as explained in “i5/OS Integrated Web application server (part of 5722-DG1)” on page 475.

Programming considerations and overview of the enablement process

Program objects must be *stateless*, that is:

- After a request is sent, the logic is performed and a response is returned.
- Your program must comply so that, when it is identified in the create Web services server process, i5/OS can generate the appropriate Program Control Markup Language (PCML) statement. If you are sufficiently knowledgeable, you can alternatively provide a PCML file. In the simplest case, you allow the i5/OS-based software to generate the PCML.

  For i5/OS V5R4, you create or recreate your ILE program and specify the following option in the source program:

  - For RPG the header specification:

    ```
    H PGMINFO(*PCML:*MODULE)
    ```

  - For COBOL:

    ```
    PROCESS OPTIONS PGMINFO(PCML MODULE)
    ```

The following steps summarize how to create the Web service and associated Web services server:

1. Create the server to run a service, using a new Create New Web Services Server link on i5/OS Web Administration GUI Web page:

   `http://hostname:2001/HTTPAdmin`
2. Select **Install a new service - externalize an i5/OS program**.
3. Select a program to externalize as a service. Identify the library, program name, and program type (service or program).
4. Name and describe the new service.
5. Specify which items in the ILE program to externalize, such as field names and file attributes (for example, numeric, character, and so forth). These are the input and output variables that are processed by the program.
6. Create the actual Web services server and specify its i5/OS security attributes.
7. The program might use other programs and libraries on the system. Identify other libraries, for example, that the program might use when it runs.
8. Review the summary of servers, services, and operations that you explicitly defined, for example the server and service name, operations and procedure names. Also review those items that you implicitly defined, for example the URL of the server.

   When finished, click **Finish** to create the Web service server.
9. Use the GUI to view and manage the server and service. This is one of the server types that can be managed from the i5/OS Web Administration GUI. You can also view the generated WDSL file.

Other Web services consumers can now request your service.

Integrated Web services client

The integrated Web services client for ILE includes an internal engine that supports the ILE environment to act as a client that is available to the ILE programming languages under i5/OS, including RPG, COBOL, C, and C++. This means an ILE RPG, COBOL, C, or C++ application can act as a consumer (“requester”) of a Web service. The client support can call a variety of Web service implementations, including RPG, COBOL, C, C++, Java, PHP, .NET, WebSphere Process Server, Enterprise Services Bus, Web 2.0, and more.

The client support characteristics include:

- Supports enablement of an ILE program to consume services
- Invokes Web service client from ILE programs (RPG, COBOL, C, and C++)
- Enables an ILE programmer to consume services from a program or service program
- Uses ILE enablement to bind and call a service directly from an i5/OS program or service program
- Leverages WSDL to generate proxy client code to be integrated in a program or service program
- Uses and enhances existing System i development skills to interact with Web services and SOA
- Uses quick interoperability of ILE programming architecture for minimal consumption of i5/OS resources with a small system footprint
- i5/OS support ships via PTF delivery for 5722-SS1 Option 3
- Supports a Web service client module for C, C++, RPG, and COBOL
- Supports document style literal only
- Complies with the Web Services Invocation 1.1 basic profile
- Supports Secure Sockets Layer (SSL) for ILE service
- Implements staged development for ILE:
  - Generate proxy code
  - Examine proxy code
  - Integrate proxy code into ILE source code
  - Compile and bind program or service program
  - Run ILE program or service program as a Web service

You make small changes to your ILE program to use interfaces to be a client and request a service. For example, you use the eval RPG calculation statement to request (via a URL) the Web service and pass parameter data to the service program, so that you are can process the received parameter data values and results from the service.

For more i5/OS-based information, refer to *Building SOA-based Solutions for IBM System i Platform*, SG24-7284.

WebSphere Application Server V6.1 Feature Pack for Web services

WebSphere Application Server V6.1 for i5/OS is available as:

- 5733W61 - BASE, feature 5050 (WebSphere Application Server V6.1 for i5/OS)
- 5733W61 - Option 2, feature 5102 (WebSphere Application Server V6.1 (Base))
- 5733W61 - Option 3, feature 5103 (WebSphere Application Server V6.1 Network Deployment)

The feature pack extends the capabilities of WebSphere Application Server V6.1 under i5/OS to enable Web services messages to be exchanged asynchronously, reliably, and securely with other IBM and non-IBM products supporting Web services. The focus of the feature pack is interoperability.

Through support for key Web services, programming interfaces provide simplified application development through a standard annotation-based program model to develop Web service providers and clients. A common set of binding rules for XML and Java makes it easy to incorporate XML data and processing functions in Java applications.

A further set of enhancements helps you send binary attachments, such as images or files, along with your Web services requests.

Using Web services profiles makes it easier to configure, reuse, and manage configurations, so you can introduce new Web services profiles seamlessly in the future. These configurations are captured in a grouping called *policy sets* that enable you to select, and associate with an application, different qualities of service. You can configure the policy sets to allow only those capabilities within a given WS-Interoperability (WS-I) profile. This helps ensure that the only configurable portions are those that you choose.

WS-I: WS-I is an open industry organization chartered to promote Web services interoperability across platform systems and programming languages.

The capabilities within this feature pack are provided by PTFs included in HTTP Server for i5/OS, 5722-DG1, V5R4 group PTF SF99114, planned for December 2007 availability.

For more information about WS-I, refer to the WS-I Web site at:

`http://www.ws-i.org/`

For more information about the feature pack, refer to the WebSphere Application Server at:

`http://www.ibm.com/software/webservers/appserv/was/featurepacks/`

WebSphere Enterprise Service Bus V6.1

In the context of the WebSphere Enterprise Service Bus, an *enterprise service bus* is an architectural construct for infrastructure-type middleware, based on standards, that enables a common interface for applications from various vendors to communicate with each other in the context of Web services.

In general, an enterprise service bus generally provides an abstraction layer on top of an implementation of an enterprise messaging system, which allows applications to exploit the value of messaging and events without writing a significant amount of code. The enterprise service bus interface allows applications that are written on a variety of operating systems to communicate with each other efficiently whether the applications are located in the same system or in a distributed network.

The enterprise service bus is directed toward an enterprise-wide infrastructure pipeline that exchanges messages among statically defined end points (FTP directories, message queues, Web services, HTTP URLs, database connections, and so forth). The enterprise service bus does not implement an SOA, but rather provides the features with which one can be implemented.

WebSphere Enterprise Service Bus is the connectivity infrastructure provided by IBM for integrating applications and services. It is designed to enable the development of an SOA. Built on top of WebSphere Application Server, WebSphere Enterprise Service Bus delivers a standards-based connectivity and integration solution that allows you to create and deploy

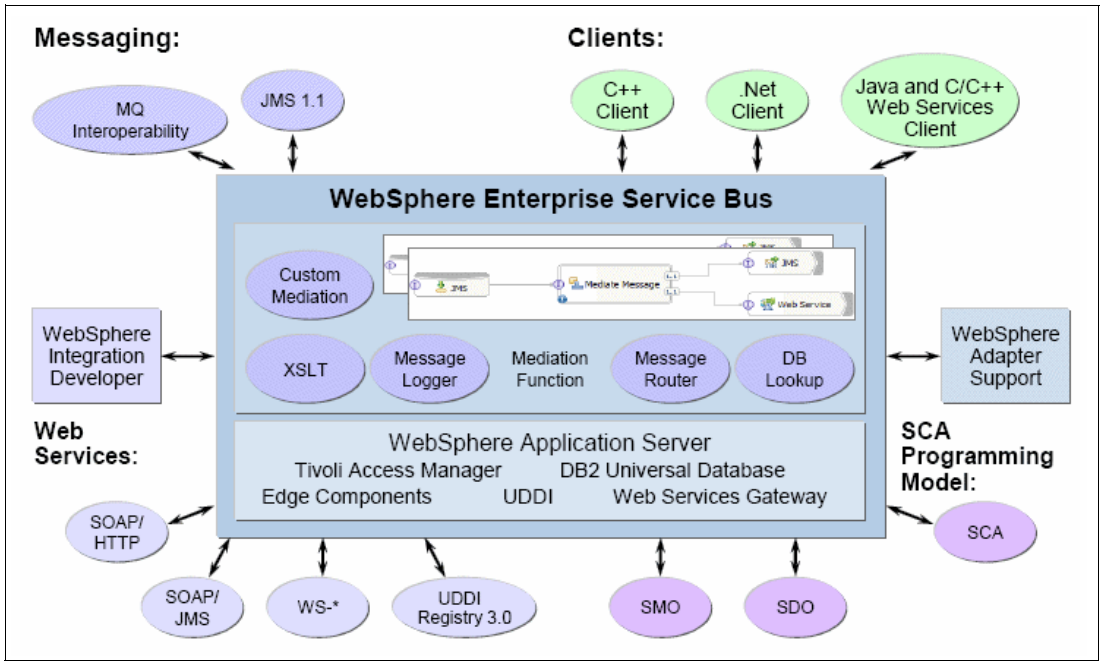
interactions quickly and easily between applications and services, with a reduced number and complexity of interfaces.

In an enterprise service bus, there is no direct connection between the consumer (requester of service) and provider. Consumers access the enterprise service bus to invoke services. The enterprise service bus acts as an intermediary, passing the request to the provider using the appropriate protocol, transport, and interaction pattern for the provider. This mediation enables the enterprise service bus to shield the consumer from the infrastructure details of how to connect to the provider.

The enterprise service bus supports several integration mechanisms. All of the mechanisms can be described as invoking services through specific addresses and protocols, even if in some cases the address is the name of a CICS transaction and the protocol is a Java 2 Platform, Enterprise Edition (J2EE™) resource adapter that integrates with the CICS Transaction Gateway. By using the enterprise service bus, consumers are unaware of how the service is invoked on the provider.

Because the enterprise service bus removes the direct connection between the service consumer (requester) and providers, an enterprise service bus enables the substitution of one service implementation by another with no effect on the consumers of that service.

The following figure illustrates the WebSphere Enterprise Service Bus, the components in the product, and the features and functions that are associated with the product.



Terminology

In this section, we have defined most of the acronyms shown in this figure. Here are additional acronyms and terms that you should understand:

- **Adapters**: The WebSphere Enterprise Service Bus provides adapters provide connection to the Web services functions and hundreds of IBM and ISV solutions. Pre-built mediation function saves time and development costs. The provided adapters include:
  - WebSphere Adapter for JDBC V6.1
  - WebSphere Adapter for Flat Files V6.1
  - WebSphere Adapter for Email V6.1

- WebSphere Adapter for FTP V6.1
- WebSphere Adapter for SAP Software V6.1
- WebSphere Adapter for Siebel® Business Applications V6.1
- WebSphere Adapter for PeopleSoft Enterprise V6.1
- WebSphere Adapter for Oracle e-Business Suite V6.1
- WebSphere Adapter for JD Edwards EnterpriseOne V6.1
- WebSphere Business Adapter for iSeries:
  - Enables integration between other applications and applications running through an integration broker
  - Supports execution of RPG programs on i5/OS and posts the results from the same to the Integration broker
  - Supports bidirectional exchange of messages to and from i5/OS data queues
  - Is metadata driven and includes object discovery capabilities for both the RPG programs and the data queues
  - Uses IBM Toolbox V5R2 for Java to execute an RPG program under i5/OS

For more information about available adapters, refer to the WebSphere Adapters page at:

http://www.ibm.com/software/integration/wbiadapters/

- **Common Event Infrastructure (CEI)**: WebSphere Enterprise Service Bus uses the Common Event Infrastructure to provide event management services, such as event generation, transmission, persistence, and consumption. The format of those events is defined by the Common Base Event (CBE) specification.
- **Java Messaging Services (JMS)**: The JMS specification addresses the demands of loosely coupled distributed systems in a coherent manner. Web services is based on JMS and the exchanging of asynchronous messages. JMS offers an API and a set of semantics that prescribe the interface and general behavior of a messaging services.

  Of the Java messaging solutions that are currently available, two architectural approaches are commonly used:

  - Stand-alone messaging server
  - JMS embedded within an application server

  The pairing of XML and Java messaging promotes highly flexible and scalable designs that can better accommodate the rapid change that distributed systems face in today's business environments.

  The IBM WebSphere MQ product delivers reliable application integration for applications and can be used with Web services.
- **Mediation**: Mediations process the flow of services requests between service consumers and providers.

  Mediations are provided by SCA and Service Message Objects (SMO). Service Component Architecture (SCA) supports the description of every mediation module through a technology-neutral interface. As stated earlier, SMO is based on Service Data Object (SDO) and supports the representation of a binding-specific data format in a common, neutral way. The application of this SCA/SMO-based programming model allows for the configurable assembly of different mediation modules that contain the mediation flow.

  Mediation functions are built upon the mediation base and consist of one or more mediation modules. An SCA/SMO-based mediation module is composed of different parts, such as imports representing providers, exports representing service consumers and a mediation flow component representing integration and mediation functionality.

The WebSphere Enterprise Service Bus provides the following standard mediation primitives:

- The *MessageLogger* logs a copy of a message to a database for future retrieval or audit. The integration developer can customize the primitive by, for example, naming the database.
- The *DatabaseLookup* primitive retrieves values from a database to add them to a message.
- The *MessageFilter* primitive compares the content of a message to expressions configured by the developer and routes the message to the next mediation primitive based on the result.
- The *XSLT* primitive transforms messages according to transformations defined by an Extensible Stylesheet Language (XSL) stylesheet.

- **Service Component Architecture**: WebSphere Enterprise Service Bus implements a mediation layer that consists of a mediation base and mediation functions. This mediation framework is different from the one implemented by WebSphere Application Server because it is based on SCA. This mediation framework allows enhanced flexibility, encapsulation, and reuse. You can continue to use mediations that you may have implemented for WebSphere Application Server together with WebSphere Enterprise Service Bus, but the new tooling i that is provided for WebSphere Enterprise Service Bus V6.1 does not support the modification of these mediations.
- **Service Data Object**: Mediation components are part of the enterprise service bus implementation. A mediator is commonly concerned with the flow of messages through the infrastructure and not just with the business content of the message. The information that governs their behavior is often held in headers that flow with the business message. Therefore, the SMO pattern for SDO is introduced to support this pattern. SMOs are enhanced SDOs to provide an abstraction layer for processing and manipulate messages exchanged between services.
- **Service Message Object**: An SMO is based on an SDO SMO and supports the representation of a binding-specific data format in a common, neutral way.

Support features

WebSphere Enterprise Service Bus V6.1 includes platform support for i5/OS for communication with other implementers using the enterprise service bus. The support includes the following features:

- Is built as a service bus based on the messaging backbone of the WebSphere platform

  WebSphere Enterprise Service Bus is packaged both as part of WebSphere Process Server and as a stand-alone product.
- Provides Web services connectivity, MQ and MQ/JMS messaging, and service-oriented integration using WebSphere Adapters
- Integrates seamlessly with the industry-leading WebSphere platform for streamlined IT operations.
- Delivers business-critical, quality-of-service features from WebSphere Application Server Network Deployment
- Is easily extended to WebSphere Process Server for service orchestration and business process management
- Provides an integrated solution for both service mediation and service hosting

- Leverages WebSphere Application Server for other solutions, in addition to inheriting new features and benefits introduced in WebSphere Application Server V6.1
- Supports i5/OS and remote DB2 support to enable integration with i5/OS applications and leverage relational database management servers running on i5/OS

WebSphere Enterprise Service Bus V6.1 was announced on 9 October 2007 for i5/OS and includes enhancements on other supported operating systems. See announcement letter 207-230, dated 9 October 2007 for the most complete description of WebSphere Enterprise Service Bus V6.1.

For more information, refer to go to *Getting Started with WebSphere Enterprise Service Bus V6*, SG24-7212, and the IBM Enterprise Service Bus Web page at:

`http://www.ibm.com/software/integration/wsesb`

WebSphere Enterprise Service Bus V6.1 is planned to be available 21 December 2007, as a Web download from Passport Advantage.

WebSphere Process Server V6.1

WebSphere Process Server is built on WebSphere Enterprise Service Bus. This foundation provides the process server with the mediation functionality of WebSphere Enterprise Service Bus and the qualities of service that WebSphere Application Server provides (for example clustering, failover, scalability, and security).

WebSphere Process Server adds the ability to build business processes that orchestrate multiple services to achieve a business goal. It helps ensure that the processes that you design in WebSphere Business Modeler or WebSphere Integration Developer are executed in a consistent, reliable, secure manner with transactional integrity. Built on open standards, it deploys and executes processes that orchestrate services (people, information, systems, and trading partners) within your SOA or non-SOA infrastructure.

When combined with the power of WebSphere Business Monitor, processes can be optimized to meet changing business requirements, assisting in giving the business a competitive advantage. WebSphere Process Server is built on, and contains, WebSphere Enterprise Service Bus functions. WebSphere Process Server V6.1 includes i5/OS V5R4 support.

You can use the features of a number of supporting services in WebSphere Process Server. Most of these can be classified as some form of transformation. There are a number of transformation challenges when connecting components and external services, each of which is addressed by a component of WebSphere Process Server:

- Interface maps

  Frequently interfaces of existing components match semantically but not syntactically. Interface maps allow the invocation of these components by translating these calls. Additionally business object maps can be used to translate the actual business object parameters of a service invocation.

- Business object maps

  A business object map is used to translate one type of business object into another type of business object.

- Relationships

  In business integration scenarios, you must often access the same data in various backend systems, for example in both an enterprise resource planning (ERP) system and a customer relationship management (CRM) system. A common problem for keeping

business objects synchronized is that different backend systems use different keys to represent the same objects.

The relationship service in WebSphere Process Server can be used to establish relationship instances between objects in these disparate backend systems. These relationships are accessed from a business object map when translating one business object format into another.

- Dynamic service selection

  A selector component allows dynamic selection and invocation of different services, which all share the same interface.

- Mediation

  The mediation component is inherited from WebSphere Enterprise Service Bus.

The primary development tool for WebSphere Process Server is WebSphere Integration Developer. This is the same tool used for WebSphere Enterprise Service Bus development tasks.

New or enhanced WebSphere Process Server V6.1 features leverage:

- WebSphere Application Server in addition to inheriting new features and benefits introduced in WebSphere Application Server V6.1.
- Running under i5/OS.
- Relational database management servers with DB2 support.

WebSphere Process Server V6.1 was announced for i5/OS on 9 October 2007 and includes enhancements on other supported operating systems. See announcement letter 207-230, dated 9 October 2007, for the most complete description of WebSphere Portal Server V6.1.

For more information, refer to *Getting Started with WebSphere Enterprise Service Bus V6*, SG24-7212, as well as the IBM WebSphere Process Server Web page at:

`http://www.ibm.com/software/integration/wps`

WebSphere Process Server is planned to be available 21 December 2007 as a Web download from Passport Advantage.

WebSphere Integration Developer V6.1

WebSphere Integration Developer is the “one tool, one set of skills” solution for end-to-end integration in your SOA. This Eclipse-based tool builds SOA-based business process management and integration solutions across WebSphere Process Server, WebSphere Enterprise Service Bus, and WebSphere Adapters. It simplifies integration with features that accelerate the adoption of SOA by rendering existing IT assets as service components, encouraging reuse and efficiency. It enables integration developers to assemble business solutions, whether processes, mediations, adapters, or code components with minimal skills.

You construct process and integration solutions using drag-and-drop technology to define, in a visual way, the sequence and flow of business processes. WebSphere Integration Developer supports development deployment to WebSphere Enterprise Service Bus and WebSphere Process Server on i5/OS V5R4 and other operating systems.

One of the primary purposes of WebSphere Integration Developer is to provide the appropriate tools to build and test SCA-based applications easily. WebSphere Integration Developer is built on the Rational® Software Development Platform, which is based on Eclipse 3.0 technology.

Two user roles are associated with WebSphere Integration Developer:

- Integration developer

  The integration developer is the primary role. It focuses on building service-oriented solutions. For this user role, the tool is expected to simplify and abstract advanced IT implementation details.

- Application developer

  The application developer is knowledgeable in development platforms such as J2EE, understands SOA, Web services, and Java. Application developers implement application-specific business logic and expose it as a service.

New features in WebSphere Integration Developer V6.1 offer:

- Increased developer productivity with ease-of-use enhancements.
- Enhanced human workflow.
- Improved business-driven development capabilities.
- Better connectivity.

WebSphere Integration Developer V6.1 was announced for i5/OS on 9 October 2007 and includes enhancements on other supported operating systems. See announcement letter 207-230, dated 9 October 2007, for the most complete description of WebSphere Integration Developer V6.1.

For more information, see *Getting Started with WebSphere Enterprise Service Bus V6*, SG24-7212, as well as the IBM WebSphere Integration Developer Web page at:

`http://www.ibm.com/software/integration/wid`

i5/OS Integrated Web application server (part of 5722-DG1)

The Integrated Web application server was introduced with PTFs included in the HTTP Server for i5/OS V5R4 group PTF SF99114 in November 2006. Newer levels of SF99114 became available in 2007 prior to December 2007. The levels include enhanced support for specific IBM-controlled Web applications, such as:

- iSeries Access for Web
- iSeries Navigator on the Web
- Secure Perspective for System i (5722-PS1); see 11.1.1, “Secure Perspective features and benefits” on page 434
- DB2 Web Query, 5722-QU2; see 11.12.1, “DB2 Web Query for System i, 5733-QU2” on page 490

The i5/OS Integrated Web application server was not formally announced until October 2007. This “formally announced version” will become available as part of the planned December 2007 level of SF99114 PTFs. PTFs to 5722-SS1, Option 3, are included within the December SF99114 group of PTFs. This December 2007 version is referred to as *Integrated Web application server Version 7.1*. IBM software support representatives refer to the “pre-V7.1 version” as V6.5. V7.1 is required to run i5/OS Integrated Web services server for ILE described in 11.7.1, “i5/OS integrated Web services server for ILE” on page 465.

After you install the appropriate level of group PTF SF99114, and any requisite PTFs, when you start the IBM-provided HTTP Server for i5/OS Administration server *ADMIN (for example, using the STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN) command), you must activate the integrated Web application server. You can determine if this integrated server is active by looking at the active jobs within the subsystem QHTTPSVR. Look for an active HTTP server job with the function identified as PGM-QLWISVR.

The integrated Web application server integrates an Open Services Gateway Initiative (OSGi)-based Web servlet container with the i5/OS operating system. OSGi is an independent, non-profit corporation that is working to define and promote open specifications for the delivery of managed services to networked environments. The Integrated Web application server is considered a Web container that includes the basics for getting applications to be up and running quickly and effectively on the Web. The integrated Web application server is a good place to prototype new applications or run existing small footprint or low-use applications.

For applications that require a high degree of scalability, we recommend that you use WebSphere Application Server Express. The integrated Web application server can be considered an initial deployment to the more scalable solution. This Web container is easy to use and configure, does not require any additional products to install, and uses minimal system resources.

The integrated Web application server can be completely administered using the Web Administration for i5/OS GUI (at port 2001). You can also use this GUI to manage all HTTP servers, WebSphere Application Server profiles (servers), and WebSphere Portal servers. With this interface, you can create, start, stop, and manage all these servers.

The integrated Web application server offers the following key benefits:

- OSGi-based Web servlet container
- Support for JDK 1.5 run by default on IBM technology for Java (32-bit)
- Support for DB2 for i5 using Toolkit for Java or Java native implementations
- GUI to manage all aspects of the integrated Web application server:
  - Wizard to create a new server instance
  - Wizard to deploy applications to the instance of choice
  - Interface to manage applications, server properties, and database connection information
  - Ability to view all servers on the System i platform; start, stop, or delete servers in one easy-to-use display

The GUI support for this integrated server will be shipped with the latest update to HTTP Server for i5/OS V5R4 group PTF SF99114, which is planned to be available on 21 December 2007.

11.8 Running either 64-bit JVM or 32-bit JVM under WebSphere Application Server 6.1 for i5/OS

i5/OS V5R4 supports running Java applications under either the 64-bit JVM (referred to as *Classic JVM* on i5/OS) or the 32-bit JVM (referred to as *IBM Technology for Java Virtual Machine*).

Classic JVM was the original JVM available under i5/OS, which includes support of large address spaces for applications that use it. i5/OS V5R4 introduced support for the 32-bit JVM, based upon the 32-bit JVM that is supported on all IBM operating systems. The 32-bit JVM offers less main storage requirements and associated latest JVM performance enhancements. The smaller main storage requirements are ideal for use on System i models in the 525 through mid-sized 570 configurations. Within applications that require extremely large address spaces, the 64-bit JVM is the best choice.

For more information, refer to the “Java performance” chapter in the *System i Performance Capabilities Reference*, SC41-0607, manual, which is available on the Web at:

http://publib.boulder.ibm.com/infocenter/iseries/v5r4/topic/books/sc410607.pdf

By default, WebSphere Application Server Version 6.1 uses Classic JVM (64-bit) for all newly created profiles. If you want to use IBM Technology for Java VM (32-bit JVM), you must use a special Qshell script included with WebSphere Application Server Version 6.1 for i5/OS.

The following i5/OS Qshell script can switch the JVM type. If you do not use the default installation directory, adjust these instructions accordingly.

```
/QIBM/ProdData/WebSphere/AppServer/V61/Base/bin/enableJvm
```

This i5/OS Qshell script requires a user to have *ALLOBJ authority. The command syntax is:

```
enableJVM <parameters>
```

The parameters are:

- `-jvm [std32 | classic]`

  This is a required parameter that specifies the JVM to use:

  - `std32` = IBM Technology for JVM
  - `classic` = Classic JVM

- `-profile <profile_to_be_enabled>`

  This is an optional parameter that specifies the specific profile for which you enable a desired JVM. It is important to note that, if a profile is not specified, all profiles are switched to the specified JVM.

- `-verbose`

  This is an optional parameter that enables additional trace statements.

Here is an example of the i5/OS Qshell script:

```
enableJVM -jvm std32 -profile default -verbose
```

In this example, we set the profile default to run on IBM Technology for JVM and show additional details on the display.

With WebSphere Application Server Network Deployment V6.1, it is possible to include servers with Classic JVM and IBM Technology for JVM in the same cell.

For additional details about this topic, refer to IBM Technote *Switching between JVMs in WebSphere Application Server 6.1 for i5/OS*, TIPS0666.

11.9 IBM WebSphere Development Studio Client V7.0

WebSphere Development Studio Client for System i is a collection of workstation-based application development tools. These tools can help solution providers and customers rapidly and cost-effectively deliver applications for On Demand Business for the System i platform.

WebSphere Development Studio Client for System i consolidates key System i workstation-based development tools into one attractively-priced offering. It is also part of WebSphere Development Studio for System i.

Effective 16 March 2007, new orders for V5R3 and V5R4 (5722-WDS) include the new V7.0 workstation tools, WebSphere Development Studio Client for iSeries. Effective 16 March 2007, existing V5R3 and V5R4 (5722-WDS) customers, who have acquired the program previously and who have a current System i Software Maintenance or Software Subscription contract, can use the #2658 no-charge feature number to order the new V7.0 workstation tools.

The WebSphere Development Studio Advanced Edition for iSeries is no longer offered. New customers should acquire the advanced workstation tools, 5724-D46, via the Passport Advantage channel because the entitlement of the advanced WebSphere Development Studio client tools is no longer offered.

11.9.1 WebSphere Development Studio Client V7.0, ClearCase Integration, and Improved RPG support

WebSphere Development Studio Client for iSeries V7.0 inherits and extends the robust, easy-to-use Rational Software Delivery Platform and a subset of Rational Application Developer for WebSphere Software V7.0. It delivers an integrated development environment (IDE) with tools for developing Web, Web services, client/server, and i5/OS server applications using programming languages such as RPG, COBOL, CL, and Java.

WebSphere Development Studio Client Advanced Edition for iSeries V7.0 contains all of the development tools that are included in WebSphere Development Studio Client. In addition, it inherits and builds on additional premium Web, EJB, and J2EE development capabilities from IBM Rational Application Developer V7.0. In addition, it provides specific advanced System i tools including data definition specification (DDS), application diagram support, ClearCase integration, and an Eclipse-based Screen designer technology preview.

The focus for WebSphere Development Studio Client V7.0 is to deliver the power of the Rational Software Delivery Platform to the System i market and to provide enhancements for System i application developers. WebSphere Development Studio Client Advanced Edition V7.0 includes additional capabilities to meet more advanced development needs.

11.9.2 New in WebSphere Development Studio Client V7.0

Installation

The WebSphere Development Studio Client and WebSphere Development Studio Client Advanced Edition installations now provide a selective installation for flexibility. Using the new installer, you can install only the options you need. You can also perform multiple installations onto the same workstation to create different workbench configurations.

You can now install into an existing Eclipse installation.

Remote System Explorer

Remote System Explorer offers the following features:

- iSeries Data Table View

  You can display the contents of members of a data physical file by using the iSeries Data Table View. This view applies only to data physical files, not source, and operates only on one member of a data physical file at a time. The file records in the member are displayed as rows in a table, with columns in the table according to the fields in the record format of the file, and the field values presented in a formatted fashion according to the field data type.

- iSeries Table View default column layout

  The default column layout in the iSeries Table view is changed for the library, object, and members. The Text field is a larger field because the Status field is no longer displayed.

- iSeries Remote System Explorer (RSE) Getting Started page

  This page is displayed when you open the RSE perspective. You can follow the steps on this page to quickly get started using the RSE.

- Programming Development Manager (PDM) and Source Entry Utility (SEU) Transition Guide

  This revised guide tells you about the most commonly performed tasks on your iSeries system using RSE and the Remote Systems LPEX Editor. It also explains why you should adopt these tools instead of using PDM and SEU. See “First Steps” in the Welcome view to see this guide.

- ILE RPG SQL support

  A new parser type for ILE RPG SQL is added to accept SQL statements. You can define source member types to be associated with this parser. For the source members associated with the ILE RPG SQL parser type, the following features have been added:

  – Support for tokenizing embedded SQL statements
  – Support for uppercasing, indenting and formatting of SQL statements in free format ILE RPG
  – Commonly used templates to assist in editing SQL statements in free format ILE RPG (You can also add your own SQL templates.)

iSeries projects

iSeries project development enhancements include:

- Label decorations

  All workbench decorations, including the iSeries decorations, are now displayed in the iSeries Navigator view. On the Label Decorations preference page, you can control which decorations to display in the iSeries Project Navigator.

- Sequence numbers

  A new preference is added to have sequence numbers and timestamp information automatically removed from members when they are downloaded to an iSeries project and added when they are uploaded back to the remote library. In addition, actions are available so you can add and remove this information from members within an iSeries project.

  Sequence numbers make it easier to use iSeries projects with a Source Configuration Management (SCM) tool provider, such as Rational ClearCase, which keeps track of source changes and therefore remove the need for the timestamps.

- Push method selection during compile

  You can select which push method to use during a compile or bind operation on the Build and Compile page of iSeries Projects preferences. The options are to push all changed resources in the project or to push only the selected resources if there are any changes.

- Cheat sheet to help create an iSeries project-based application in the Help menu

  Cheat sheets are an important productivity tool for Eclipse users.

Remote Systems LPEX Editor

The LPEX editor enhancements include:

- Language template locations

  The templates are now grouped by language, one for COBOL, one for C/C++, and one for ILE RPG. The template ILE RPG FREE-FORM is renamed to FREE-FORM.

- ILE RPG SQL

  This new parser type accepts SQL statements. You can define source member types to be associated with this parser.

- Source members associated with the ILE RPG SQL parser type
  - Support for tokenizing embedded SQL statements
  - Support for uppercasing, indenting, and formatting of SQL statements in free-format ILE RPG
  - Commonly used templates to assist in editing SQL statements in free format ILE RPG

- Show block nesting

  Selecting the start or end of a code block and selecting the Show Block Nesting action add connector bars to the editor margin that connects the start and end of the selected block and up to five nested blocks of code.

- Outline view

  Control Language (CL) information for labels and subroutines used in a member is now shown in the Outline view.

- New shortcuts

  New shortcuts have been added to the editor for opening the declaration of a subroutine or procedure in RPG IV (F3) and jumping to the start or end of a code block (Ctrl+Shift+M).

i5/OS Web and Java tools

Specific i5/OS Web and Java tool enhancements include:

- iSeries Web Component Tag Library and Web Interaction wizard

  The iSeries Web Component Tag Library and the Web Interaction wizard are deprecated (supported, but discouraged) in V7.0. You should now use the JSF Widget Library (JWL), which implements the JSF standard. The JWL is the strategic direction for Web widgets. Most of the functions provided by iSeries Web Component Tag Library and the Web Interaction wizard in Version 6.x can be done in V7.0 using the Program Call wizard (or Web Services wizard) and the base JSF tools. There is no JSF subfile support in V7.0. Information messages or warning messages are issued if you use iSeries Web Component Tag Library and the Web Interaction wizard.

- Program Call wizard
  - Usability enhancements for creating JSFs applications
  - Additional program and service program structure data type support

- Web Services wizard

  Several usability enhancements are added for easier creation of Web services and Web services clients.

Integrated iSeries Debugger

The Integrated iSeries Debugger now supports debugging a suspended program. After a program has found an exception and is waiting on a message queue, the debugger can attach to the job and allow the developer to look at the call stack and field information to assist in determining why the problem occurred.

IBM WebFacing Tool

- Linked HATS/WebFacing application

  IBM WebFacing Tool delivers extensions to allow Web-enabled applications that are created with the WebFacing Tool to interoperate with HATS applications in a browser. You can now build linked HATS and WebFacing applications and customize them to have the same design and functionality.

- WebFacing Deployment Tool for WebSphere Development Studio with HATS Technology licensing change

  WebFacing applications, HATS applications, and linked HATS and WebFacing applications all use the IBM WebFacing Deployment Tool for WebSphere Development Studio with HATS technology V7.0 license to enable the respective runtimes for production deployment. Otherwise the applications are limited to two user connections for testing purposes.

- WebFacing Web Project wizard redesigned

  The WebFacing Web Project wizard now provides improved usability and greater customization capabilities. Two new styles have been added to assist in developing linked WebFacing and HATS applications.

- Project migration

  The migration of existing WebFacing projects to V7.0 has been simplified by using the new WebFacing Migration wizard. Unmigrated projects are now distinguished with unique icons.

- WebFacing “cheatsheet” in the Help menu

  The new cheatsheet helps you create a WebFacing application for the Web.

- WebFacing Developer role added to the Welcome view

  Using the WebFacing Developer role, you can enable or disable the views and tools in the WebFacing perspective. By default, this role is enabled.

HATS Toolkit

- With HATS, you can transform access to your existing host applications by using rich client GUI applications that run in Eclipse Rich Client Platform (Eclipse RCP) or Lotus Expeditor Client environments. The Eclipse RCP is a subset of plug-ins that are provided by the Eclipse platform, which is best known as an open-source tooling platform.
- The introduction of Eclipse RCP lets you use the core functionality provided by Eclipse to build native client applications targeted for a user’s desktop. Lotus Expeditor Client provides a rich client run-time environment and integrated middleware components for extending many enterprise applications to server-managed laptop and desktop systems.
- A rich client environment offers capabilities that are not available in a traditional Web environment, including:
  - Improved response time
  - Richer set of user interface (UI) widgets, which provide for a more native application appearance, for example, native tab folder control, editable combo boxes, toolbars, menu bars, and tables.

- No dependency on WebSphere Application Server or WebSphere Portal.
- Client-side processing (distributed, not centralized on a single server).

For more information for HATS, refer to announcement letter 207-032, dated 27 February 2007.

- With HATS and WebFacing application runtime interoperability, you can perform DDS transformation, as well as 5250 data stream transformation, within the same Web application. This function is particularly useful for those who have built a DDS source-based transformation application, using the IBM WebFacing Tool, that need to interact with a host application that has been transformed using the HATS tool.

  This function is also useful for HATS users who want to take advantage of transformation, based on DDS, provided by the WebFacing tool. With this support, a HATS application and a WebFacing application can be linked together to interoperate as a single enterprise application and use a single connection to a WebFacing server.

11.9.3 New in WebSphere Development Studio Client Advanced Edition V7.0

In addition to the enhancements described in WebSphere Development Studio Client V7.0 text, WebSphere Development Studio Client Advanced Edition V7.0 includes the following enhancements.

RSE

- Application Diagram

  The Application Diagram provides a graphical view of the different resources in an i5/OS native application and their relationships to each other. It helps to prepare you for understanding and modernizing your application architecture.

  There are two different diagrams that you can look at in the Application Diagram view, a Source Call Diagram and a Program Structure Diagram. The *Source Call Diagram* takes ILE RPG and ILE COBOL source as input and displays a call graph showing subroutine and procedure calls. The *Program Structure Diagram* takes program and service program objects as input and displays the binding relationships between them as well as the modules bound into each program and service program.

- Technology Preview

  A Screen Designer is now integrated with the Remote System Explorer to allow you to graphically design and modify DDS display files while making direct source code modifications. The graphical editor is integrated with the Remote Systems LPEX editor so you can easily switch between graphical editing and source editing modes.

iSeries projects

You can now add save files to iSeries projects from RSE connections and push save files from local iSeries projects to the host. One of the benefits of adding save files in iSeries Projects is that you can package the contents of your source, binaries, and other objects in save files, which can then be checked in and versioned using an SCM tool, such as IBM Rational ClearCase or CVS. This gives an indirect way of allowing non-source resources to be versioned in an SCM stream file based SCM repository.

IBM WebFacing Tool

The general enhancements to the IBM WebFacing Tool include:

- WebFacing Portlet Project wizard redesign. The WebFacing Portlet Project wizard has changed. The new wizard delivers improved usability and greater customization capabilities.
- WebFacing cheatsheet in the Help menu. A new cheatsheet helps you create a WebFacing portlet application.

For additional information, refer to the WebSphere Development Studio Client for System i page at:

http://www-306.ibm.com/software/awdtools/wdt400/

11.9.4 Hardware requirements: WebSphere Development Studio Client and WebSphere Development Studio Client Advanced Edition

- Intel Pentium III 800 MHz processor minimum (higher is recommended)
- 768 MB RAM; 1 GB RAM recommended
- For the i5/OS Development Tools, Remote System Explorer, and iSeries Projects, 256 MB RAM recommended
- Reduce or increase disk space requirements depending on the features that you install:
  - For installing the i5/OS Development Tools feature only, 1.5 GB of disk space

    Of this disk space, only 500 MB is used during the installation process and can be recovered after the installation is complete.
  - WebSphere Development Studio Client for a default installation, a minimum of 5 GB of disk space

    Some of this disk space (500 MB) is used only during the installation process and can be recovered after the installation is complete.
  - WebSphere Development Studio Client Advanced Edition for a default installation, a minimum of 5.5 GB of disk space

    Some of this disk space (500 MB) is used only during the installation process and can be recovered after the installation is complete.
  - Additional disk space, for developing applications
  - Additional disk space, if you download the product package to install this product
  - Additional disk space, if you use FAT32 file system instead of NTFS
  - An additional 500 MB of disk space, in the directory pointed to by your environment variable TEMP
- Display resolution: 1024 x 768 minimum
- CD-ROM drive

Software requirements under i5/OS

The following software products and release levels are required:

- i5/OS V5R3 or V5R4 is required.
- WebSphere Development Studio Client and WebSphere Development Studio Client Advanced Edition V7.0 support for the i5/OS release will end when that i5/OS release officially ends service, or when service is officially ended.

Some WebSphere Development Studio Client components need additional PTFs. The PTF information is available on the Web at the following address:

http://ibm.com/software/awdtools/iseries

To find more information about any required i5/OS PTFs:

a. Open the RSE perspective if it is not already open. The name of the current perspective is shown in the top left corner of the title bar for the Window. To open the RSE perspective, select **Window** → **Open Perspective** → **Other** and select **Remote System Explorer** from the list.

b. Create a connection to your iSeries by expanding **New Connection** → **iSeries**.

c. Expand your new connection and right-click **iSeries Objects** and select **Verify Connection**.

   A window opens that shows which required PTFs are already installed on the system and which ones are missing.

- i5/OS is required only if the programming objects are located, or the applications contain back-end code, on the System i5 model.
- To compile RPG, COBOL, C, C++, CL, or DDS under i5/OS using the RSE or CODE, 5722-WDS (including option 60) must be installed.

11.10 WebFacing Deployment Tool V7.0 with HATS technology

Using IBM WebFacing Deployment Tool for WebSphere Development Studio with HATS technology V7.0, you have the flexibility to use both the IBM WebFacing Tool V7.0 and HATS V7.0 technologies to achieve your UI modernization goals. The IBM WebFacing Tool V7.0 and the HATS Toolkit V7.0 are included in WebSphere Development Studio Client for iSeries V7.0 and WebSphere Development Studio Client Advanced Edition for iSeries V7.0.

IBM WebFacing Deployment Tool for WebSphere Development Studio with HATS technology V7.0 acts as a “run-time-enablement key” for applications that are created with these tools.

IBM WebFacing Tool technology

The IBM WebFacing Tool quickly, easily, and cost-effectively generates Web interfaces to 5250 applications. It supports the following features:

- Generates a new, fully functional Web user interface based on DDS source code
- Provides comprehensive DDS keyword support
- Allows quick and easy conversion of non-WebFaced DDS displays or system displays in refaced applications
- Generates portals for host access in a portal environment (WebSphere Development Studio Client Advanced Edition for iSeries only)
- Removes the requirement for online transaction processing (OLTP)

HATS technology

HATS includes a default transformation engine that quickly and easily generates a dynamic Web interface from a 5250 datastream. The resulting Web interface can also be customized with the HATS Toolkit.

- Browser interface to host applications
- Improvement of navigation of host applications

- Generation of portals for host access in a portal environment (WebSphere Development Studio Client Advanced Edition for iSeries only)
- No requirement to access to source code
- No requirement for OLTP starting with i5/OS V5R4

HATS and WebFacing application run-time interoperability

Interoperability between HATS and the WebFacing Tool provides the ability to perform DDS source transformation, as well as 5250 data stream transformation, within the same Web application. This function is particularly useful for those who have built a DDS source-based transformation application using the IBM WebFacing Tool that needs to interact with a 5250 application that has been transformed using HATS.

This function is also useful for HATS users who want to take advantage of transformation, based on DDS source files, provided by the IBM WebFacing Tool. With this support, a HATS application and a WebFacing application can be linked together to interoperate as a single enterprise application and use a single connection to a WebFacing server. This function is not supported in a portal environment.

Requirement: The use of this function requires either WebSphere Development Studio Client for iSeries or WebSphere Development Studio Client Advanced Edition for iSeries and a license for IBM WebFacing Deployment Tool for WebSphere Development Studio with HATS technology.

Additional enhancements in the HATS Toolkit V7.0

For additional HATS V7.0 information, see announcement letter 207-032, dated 27 February 2007 for WebSphere Host Access Transformation Services Toolkit V7.0. A summary of these enhancements includes:

- Eclipse Rich Client Platform support.
- Simplified combination of multiple screens of tabular data.
- Conversion of HATS table component data to a spreadsheet file.
- Integration of the Host Simulator tool with HATS toolkit to allow easier “offline” HATS development.

Additional enhancements in the IBM WebFacing Tool V7.0

For additional IBM WebFacing Tool enhancements, see announcement letter 207-030, dated 27 February 2007 for WebSphere Development Studio Client for iSeries V7.0. A summary of these enhancements includes:

- Linked HATS and WebFacing application.
- Redesign of the WebFacing Web Project wizard and WebFacing Portlet Project wizard (WebSphere Development Studio Client Advanced Edition for iSeries only) to provide improved usability and greater customization capability.
- WebFacing cheatsheet in the Help menu to assist in creating WebFacing Web applications.
- WebFacing cheatsheet in the Help menu to assist in creating WebFacing portlet applications (WebSphere Development Studio Client Advanced Edition for iSeries only).
- New WebFacing Migration wizard to simplify the migration of WebFacing projects to V7.0.
- New WebFacing Developer role in the Welcome view.

For a detailed comparison of the IBM WebFacing Tool and HATS, see the Comparing the WebFacing Tool and HATS Toolkit Web page at:

http://www.ibm.com/support/docview.wss?uid=swg27007084

11.11 IBM Systems Workload Estimator enhancements

The IBM Systems Workload Estimator is a Web-based sizing tool for System i, System p, and System x environments. You can use this tool to size a new system, to size an upgrade to an existing system, or to size a consolidation of several systems. The Workload Estimator uses measurement input to best reflect your current workload and provides a variety of built-in workloads to reflect your emerging application requirements. Virtualization can be used to yield a more robust solution.

The Workload Estimator provide current and growth recommendations for processor, memory, and disk that satisfy the overall client performance requirements.

Workload Estimator was enhanced several times during 2007, including support of performance data from IBM System WebSphere Application Server as input (see 11.6.5, “WebSphere performance data collected by i5/OS Collection Services” on page 463).

The following additional enhancements were made in Workload Estimator 2007.2 (April 2007), 2007.3 (May 2007), 2007.3.update.1 (July 2007), and 2007.4 (September 2007):

- New System p and System i POWER6 models:
  - The POWER6 System p 570 (p570) models ranging from 2 to 16 processor cores, now ordered as 9117-MMA, which comes in a variety of clock speeds up to 4.7 GHz
  - The POWER6 System i 570 (i570) models ranging from 2 to 16 processor cores, now ordered as 9406-MMA, which comes with a clock speed of 4.7 GHz
- Virtualization support for POWER6 models

  Hypervisor and virtualization sizing algorithms were updated to support considerations for both POWER6 and POWER5.
- New IBM System i models

  Support was added for the IBM POWER5+ processors for Models 515, 525, and 595.
- New IBM System x models supported

  Support was added for the most recent IBM System x models.
- New System x default disk attachment type

  The default disk attachment type has been changed from Ultra SCSI 3 to Serial SCSI to reflect currently shipping hardware. Users can change their defaults on the Options page. Different disk attachment types result in a different number of recommended drives based on the throughput capabilities of each attachment type.
- Redundant Virtual I/O Servers (VIOS)

  Current VIOS support was enhanced to allow sizing of redundant VIOS. Through this enhancement, resources in a redundant VIOS partition can be available for a failover in case the primary VIOS partition is down for maintenance.
- HATS workload update for i5/OS

  The HATS workload was enhanced to support HATS V7 and WebSphere V6.1.

- WebSphere workload for i5/OS

  The WebSphere workload was enhanced with improved calculations for memory and disk requirements.

- Portal Express workload update for i5/OS

  The WebSphere Portal workload was updated for WebSphere Portal Express 6.0 and includes support for the following components:

  - Custom Application
  - Portal Document Manager
  - Web Content Management

- Enhancements for disk

  Disk sizing support was enhanced with additional customer representative data. Additional information was provided in the user options help text to assist in selection of the appropriate IOA type.

  - New disk models: Several new disk attachment types were added. See a summary table found in the user options.
  - Disk calculation improvements: Calculations involving the number of disk arms in the recommendation were enhanced, especially those involving mirroring.

- System Planning Tool (SPT) updates for POWER6

  The linkage between the Workload Estimator and SPT was updated to support POWER6 and the new models.

- Size retired System p models

  You might need to perform sizing on a model that is no longer sold by IBM. In doing so, you might want to add workload to your existing system or consolidate work onto an older existing system. After completing a System p estimation, a new option called *Retired Sizing* is available on the Selected System panel to help you determine whether a particular retired model meets the requirements of the sizing. Supported systems include selected 5xx models.

- Miscellaneous improvements to the Workload Developer

  The Workload Developer component has also been updated with many enhancements. Be sure to read the “What’s New” information in the help menu of Workload Developer. Remember that Workload Developer is included in the download version of Workload Estimator.

- Added RedHat Enterprise Linux x Version 5 (RHEL5)

  RHEL5 was added as a supported operating system. Several workload plug-ins for Linux partitions were updated to support RHEL5.

- Updates to workloads and sizing guides

  The Workload Estimator provides a large number, and scope, of workloads to help characterize your environment to be sized. Some are built-in workloads provided within Workload Estimator. Others are called *sizing guides* and are available as front ends to Workload Estimator; see:

  `http://www.ibm.com/servers/sizing`

  Collectively, these workloads have frequent additions and updates:

  - 3COM Telephony workload

    This workload for the System i platform is now added as a built-in dynamic solution workload. Previously, it existed only on the IBM Sizing Guide Web site.

- i5/OS workload updates for Domino and WebSphere

  These workloads were updated to better represent POWER6 and to be more customer representative.

- PM workload updates for the System i and System p platforms

  The workload of the Workload Estimator for measured data from Performance Manager for System i and System p was updated with improved usability.

- Clone function

  Using Workload Estimator, you can now do large-scale sizings more quickly with the clone function. This function was added so that you can easily clone workloads and configuration objects such as partitions, systems, and tiers.

- Dynamic solutions

  Workload Estimator offers better support of *dynamic solutions*, which are solutions that determine the base configuration, based on the responses to the workload and questionnaire. On the Workload Configuration panel, dynamic workloads have been added at the solution level instead of at the partition level. Some IBM Sizing Guides (Workload Estimator plug-ins) hosted on other Web sites use this approach. Some of the workloads that result in dynamic solutions will begin to be included on the list of built-in workloads of Workload Estimator.

Be sure to use the links in the Help area of the Workload Estimator License Agreement Web page to find tutorials on how to use Workload Estimator and “What’s New” information for each update to Workload Estimator. There are important Workload Estimator enhancements over the last 12 months of which you should be aware.

You can find the IBM Systems Workload Estimator on the Web at:

`http://www-304.ibm.com/jct01004c/systems/support/tools/estimator/index.html`

Note: At the time this paper was being published, Midrange Performance Group (MPG) announced that a new release of its Performance Navigator product supports the new IBM System i5 processor models. For more information, refer to the MPG Web site at:

`http://www.mpginc.com`

11.12 MySQL Enterprise for i5/OS, 5639-MYS

MySQL is a popular open source database that is often used with PHP-based Web applications. The announcement of MySQL support for i5/OS follows the successful introduction of PHP supported by Zend on i5/OS in 2006. Now many companies are extending the value of their traditional transaction processing applications by integrating them with PHP-based Web applications running on i5/OS.

It is developed and distributed by MySQL AB, which is a company that builds its business by providing services around MySQL. MySQL first was developed for UNIX and Linux applications. It became popular when Internet service providers (ISP) discovered that MySQL could be offered free of charge to their Internet customers and it was able to provide most of the storage and retrieval functionality that a dynamic Web application needs. MySQL is now in use as an integrated database in many applications on almost every operating system.

In 2007, MySQL AB and IBM announced a joint technology and reseller agreement to bring support for the MySQL open source database to the IBM System i business computing platform.

MySQL Enterprise is provided as an annual subscription offering from MySQL AB that includes:

- MySQL Enterprise Server software, a reliable, highly secure, and up-to-date version of the open source database.
- MySQL Network Monitoring and Advisory Service that continuously monitors your database and proactively provides guidance on how to best implement MySQL.
- MySQL Production Support to assist you in the development, deployment, and management of MySQL applications.

MySQL is a client-server architecture based on TCP/IP. The MySQL server waits for connections on a specified port and responds to SQL statements from a client.

MySQL Enterprise Server supports multiple storage engines. The following storage engines are supported with MySQL for i5/OS:

- The MyISAM storage engine manages non-transactional tables. It provides high-speed storage and retrieval, as well as full text searching capabilities. MyISAM is supported in all MySQL configurations. It is the default storage engine unless you have configured MySQL to use a different one by default.
- The MEMORY storage engine provides in-memory tables. Using the MERGE storage engine, a collection of identical MyISAM tables can be handled as a single table. Like MyISAM, the MEMORY and MERGE storage engines handle non-transactional tables. Both are also included in MySQL by default.
- The EXAMPLE storage engine is a *stub engine* that does nothing. You can create tables with this engine, but no data can be stored in them or retrieved from them. This engine is used to illustrate how to begin writing new storage engines. As such, it is primarily of interest to developers.
- The ARCHIVE storage engine stores large amounts of data without indexes with a small storage area.
- The comma separated values (CSV) storage engine stores data in text files using the CSV format.

The MySQL Network Monitoring and Advisory Service is like having a virtual database assistant (DBA) at your side. This service recommends best practices to help eliminate security vulnerabilities, improve replication, optimize performance, and more. It continuously monitors your MySQL servers and alerts you to potential problems before they impact your system. As a result, the productivity of your developers, database administrators, and system administrators is improved significantly.

MySQL Enterprise for i5/OS is available to be ordered from IBM in three service levels: silver, gold, and platinum. IBM will pass the order for 5639-MYS to MySQL AB for fulfillment. The software license and support is provided by MySQL AB.

You can find more information about MySQL Enterprise for i5/OS on the Web at the following locations:

- IBM System i

  `http://www.ibm.com/systemi`
- DB2 for i5/OS

  `http://www.ibm.com/servers/eserver/iseries/db2/`
- MySQL Web site:

  `http://www.mysql.com`

11.12.1 DB2 Web Query for System i, 5733-QU2

DB2 Web Query for System i (DB2 Web Query) is a comprehensive, Java-based business intelligence tool that delivers graphical, Web-based query and report writing functions. It is positioned as an enhanced version of the IBM Query for iSeries (popular as Query/400) product, 5722-QU1. Use DB2 Web Query to make DB2 data accessible to analysts and executives with equal ease. With the DB2 Web Query import function, you can modernize existing Query for iSeries reports or enable them for the Web. DB2 Web Query lays the foundation for more sophisticated BI applications.

Parameterized reporting, which uses input values to complete report processing, makes analyzing data simple and intuitive. It improves productivity while significantly reducing the number of reports to maintain. It gives the power of the data to users, reducing the dependence on IT staff for building customized reports based on user requests.

The DB2 Web Query for System i product is available from and supported by IBM, under licensed program 5733-QU2. DB2 Web Query for System i was developed expressly for IBM and the System i environment by Information Builders, Incorporated. As such 5733-QU2 capabilities are based upon those of WebFOCUS by Information Builders.

This IBM product has a base product and additional product components. The following topics describe the base and optional features.

For more detailed information about the overall DB2 Web Query capabilities, see *Getting Started with DB2 Web Query for System i*, SG24-7214. Also refer to the following pages on the IBM Web site:

- DB2 Web Query for System i

  `http://www.ibm.com/systems/i/db2`

- Support for System i:

  `http://www.ibm.com/systems/support/i`

Base features

The following list highlights some of the main features of DB2 Web Query that are available with the 5733-QU2 base product:

- Browser-based interface

  A Web browser interface is used by either DB2 Web Query developers or those users who perform the queries. This provides a graphical environment without the requirement of installing additional desktop software or plug-ins on each user's PC.

- Query/400 report modernization

  DB2 Web Query provides built-in adapters to import existing *QRYDFN objects without requiring any changes to those objects. After the appropriate metadata is created from the import process, the queries can be invoked from a browser interface and results displayed to the browser. This feature provides a modernized interface for both running existing queries and the report output.

- Web-based query and reporting of data stored in DB2 for i5/OS

  Included in DB2 Web Query is a component known as *Report Assistant*. This is an HTML-based graphical tool that allows you to create new queries or modify existing ones, including imported Query/400 queries. You can select a data source, specify any sorting or grouping information, and display the report in your browser or another desktop application. When you use Report Assistant, DB2 Web Query creates a styled report that

you can deploy on the Web without the necessity of learning the complexities of any reporting language.

- Deliver output content in various modernized formats for Web browsers and wireless devices

  By default, DB2 Web Query generates HTML and displays the query results to the browser. However, you can optionally specify other output formats. The following list shows some of the more commonly used formats that are available:

  - Excel® (97 and 2000)
  - PDF
  - XML
  - Microsoft Word document (DOC)
  - PostScript® (PS)

  In addition, you can direct your DB2 Web Query report output to the traditional i5/OS spooled file and database file formats.

- Easy Report graph generation

  Graph Assistant is an HTML-based tool that guides you step-by-step through the creation of a graph. By using Graph Assistant, you can create and style your graphs.

- What You See Is What You Get (WYSIWYG) report building

  Power Painter is a Web layout and report creation tool that is built using Asynchronous JavaScript™ and XML (AJAX) technology. With this tool, you can create output and page layout formats. Power Painter combines reporting, graphs, and page layout design in a single tool. The framework makes Power Painter a thin-client tool that looks, responds, and performs like a Windows-based facility.

- Data adapters

  Data adapters manage the communication between DB2 Web Query and the DB2 for i5/OS database through the use of SQL statements or other data access methods. Three adapters are provided with the base product:

  - Query/400 adapter

    This adapter retrieves the associated Query/400 query.

  - DB2 CLI adapter

    This adapter generates appropriate SQL statements to submit to the DB2 for i5/OS database engine.

  - System i Heritage Files adapter

    This adapter generates the appropriate OPNQRYF command to handle reports that are based on data in multi-member or multi-format files.

- Runs under i5/OS

  Each server-side component of the DB2 Web Query solution runs under i5/OS. This integrated environment equates to a more simplified environment. There are fewer servers and operating systems to set up, administer, secure, backup, and maintain.

- Ability to use matrix reporting, ranking, color coding, drill-down, and font customization to enhance the visualization of DB2 data

- Federated DB2 for i5/OS data access

  Customers with multiple System i servers or i5/OS partitions will value the federated query capabilities of DB2 Web Query. This feature provides the ability to develop a single report against multiple DB2 for i5/OS databases.

Optional features available from IBM

In addition to the base product, you can add the following optional features to DB2 Web Query for multi-dimensional reporting, disconnected data analysis, and customization and metadata management:

- OLAP module

  The DB2 Web Query OLAP feature adds multi-dimensional analysis to your reports. With the OLAP feature, you can view the data in an almost unlimited number of ways. This satisfies a broad range of analytical needs and gives users the ability to dynamically interact with the data. By OLAP enabling a report, DB2 Web Query can automatically provide an interface with drop-down lists and drill-capable columns that allow the user to slice and dice, or pivot their data, and perform a variety of local analysis on the original report.

- Developer Workbench

  DB2 Web Query Developer Workbench is an add-on component that provides a rich client development environment for building customized business intelligence applications. While you do not need Developer Workbench to create DB2 Web Query reports, there are some compelling reasons to consider using it as your report development tool:

  - Enables multidimensional data analysis
    - Define hierarchies to be stored in the metadata
    - Prerequisite for the OLAP module
  - Shields users from the complexity of the databases
    - Include meaningful field (column) names
    - Include multilingual titles
  - Provides an SQL Wizard that allows a developer to use, type in, or copy and paste SQL statements directly into the tool
  - Includes an HTML Layout Painter tool

    With the HTML Layout Painter, you can combine reports, graphs, and other elements together in a single HTML document or layout. It provides a WYSIWYG design environment to help you create professional looking layouts that require more advanced components such as custom HTML, HTML template files, and cascading stylesheets (CSS).
  - Includes advanced programmer tools:
    - Data Profiling
    - Impact analysis
    - Ability to change field types (including integer or alpha to recognized date fields)
    - Automatic date decomposition

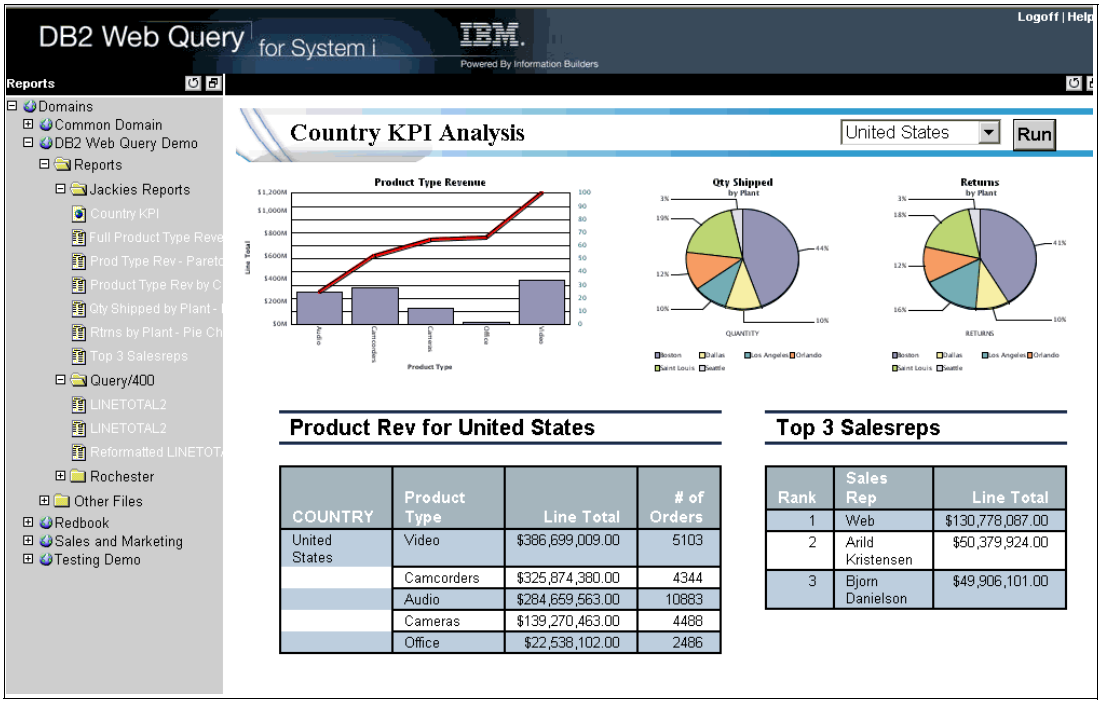
- Active Reports

  Many mobile workers need access to important information stored in their analytic reports while disconnected from the Internet. With DB2 Web Query Active Reports, such users can take the power of business intelligence with them wherever they go. By combining data and interactive controls into a single, self-contained HTML file, Active Reports delivers analytic capabilities in a completely portable and disconnected environment, with absolutely no software required.

- Additional user licenses

  If you need more users than the base option provides or you need more than you are currently licensed for, you can purchase additional licenses. For more details and support, contact your IBM representative.

The following figure shows an example of an interface of DB2 Web Query for System i. A graph chart and a pie chart in the upper area of the interface of DB2 Web Query can be created by using Graph Assistant. The two tables that are shown can be created by using Report Assistant. The layout of the Web interface can be created by using Power Painter.



i5/OS integrated Web application server Version 7.1: DB2 Web Query, 5733-QU2, requires use of the i5/OS integrated Web application server at Version 7.1 level, announced 9 October 2007. This i5/OS Web integrated application server at an earlier version was included in the PTFs under HTTP Server for i5/OS V5R4 group PTF SF99114. A level of SF99114 planned for December 2007 availability will upgrade the integrated application server to V7.1. Prior to the availability of this December 2007 level of SF99114, if you already have group PTF SF99114 installed, you can install PTFs to update the integrated Web application server to Version 7.1. See Information APAR II14318 for DB2 Web Query installation and PTF requirements at:

http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027

11.13 Value Packs for Popular i5/OS Software Products

In 2007, IBM announced “Value Packs for Popular i5/OS Software Products (Value Packs for i5/OS)” as new software offering for i5/OS V5R4. This offering includes the following software packages:

- DB2 Value Pack for i5/OS, 5722-DVP
- Operations Value Pack for i5/OS, 5722-SVP
- Zend and MySQL Value Pack for i5/OS, 5639-MVP

These offerings can provide savings to clients who require the key database and operations software provided by these packages. The bundles offer a discount versus purchasing these i5/OS-based software products individually and represent the majority of popular software

products that have been packaged with the POWER5 550, 570, and 595 Enterprise Editions. These Value Packs are designed to offer these valuable software products, at a savings, to clients who purchase a new POWER6 570, which no longer bundles these software products in the base configuration. One value pack includes older technology systems as described in the following section.

11.13.1 DB2 Value Pack for i5/OS, 5722-DVP

DB2 Value Pack for i5/OS is for 570 (POWER6) models only and contains the following products and functions:

- DB2 Query Manager and SQL Development Kit, 5722-ST1

  This program provides an interactive query and report writing interface, as well as precompilers and tools to assist in writing SQL application programs in high-level programming languages. Query Manager offers a prompt-driven interactive interface to help you develop reports that fit your needs.

  SQL Development Kit contains SQL precompilers for developing database applications in several programming languages. It also includes an SQL statement processor for SQL scripts and Interactive SQL, a prompt-driven interface for testing and running SQL statements.

- DB2 Symmetric Multiprocessing (DB2 SMP), 5722-SS1, Option 26

  DB2 SMP expands on the parallel capabilities of DB2 for i5/OS. This feature improves performance on the industrial-strength System i database by extending the capabilities of DB2 for i5/OS on any IBM System i server that has multiple CPUs, or in some cases, even with single CPU configurations. This improved performance is critical, especially in a data warehouse or analytical query environment. The performance gains provided by this feature allow for better, more effective business decisions to be made in a more timely manner.

  With the DB2 SMP feature installed and enabled, a single database operation can run on multiple processors at the same time (in parallel). These database operations are typically queries, which are run through any SQL or query interface, but the SMP feature can enhance other database operations as well, including index builds, table reorganizations, and bulk loads.

  System administrators can enable DB2 SMP differently for each user of the system, giving the system administrator greater control over how system resources are used. With this flexibility administrators can balance the needs of all users against the available resources.

- DB2 Universal Database Extender, 5722-DE1

  DB2 Universal Database Extender consists of two components: the XML Extender and a linguistic search engine called *Text Extender*.

  – DB2 XML Extender for i5/OS includes new data types to store XML documents in the DB2 database and new functions to work with these structured documents. Managed by DB2, these documents are stored as character data or external files. With the retrieval functions, you can retrieve complete documents or individual elements.

    Use DB2 XML Extender to extract XML elements and attributes into traditional SQL data types, leveraging the sophisticated indexing and SQL query functionality of DB2 for i5/OS.

    Leverage the ability to store, retrieve, or update XML documents in a single DB2 column, or store XML documents as a collection of DB2 data in multiple columns and tables. Compose existing DB2 data into XML documents and leverage the compatibility

with the powerful search functions of the Text Extender component to search one or more sections within a set of XML documents.

DB2 Text Extender for i5/OS delivers powerful and flexible full-text search. Using SQL for linguistic functions enables thorough searching of documents where the need is complex and the quality and precision of the search results outweigh the retrieval time. Text search functions are integrated into SQL, which is widely used and available for many programming languages and environments. Maintain the text indexes automatically through incremental or asynchronous full-text index update with automatic synchronization. The Text Extender provides linguistic indexing and search for 22 languages including English, German, French, and Japanese. Leverage Boolean, wildcard, free-text and fuzzy search options, or proximity search for words within the same paragraph and sentence, or documents that contain specific text.

– XML Toolkit for IBM System i5 (XML Toolkit), 5733-XT1

This program is designed to provide key development enablement components, XML parsers, to assist in the use of XML for general application or business-to-business solutions. The XSL transformer allows you to reformat or reorganize XML documents to other formats (for example, XML or HTML).

The XML Toolkit for System i5 is based on cross-platform, open-source code that is designed to be compliant with industry standards. Parser version 5.6 corresponds to Xerces-C Version 2.6 from Apache Software Foundations with fixes. The XSL transformer corresponds to Xalan-C Version 2.0 from Apache Software Foundations. In addition to providing the XML for C++ parser and the XSL transformer for C++, a unique interface called *XML procedural parser* is provided to the XML for C++ parser that allows applications written in RPG, C, or COBOL to access an XML parser.

Also included with the XML Toolkit is XML Scripting for IBM System i5. XML Scripting for System i5 provides an XML-based build tool.

11.13.2 Operations Value Pack for i5/OS, 5722-SVP

Operations Value Pack for i5/OS is only for 570 (POWER6) systems and contains the following products and functions:

- Backup Recovery and Media Services (BRMS), 5722-BR1

  BRMS is the strategic solution for planning and managing the backup of the System i platform. BRMS provides i5/OS support for policy-oriented setup and automated archive, backup, recovery, and other removable-media- related operations. BRMS uses a consistent set of intuitive concepts and operations that you use to develop and implement a backup strategy tailored to your business requirements.

  BRMS improves productivity by assisting customers who define, implement, and maintain a technical strategy for managing their i5/OS backups and backup media. Systems management and user productivity will be enhanced through consistent, intuitive, policy-driven operations. Policy support enables a customer to establish control and evaluation criteria on an operation, object, object group, media, device, system, or location basis. BRMS provides cost savings, reduces complexity and improves operational productivity.

  BRMS supports unattended operations by automatically recovering from media-related errors that may occur while using tape automation, reducing the need for operator intervention.

- BRMS Network Feature, 5722-BR1, Option 1

  This feature enables a BRMS system to connect to other BRMS systems in the network using native TCP/IP, APPN, or both. A BRMS network system shares the inventory and

policies that are associated with media managed by a central BRMS system. In addition, you can view the saved history of any system in the network from a single system. The networking feature also allows you to offload your media duplication task by using one system in the network to duplicate media on behalf of another system in the network. The systems in a BRMS network can be other i5/OS systems or individual i5/OS partitions.

- Media and Storage Extensions, 5722-SS1, Option 18

  With this option, you can use APIs for media and storage management that enable monitoring and control of media usage, including volumes to be selected and volume expiration dates. This option is a prerequisite feature to BRMS.

- Performance Tools for i5/OS, 5722-PT1, and Performance Tools Manager, 5722-PT1, Option 1

  These program provide a complete set of reporting, analysis, and modeling functions to assist the user in managing the performance of the System i platform. It provides printed and online reports, either in graphic or tabular form, portraying the performance and utilization of i5/OS applications. The Performance Advisor function assists the user in analyzing system performance, diagnosing performance problems, pinpointing performance bottlenecks, and providing recommendations to eliminate those bottlenecks.

11.13.3 Zend and MySQL Value Pack for i5/OS, 5639-MVP

The Zend and MySQL Value Pack for i5/OS value pack includes a combination of Zend and MySQL products, at a reduced price, compared to the price of the individual products. The Zend and MySQL Value Pack includes software packages to support an environment for Web application development and deployment on i5/OS:

- Zend Core for i5/OS with gold support
- Zend Studio for i5/OS with gold support
- Zend Platform for i5/OS with gold support
- MySQL Enterprise with silver support

This value pack requires i5/OS V5R4 and Portable Application Solution Environment (PASE) 5722-SS1 Option 33. It is for the following systems:

- POWER6 technology-based System i Model 570
- System i5 Models 515, 520, 525, 550, 570, and 595
- eServer i5 Models 520, 550, 570, and 595
- iSeries Models 270, 800, 810, 820, 825, 830, 840, 870, 890, and SB2

The following products and support are included in this value pack:

- *Zend Core for i5/OS* is a fully tested and enhanced version of the open source PHP product. Offering PHP run time, it is packaged to make your software installation easier and faster with instant PHP setup. Core for i5/OS is enhanced to take advantage of specific i5/OS resources and capabilities. Zend Core extensions and the toolkit enable you to access DB2 and applications on i5/OS.

  The Value Pack comes with a license for Zend Core for one server and one year of gold support for one processor. Gold support includes telephone support for business hours Monday through Friday as well as Web-based support and software updates. This support is provided by Zend.

- *Zend Studio for i5/OS* is a PHP IDE that is designed for professional developers. It includes all the development components that are necessary for the full PHP application life cycle. Through a comprehensive set of editing, debugging, analysis, optimization, database tools, and testing, Zend Studio can speed development cycles and simplify complex projects. Zend Studio for i5/OS is enhanced to work with the integration toolkit

that is provided with Zend Core on i5/OS. The Zend Studio client is supported on the Microsoft Windows, Linux, and Macintosh platforms.

The Value Pack comes with a license for Zend Studio for one client and one year of gold support for one client. Gold support includes telephone support for business hours Monday through Friday as well as Web-based support and software updates. This support is provided by Zend.

- *Zend Platform for i5/OS* is a robust PHP production environment that helps ensure that applications that are written in PHP run smoothly at all times. Zend Platform for i5/OS is designed for IT personnel and businesses that require commercial-grade Web applications in highly reliable production environments,. It offers high performance and scalability for an improved Web experience and response time. Zend Platform can deliver application uptime and reliability through enhanced PHP monitoring and immediate problem resolution.

  The Value Pack comes with a license for Zend Platform and includes one processor for one year and one year of gold support for one processor. Gold support includes telephone support for business hours Monday through Friday as well as Web-based support and software updates. This support is provided by Zend.

- *MySQL Enterprise for i5/OS* includes:
  - MySQL Enterprise Server 5.0 software, which is an up-to-date version of MySQL open source database for cost-effectively delivering e-commerce, online transaction processing, and data warehousing applications.
  - MySQL Network Monitoring and Advisory Service, which gives developers, database administrators, and system administrators a virtual DBA to enforce MySQL recommended best practices.
  - MySQL Production Support, which helps you to get your toughest technical questions answered quickly.

  The Value Pack comes with a one-year subscription for MySQL Enterprise for one server and one year of silver support for one server. Silver support includes telephone support for business hours Monday through Friday as well as Web-based support and software dates.

  This support is provided by MySQL AB.

11.14 Analyze Object Conversion tool

In 2008, IBM plans to deliver i5/OS V6R1, which was announced as a July 2007 product preview. With this new release, IBM will require conversion of all programs that are created under previous releases that use the i5/OS machine interface (MI). The purpose of the conversion is to upgrade and refreshe programs to take advantage of the latest system enhancements, including enhanced system integrity, improved performance, and a range of new operating system and processor capabilities. In order for a program to be converted, its creation data (sometimes referred to as *observability*) must be available. Programs created for V5R1 or later have their creation data automatically saved during program creation. Clients and ISVs with programs created for OS/400 V4R5 and earlier must ensure that the creation data is available for the conversion process.

IBM will provide the Analyze Object Conversion (ANZOBJCVN) tool for i5/OS V5R3 and V5R4 to help you plan for the program conversion. This tool helps you identify potential conversion difficulties, if any, and estimates the time required for program conversion. It also provides information about two other types of conversions: integrated file system names and spooled files.

V6R1 is planned to be supported on Models 515, 520, 525, 550, 570, POWER6 570, 595, 800, 810, 825, 870, and 890. It is not planned to be supported on iSeries Models 270, 820, 830, 840, SB2, and SB3, as well as earlier members of the iSeries family. For more information about the V6R1 release, see the i5/OS V6R1 preview page on the Web at:

http://www.ibm.com/systems/i/os/i5os/v6r1preview/

Program analysis and conversion are part of the overall planning required prior to an operating system upgrade to V6R1. Consider the preparation documented in *i5/OS Program Conversion: Getting ready for i5/OS V6R1*, REDP-4293, in conjunction with the following references. The information in the following documentation will be updated over time:

- *System i: Installing, upgrading, or deleting i5/OS and related software*

  http://publib.boulder.ibm.com/infocenter/systems/scope/i5os/index.jsp?topic=/rzahc/rzahc1.htm

- System i Upgrade planning Web page

  http://www-304.ibm.com/jct01004c/systems/support/i/planning/upgrade/index.html

- V6R1 Memo to Users

Code that is created on V6R1 POWER5+ systems will run without conversion on V6R1 POWER6 systems. Additional information regarding the creation of POWER6 technology-specific programs on POWER6 systems and running them on a supported pre-POWER6 technology system will become available prior to the announcement of i5/OS V6R1.

11.15 i5/OS V5R4 and Java JDK 6

JDK Standard Edition (SE) 6 is the latest release of the Java programming language. JDK SE 6 contains many new features and enhancements to collections, jconsole, debug, monitoring and management, instrumentation, reflection, performance, and more.

The JDK SE became available in September 2007 for i5/OS. Consult the Support for System i Web page to determine how to obtain this new support:

http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027

The following enhancements are primary to JDK SE 6:

- New collection interfaces
  - DEQUE: Double-ended queue supports element insertion and removal at both ends. Extends the Queue interface.
  - BLOCKINGDEQUE: Deque with operations wait for the deque to become non-empty when retrieving an element and wait for space to become available in the deque when storing an element. Extends both the Deque and BlockingQueue interfaces. This interface is part of java.util.concurrent.
  - NAVIGABLESET: SortedSet extended with navigation methods reports closest matches for given search targets. A NavigableSet can be accessed and traversed in either ascending or descending order. This interface is intended to supersede the SortedSet interface.

  - NAVIGABLEMAP: SortedMap extended with navigation methods returns the closest matches for given search targets. A NavigableMap can be accessed and traversed in either ascending or descending key order. This interface is intended to supersede the SortedMap interface.
  - CONCURRENTNAVIGABLEMAP: ConcurrentMap is also a NavigableMap. This interface is part of java.util.concurrent.
- New concrete implementation classes
  - ARRAYDEQUE: Efficient resizable-array implementation of the Deque interface
  - CONCURRENTSKIPLISTSET: Concurrent scalable skip list implementation of the NavigableSet interface
  - CONCURRENTSKIPLISTMAP: Concurrent scalable skip list implementation of the ConcurrentNavigableMap interface
  - LINKEDBLOCKINGDEQUE: Concurrent scalable optionally bounded FIFO blocking deque backed by linked nodes
  - ABSTRACTMAP.SIMPLEENTRY: Simple mutable implementation of Map.Entry
  - ABSTRACTMAP.SIMPLEIMMUTABLEENTRY: Simple immutable implementation of Map.Entry
- Existing classes have been retrofitted to implement the new interfaces in JDK 6:
  - LINKEDLIST: Deque
  - TREESET: NavigableSet
  - TREEMAP: NavigableMap
- New methods added to the Collections utility class
  - NEWSETFROMMAP(MAP): Creates a general-purpose set implementation from a general-purpose map implementation.
  - ASLIFOQUEUE(DEQUE): Returns a view of a Deque as a last-in-first-out (LIFO) queue.
- JCONSOLE enhancements. The Java SE platform already includes a graphical monitoring tool called *JConsole*. The tool implements the Java Management Extensions (JMX™) API, which enables you to monitor the performance of a JVM and any instrumented applications. Introduced in Java 2 Platform, Standard Edition 5.0 (J2SE™), JConsole became an officially supported feature of J2SE 6.

  The major JConsole tool enhancements in J2SE 6 include:
  - JConsole tool. JConsole Plugin support enables you to build your own plug-ins to run with JConsole. For example, you can add a custom tab to access MBeans for your applications.
  - Dynamic attach capability. Dynamic attach capability enables you to connect JConsole to any application that supports the dynamic Attach API, which was also added in J2SE 6.
- An enhanced user interface to make data more easily accessible
- New Overview and VM Summary tabs to enable a better presentation of general information about your JVM
- Improved presentation of MBeans to make it easier to access the operations and attributes of your MBeans
- New Monitoring and Management API Enhancements

J2SE now includes an API to allow you to monitor and manage the JVM and other applications in the package java.lang.management. The J2SE 6 platform includes the following enhancements to this API:

- Support for java.util.concurrent locks
- New classes and methods added in the java.lang.management package for obtaining the list of locks owned by a thread and to report which stack frame locked a monitor:
  - New LockInfo class
  - New MonitorInfo class
  - New ThreadInfo methods getLockInfo(), getLockedMonitors(), and getLockedSynchronizers()
  - New ThreadMXBean methods dumpAllThreads() and getThreadInfo(long ids, Boolean lockedMonitor, Boolean lockedSynchronizers)

- New functions added to the java.lang.instrument package

  Support for retransformation of class files was added. To facilitate dynamic transformation of classes that are already loaded, the following methods are added:

  - `Instrumentation.retransformClasses(Class...)`
  - `Instrumentation.addTransformer(ClassFileTransformer, Boolean)`
  - `Instrumentation.isModifiableClass(Class)`
  - `Instrumentation.isRetransformClassesSupported()`

  These methods are suited to such operations as adding instrumentation to methods whose classes have already been loaded. Support for retransformation means that access to the original class file is no longer required in order to instrument loaded classes. They enable the easy removal of applied transformations and are designed to work in multi-agent environments.

- New support for instrumenting native methods. The following methods enable native methods to be instrumented by including a JVM-aware mechanism for wrapping the native method:

  - `Instrumentation.setNativeMethodPrefix(ClassFileTransformer,String)`
  - `Instrumentation.isNativeMethodPrefixSupported()`

- New support for appending to the class loader search. The following methods enable instrumentation support classes to be defined in the appropriate class loader:

  - `Instrumentation.appendToBootstrapClassLoaderSearch(JarFile)`
  - `Instrumentation.appendToSystemClassLoaderSearch(JarFile)`

12

Software for System i models

In this chapter, we cover the i5/OS V5R4 and V5R3 capabilities that were announced during 2007 up to this date at which this paper was published. For IBM System i telephony capabilities, which were introduced during 2006 and enhanced during 2007, refer to 3.6.2, “System i and 3Com IP Telephony” on page 56, and 3.6.3, “System i IP Telephony Express offerings” on page 61.

Notes:

- V5R4 and V5R3 of i5/OS are currently supported for the System i family of systems and servers included in this paper:
  - POWER6 technology-based Model MMA
  - POWER5 technology-based Models 515, 520, 525, 550, 570, and 595
  - Pre-POWER5 technology-based Models 800, 810, 825, 870, and 890

  POWER6 technology-based processors require V5R4 with License Internal Code V5R4M5 or later. i5/OS POWER5 technology-based processors require i5/OS V5R3 or later. POWER4 is the chip technology that is used in Models 825, 870, and 890.
- i5/OS V5R3 and V5R4 also run on older processor technology systems. For hardware information about older processor technologies that are not covered in this paper, see:
  - *IBM eServer iSeries and AS/400e System Builder: IBM OS/400 Version 4 Release 3 - Version 5 Release 2*, REDP-0542
  - *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638
- This paper does not contain detailed ordering instructions or pricing information. For additional information, we recommend that you contact either an IBM representative or an authorized IBM Business Partner. You can go to the IBM System i “How to Buy” Web page at:

  `http://www.ibm.com/systems/i/buy/marketing/`

  From this page, you can choose to be put in contact with an IBM Business Partner or IBM Sales Representative. You can also request a price quote. To contact an IBM U.S. Sales Representative, call 1-888-SHOP-IBM.

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12.1 Minimum i5/OS and OS/400 software-level requirements for System i models

The following tables identify the software release of the minimum operating system that is required for IBM System i family of systems. The features that are supported in these processors might be supported by earlier releases of i5/OS or OS/400 than the processor itself. Many of the feature codes that are supported in these processors are also represented in this chapter.

The following table summarizes the i5/OS release levels, starting with V5R3, that are supported on the System i processor technologies.

System i model	V5R3	V5R4	V6R1[a]	V6R2[a]
POWER6 models	Not supported	Supported	Supported	Supported
POWER5+ Models 515, 525	Not supported	Supported	Supported	Supported
POWER5/5+ Models 520, 550, 570, and 595	Supported	Supported	Supported	Supported
Models 800, 810, 825, 870, and 890	Supported	Supported	Supported	Not planned
Models 270, 820, 830, and 840	Supported	Supported[b]	Not supported	Not planned

a. All statements regarding future direction and intent of IBM are subject to change or withdrawal without notice, and represent goals and objectives only. For more information, refer to the Upgrade planning Web page for future software releases:
http://www-304.ibm.com/jct01004c/systems/support/i/planning/upgrade/futuresftwr.html

b. V5R4M5 Licensed Internal Code is not formally supported on these models. V5R3M5 and V5R4M0 Licensed Internal Code is supported. Always verify the latest i5/OS release support status at the planning and upgrade Web site listed for table note a.

Note: OS/400 software releases up to and including V3R2 run only on CISC models of the AS/400 system (Models Bx0, Cx0, Dx0, Exx, Fx0, P0x, 100, 135, 140, 200, 20S, and 3x0). For information about software that supports these CISC systems, refer to *AS/400 CISC System Builder*, REDP-0042.

OS/400 software releases from V3R6 and V3R7 through V5R2 run on AS/400e systems (Models 150, 4xx, 5xx, and 6xx). For information about software that supports these RISC systems, refer to *IBM eServer AS/400e RISC System Builder Version 3 Release 6 - Version 5 Release 2*, REDP-0342.

OS/400 V5R1	OS/400 V5R2
9406-270 #2431, #2432, #2434 Processors **9406-270** #2452, #2454 DSD Processors **9406-820** #0150, #0151, #0152, #2435, #2436, #2437, #2438 Processors **9406-820** #2456, #2457, #2458 DSD Processors **9406-830** #0153, #2349, #2351 Processors **9406-840** #0158, #0159, #2461 Processors 9406-8x0 #235x CUoD #037x LC-SC Adapter Kit #1422 PDU Line Cord #147X Optical HSL Cable #1548 Interactive Capacity Card #2739 Optical Bus Adapter #275x HSL Ports #2760 PCI 1 Gbps Ethernet UTP Adapter #2765 PCI Fibre Channel Tape Controller #2766 PCI Fibre Channel Disk Controller #2772 PCI Dual WAN/Modem IOA #2773 PCI Dual WAN/Modem IOA (ANSI) #2777 HSL Ports - 8 Copper - 8 Copper #2778 PCI RAID Disk Unit Controller #2799 PCI Integrated xSeries Server #2805 PCI Quad Modem IOA #2806 PCI Quad Modem (CIM) #2817 PCI 155 Mbps MMF ATM IOA #2899 PCI Integrated xSeries Server #3007 1 GB main storage #3009 128 MB main storage #3027 1 GB main storage #3029 128 MB main storage #3032 256 MB main storage #3033 512 MB main storage #3034 1 GB main storage #3067 1 GB main storage #4319 35.16 GB 10k RPM Disk Unit #4585 80 GB VXA-2 Tape Device #4487 50 GB ¼-inch Cartridge Tape Device #4587 50 GB ¼-inch Cartridge Tape Device #4685 80 GB VXA-2 Tape Device #4687 50 GB ¼-inch Cartridge Tape Device #4778 PCI RAID Disk Unit Controller #5078 PCI Expansion Unit #510x PCI Disk Expansion Unit #516x Power Dist Unit #9002 Dual Line Cord Enabler #9752 Base HSL Ports - 8 Copper #9755 Base HSL Ports - 16 Copper #9777 Base HSL Ports - 8 Copper #9778 Base PCI RAID Disk Unit Controller 7207-330 External SLR60 Tape Drive	9406-800 #2463, #2464 Processors 9406-810 #2465, #2466, #2467, #2469 Processors **9406-825** #2473, #2495 Processors **9406-870** #2486, #2489, #2496 Processors **9406-890** #0197, #0198, #2487, #2488, #2497, #2498, #2499 Processors #0595 PCI-X Expansion Unit in Rack #15xx Interactive Card #2742 Two-Line WAN IOA #2757 PCI-X Ultra RAID Disk Controller #2776 HSL-2 Ports - 8 Copper #2782 PCI-X RAID Disk Unit Controller #2785 HSL-2 Ports - 2 Copper #2786 HSL Ports - 2 Optical #2787 PCI-X Fibre Channel Disk Controller #2788 HSL Ports - 8 Optical #2792 PCI Integrated xSeries Server #2793/#9793 Two-Line WAN IOA with Modem #2794/#9794 Two-Line IOA with Modem #2844 PCI IOP #2849 10/100 Mbps Ethernet Adapter #2892 PCI Integrated xSeries Server #2886 Optical Bus Adapter #3015 8 GB main storage #3016 8 GB main storage #3017 32 GB main storage #3018 32 GB main storage #3020 4 GB main storage #3021 4 GB main storage #3035 16 GB main storage #3036 16 GB main storage #3042 256 MB main storage #3043 512 MB main storage #3044 1024 MB main storage #3046 2048 MB main storage #3092 256 MB main storage #3093 512 MB main storage #30941024 MB main storage #3096 2048 MB main storage #4326 35.16 GB 15k RPM Disk Unit #4327 70.56 GB 15k RPM Disk Unit #4531 DVD-ROM #4631 DVD-ROM #4710 PCI Integrated xSeries Server #4805 PCI Cryptographic Accelerator #4810 PCI Integrated xSeries Server #5088 PCI-X Expansion Unit #5094 PCI-X Expansion Tower #5095 PCI-X Expansion Tower #5108 PCI-X Expansion Unit #5115 Dual Line Cords Tower #5116 Dual Line Cords #5294 Tower #5138 Redundant Power and Cooling #5294 1.8m I/O Tower #2780 Controller with Auxiliary Write Cache #2757 Controller with Auxiliary Write Cache #5700 PCI 1 Gbps Ethernet IOAI #5701 PCI 1 Gbps Ethernet UTP IOA #5702 PCI-X Ultra Tape Controller #5703 PCI-X RAID Disk Unit Controller #5704 PCI-X Fibre Channel Tape Controller #5705 PCI-X Tape/DASD Controller #7116 System Unit Expansion

OS/400 V5R1	OS/400 V5R2
	(contd.) #7124 DASD Expansion Unit - 5 slot #7136 DASD Expansion Unit - 6 slot #7137 DASD Concurrent Maintenance #8094 Optional 1.8 m I/O Rack #9094 Base PCI I/O Enclosure #9492 Base PCI Integrated xSeries Server #9710 Base PCI Integrated xSeries Server #9746 Base PCI Twinaxal IOA #9749 Base PCI 100/10 Ethernet IOA #9792 Base PCI Integrated xSeries Server #9844 Base PCI IOP

i5/OS V5R3 with V5R3M5 LIC	i5/OS V5R4
9406-520 #8325, #8327, #8330 Processors #0906 1-way Server Feature #2888 RIO-G Ports - 2 Copper #4400 1GB DDR2 Main Storage #4474 2GB DDR2 Main Storage #4475 4GB DDR2 Main Storage #4477 8GB DDR2 Main Storage #5159 850 Watt Power Supply #5553 System Console Ethernet w/o IOP #5776 PCI-X Disk Controller 90MB without IOP #6803 PCI WAN for ECS #6804 PCI WAN for ECS (CIM) #7256 520 Enterprise Enablement #7320 520, 520+ One Processor Activation #7350 Value Edition for #0975 #7352 Value Edition for #0975 #7355 Accelerator for System i5 #7357 Accelerator for System i5 #7366 Solution Edition for #0906 #7373 High Availabilty Edition for #0906 #7374 High Availability Edition for #0906 #7620 520 On/Off Processor Enablement #7622 520 Reserve Capacity Prepaid #7734 Enterprise Edition for #0906 #7735 Enterprise Edition for #0906 #7736 Enterprise Edition for #0906 #7784 Standard Edition for #0906 #7785 Standard Edition for #0906 #8410 520 Base Processor Activation #9299 Base Enterprise Enablement for 520	9406-595 #8968 0/16-way 2.3 GHz Processor #0953 8/16-way Server Feature 595 1x8968 #0954 16/32-way Server Feature 595 2x8968 #0955 32/64-way Server Feature 595 4x8968 #0958 2/16-way Server Feature 595 1x8968 #0959 4/32-way Server Feature 595 2x8968 #5870 Standard Edition for #0953 #5871 Standard Edition for #0954 #5872 Standard Edition for #0955 #5875 CBU Standard Edition for #0958 #5890 Enterprise Edition for #0953 #5891 Enterprise Edition for #0954 #5892 Enterprise Edition for #0955 #5895 CBU Edition for #0958 #5896 CBU Edition for #0959 #7320 515, 520, 520+, 525 One Processor Activation #7668 595 One Processor Activation **9406-525** #0909 1/2W Server Feature 525 1x8330 #6910 525 CBU Configuration 1 #7790 525 Express Configuration 1 #7791 525 Express Configuration 2 #7792 525 Express Configuration 3 **9407-515** #4901, #4903 Server features #6010 515 Express Configuration 1 #6011 515 Express Configuration 2 #6018 515 Base Product Config 1 #6021 515 Express Configuration 3 #6028 515 Base Product Config 2 #0532 i5/OS V5R4M0 LIC #0047 Device Parity RAID-6 All, #5570 5727 Cache + 2 70GB Disk Package #5571 5727 Cache + 6 70GB Disk Package #5583 Controller with 1.5GB Auxiliary Write Cache without IOP #5777 PCI-X Ultra320 SCSI Disk Controller - 1.5GB Write/1.6GB Read caches without IOP #5778 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP #5782 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP #5800 PCI-X EXP24 Controller - 1.5GB Write/1.6GB Read caches without IOP #6800 PCI 1Gbps Ethernet IOA #6801 PCI 1Gbps Ethernet UTP IOA #6803 PCI WAN for ECS #6804 PCI WAN for ECS (CIM)

i5/OS V5R4 with License Internal Code V5R4M5	i5/OS V5R4 with License Internal Code V5R4M5 (contd.)
9406-MMA #7380 0/2-way 4.7GHz processor card #4910 1/4W Serv Feat 570 (POWER6) 2x7380 #4911 2/8W Serv Feat 570 (POWER6) 4x7380 #4912 4/16W Serv Feat 570 (POWER6) 8x7380 #4922 1/4W Serv Feat 570 (POWER6) 2x7380 #4923 1/8W Serv Feat 570 (POWER6) 4x7380 #4924 2/16W Serv Feat 570 (POWER6) 8x7380 #5460 i5/OS Edition for #4910 #5461 i5/OS Edition for #4911 #5462 i5/OS Edition for #4912 #7053 CBU Edition for #4922 #7058 CBU Edition for #4923 #7063 CBU Edition for #4924 #0302 SCSI Controller Port Attach #0347 RAID Hot Spare Specify #0423 Admin 570 (POWER6) Enclosure Count #0533 V5R4OS, V5R4M5 Machine Code #0719 No disk drives in the system unit #0720 Load Source in #0595/5095 #0721 Load Source in #5094/5294 #0725 Load Source in #5786/5787 #0838 #3676 Load Source Specify #0839 #3677 Load Source Specify #1269 282.25GB 15k rpm Disk Unit #1292 300GB 15k rpm Disk Unit #1802 12X Channel CEC GX Adapter #2893 PCIe 2-Line WAN w/Modem #2894 PCIe 2-Line WAN w/Modem CIM #3646 73.4GB 15k rpm SAS Disk Drive #3647 146.8GB 15k rpm SAS Disk Drive #3648 300GB 15k rpm SAS Disk Drive #3676 69.7GB 15k rpm SAS Disk Drive #3677 139.5GB 15k rpm SAS Disk Drive #3678 283.7GB 15k rpm SAS Disk Drive #5403 One Processor Activation #5404 Utility Billing 100 Proc Min #5490 Enterprise Enablement #5491 Full Enterprise Enable	#5629 DVD Enclosure and Backplane #5636 IVE - 2x1Gb Ethernet #5639 IVE - 4x1Gb Ethernet #5646 PCIe Blind Swap Casset Short #5647 PCIe Blind Swap Cassette Std #5648 Service Interface Card #5656 On/Off 1Proc-1Day Billing #5680 1GB CUoD Memory Activation #5691 On/Off 1GB-1Day Memory Bill #5692 0/2GB DDR2 Memory #5693 0/4GB DDR2 Memory #5694 0/8GB DDR2 Memory #5695 0/16GB DDR2 Memory #5696 0/32GB DDR2 Memory #5756 DVD-ROM Drive IDE Slimline #5757 DVD-RAM Drive IDE Slimline #5767 PCIe 1Gb Ethernet UTP 2Port #5768 PCIe 1Gb Ethernet Fiber 2Port #5773 PCIe 4Gb Fibre Channel 1Port #5774 PCIe 4Gb Fibre Channel 2-Port #5796 PCI-DDR 12X Expansion Drawer #5801 1/4-way Processor Enclosure #6446 12X Short Run 5796 Attach #6457 12X Long Run 5796 Attach #6805 PCI 2-Line WAN IOA No IOP #6808 PCI 4-Modem WAN IOA No IOP #6809 PCI 4-Modm WAN IOA NoIOP CIM #6833 PCI 2-Line WAN w/Modem, No IOP #6834 PCI 2-Ln WAN w/Mod, No IOP CIM #7262 Quantity 150 of #1292 #7314 Dual 5796 I/O Unit Enclosure 19-inch Rack Mounting Hardware #7516 Quantity 150 of #1269 #8478 256GB CUod Memory Activate #9693 PCIe 2-Line WAN w/Modem #9694 PCIe 2-Line WAN w/Modem CIM #9933 PCI 2-Line WAN w/Modem NoIOP #9934 PCI 2-Ln WAN w/Mod NoIOP CIM

Verification: You can verify this information by using the Offering Information (OITool), IBMLink™, or other online tools. You can find the OITool on the internal Web at:

http://w3-3.ibm.com/sales/ssi/

12.2 i5/OS and OS/400 general availability and support

The following table shows the availability, withdrawal, and end of support dates for each release of the operating system. Note that i5/OS V5R4, V5R3, and OS/400 V5R2 are the supported levels of operating system for the System i models. All earlier releases of OS/400 are withdrawn from IBM marketing and support.

Release	General availability	Withdrawn from marketing	End of program support
R7.5 SSP	08 March 1996	09 February 1999	31 May 2000
V3R0.5	03 June 1994	11 February1997	31 May 1997
V3R1	30 June 1995	11 February 1997	31 October 1998
V3R2	21 June 1996	10 February 1998	31 May 2000
V3R6	29 September 1995	19 August 1997	31 October 1998
V3R7	09 November 1996	01 September 1998	30 June 1999
V4R1	29 August 1997	09 February 1999	31 May 2000
V4R2	27 February 1998	09 February 1999	31 May 2000
V4R3	11 September 1998	15 February 2000	31 January 2001
V4R4	21 May 1999	31 May 2001	31 May 2001
V4R5	28 July 2000	2 July 2002	31 December 2002
V5R1	25 May 2001	21 November 2003	30 September 2005
V5R2	30 August 2002	01 October 2005	30 April 2007
V5R3	28 May 2004	04 January 2008	---
V5R4	14 February 2006	---	---

12.3 i5/OS and OS/400 upgrade paths

The following table shows the valid upgrade paths for i5/OS and OS/400.

To: From:	V4R2 [a]	V4R3[a]	V4R4[a]	V4R5 [a]	V5R1[a]	V5R2	i5/OS V5R3	i5/OS V5R4
V4R1	✓	✓	✓	✓	-	-	-	-
V4R2	-	✓	✓	✓	-	-	-	-
V4R3	-	-	✓	✓	-	-	-	-
V4R4	-	-	-	✓	✓	-	-	-
V4R5	-	-	-	-	✓	✓	-	-
V5R1	-	-	-	-	-	✓	✓	-
V5R2	-	-	-	-	-	-	✓	✓
V5R3	-	-	-	-	-	-	-	✓

a. Withdrawn from IBM support.
b. OS/400 V4R5 is the last release to offer single-step CISC-to-RISC upgrade capabilities from V3R2.

Refer to the appropriate software installation manual for instructions to upgrade software. Single step RISC-to-RISC upgrades are supported as normal upgrade procedures.

12.4 Current-release to previous-release support for i5/OS and OS/400

The Target Release (TGTRLS) parameter specifies the valid i5/OS or OS/400 release of the operating system on which you intend to restore and use the object.

Values for TGTRLS parameter			
Current i5/OS or OS/400 release	***CURRENT**	***PRV**	**Other valid values**
V5R4	V5R4	V5R3	V5R2
V5R3	V5R3	V5R2	V5R1
V5R2	V5R2	V5R1	V4R5
V5R1	V5R1	V4R5	V4R4
V4R5	V4R5	V4R4	V4R3 V4R2 V3R2

12.5 Software ordering terminology

In this section, we explain standard terminology that is used for all software versions:

- **Product identifier (PID)**: All IBM Licensed Programs including i5/OS and OS/400 have a product identifier. The format is 57*xx-yyy.* For example, i5/OS V5R4 is 5722-SS1.
- **HIPO**: New preload orders of Version 5 are defined with HIPO numbers associated with the hardware product order. For example, HIPO feature 5372-IS5 is for new orders of Version 5. The 5372-IS5 contains features, with each feature indicating the software product to be loaded. For example, #1002 indicates BRMS (5722-BR1). It serves as an (administrative) software preload ordering vehicle. The term HIPO is not an acronym.
- **Additional feature**: Additional features are product and associated HIPO features that relate to an optional feature of a licensed program. The additional feature provides the delivery mechanism for the licensed program.
- **Skip ship**: For Version 5, some products have a “skip ship” from a previous release. They retain their original product identifiers, but can still be ordered.

12.6 i5/OS V5R4 software

The following tables show the V5R4 i5/OS-based software products that are most commonly ordered. It is not a definitive list of all System i software products that are now available. See 12.10, “Notes for Version 5 software tables” on page 526, for Version 5 software group information.

Operating system and base products	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2]	Keyed Stamped Media[9]	Software Maintenance delivery[8]
Operating System/400® [6,7]	---	5722-SS1	1000	5050	S
i5/OS Users	---		5052		
Block of 250 users	---		5053		
Unlimited users	---		5054		
Media and Storage Extensions	---	5722-SS1 Option 18	1500	5103	S
OptiConnect for OS/400	---	5722-SS1 Option 23	1515		S
DB2 Symmetric Multiprocessing	---	5722-SS1 Option 26	1517		S
DB2 MultiSystem	---	5722-SS1 Option 27	1518		S
Print Services Facility™ (PSF/400) 1-45 IPM 1-100 IPM Any speed	---	5722-SS1 Option 36 Option 37 Option 38	 1501 1502 1503	 5112 5113 5114	S
High Availability Switchable Resource	---	5722-SS1 Option 41	1505	5116	S
High Availability Journal Performance	---	5722-SS1 Option 42	1545	5117	S
S/38 Utilities for AS/400[6]	✓	5722-DB1	1021		S
HTTP Server for iSeries	---	5722-DG1	---		S
IBM Toolbox for Java	---	5722-JC1	---		S
IBM Developer Kit for Java	---	5722-JV1	---		S
DB2 Query Manager and SQL Development Kit for iSeries [6, 7]	---	5722-ST1	1011	5050	S
iSeries Access for Windows	---	5722-XE1	---		S

OS/400 complementary database software	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2]	Keyed Stamped Media[9]	Software Maintenance delivery[8]
DB2 OLAP Server™ for iSeries V8.1[10]	---	5724-B78	---		
DB2 UDB Warehouse Manager Standard Edition V8	✓	5724-E66			
DB2 Universal Database Extenders for iSeries V7.2	---	5722-DE1	1004	5050	S
DB2 DataPropagator™ for iSeries Version 8.1	✓	5722-DP4	1035	5050	S
DB2 QMF™ Distributed Edition V8.1 for Multiplatforms	---	5724-E86			
i5/OS Integration for Linux on xSeries	---	5722-LSV	---		
Query for iSeries[6, 7]	---	5722-QU1	1009	5050	S
System Openness Includes	---	5722-SS1 Option 13	---		S
NetWare Enhanced Integration	---	5722-SS1 Option 25	---		S
Portable Application Solution Environment	---	5722-SS1 Option 33	---		S
TCP/IP Connectivity Utilities for iSeries	---	5722-TC1	---		S
iSeries Access for Linux	✓	5722-XL1			
iSeries Access for Web	---	5722-XH2			
iSeries Access for Wireless	---	5722-XP1			S
iSeries Access Family[6,7]	---	5722-XW1	1012 Client Processor - 1013 Client User	5050	S

Networking products	Skip ship[2]	Product identifier	HIPO feature[2] (5372-IS5)	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Host On-Demand Version 6.0	P	5733-A59	---		M
WebSphere MQ Version 5.3[6]	P	5733-B41	---	-	M
Communications Utilities for iSeries[6]	---	5722-CM1	1003	5050	S
Cryptographic Support for AS/400[6]	✓	5722-CR1	1020		S
iSeries Cryptographic Device Manager		5733-CY1			
Communications Server for Windows NT Version 6.1	P	5639-F25	---		---
Network Authentication Enablement for i5/OS		5722-NAE			
NetView® FTP		5798-TBG			

WebSphere and on demand business products	Skip ship[2]	Product identifier	HIPO features[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
IBM Business Solutions	✓	5722-BZ1			M
WebSphere Application Server Version 6.0 Developer Edition for iSeries		5724-H89			M
WebSphere Application Server Express V5.1 iSeries	✓	5722-E51	6007		M
WebSphere Commerce for iSeries V5.6, Business Edition, Professional Edition, and Express		5724-I38 5724-I40 5724-I36	---		M
Software Integration Assistant for iSeries		5722-IA1			
WebSphere Application Server Version 5.1 for iSeries		5733-W51			M
WebSphere Application Server V 6.0 for i5/OS		5733-W60			
WebSphere Application Server 6.1 for i5/OS		5733-W61			
WebSphere Enablement	✓	5733-WE2			M

Systems management products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Backup Recovery and Media Services for iSeries[6] Network Feature Advanced Feature	---	5722-BR1	1002 1506 1507	5050 5101 5102	S
IBM Secure Perspective	---	5733-PS1	6011		Product Code
IBM Director with VE Console for i5/OS V5.10		5733-DR1			Product Code
IBM Director V5.20 (replaces 5733-DR1 starting December 2006)		5722-DR1			Product Code
VE Enterprise Workload Manager™ for i5/OS V2.1	New	5733-EWA			Product Code
PATROL for iSeries – Predict	---	5620-FIF	---		S
Tivoli Storage Manager Enterprise Edition V5.1	---	5698-ISE	---		---
Tivoli Storage Manager V5.1	---	5698-ISM	---		---
Advanced Job Scheduler for iSeries[6]	---	5722-JS1	1007	5050	S
Tivoli Management Agent	---	1TME-LCF	---		---
Managed System Services for iSeries[6]	---	5722-MG1	1030		S
Performance Tools for iSeries[6,7] Manager Feature Agent Feature	---	5722-PT1 Option 1 Option2	1008 1508 1509	5050 5101 5102	S
Content Manager OnDemand for iSeries[6] PDF Indexer Feature Web Enablement Kit Feature	---	5722-RD1 Option 12 Option 11	1010 1510 1511		M
VE Resource Dependency Service V2.1	New	5733-RDS			Product Code
System Manager for iSeries[6]	---	5722-SM1	1032		S

Application development products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
CICS Transaction Server for iSeries[6]	---	5722-DFH	1025		S
WebSphere Application Server Version 6.0 Developer Edition for iSeries		5724-H89			M
Portable Utilities		5733-SC1			
WebSphere Development Studio (Toolset)	---	5722-WDS	1015	5050	S
XML Toolkit for iSeries	✓	5733-XT1	---		S

Office support and printing products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Advanced Function Printing Utilities for AS/400[6]	✓	5722-AF1	1001	5050	S
Advanced DBCS Printer Support for AS/400[6]	✓	5722-AP1	1014	5050	S
AFP Font Collect ion for Workstation and OS/400	✓	5648-B45	---		
Business Graphics Utility for AS/400[6]	✓	5722-DS1	1027		S
Facsimile Support for iSeries	✓	5798-FAX	---		S
Advanced Function Printing Fonts for AS/400[6] Font Options	✓	5769-FNT Options 1-15	--- --- 1520-1534		S
Advanced Function Printing DBCS Fonts for AS/400[6†] Font Options	✓	5769-FN1	--- 1535-1539		S
Domino Fax for iSeries	✓	5733-FXD	---		S
Infoprint Fonts for Multiplatform	✓	5648-E77			
Infoprint Designer for iSeries	✓	5733-ID1	6003		S
Infoprint Server for iSeries	---	5722-IP1	1006	5050	S
Lotus Domino for iSeries Version 6.0	P	5733-LD7	---		M
Lotus Domino 6.5 for iSeries	P	5733--L65	---		M
QuickPlace for iSeries Version 2.0	P	5733-LQP	---		M
Content Manager for iSeries Object Server Advanced Workflow	P	5722-VI1 Option 1 Option 4	1034 --- ---		M

Additional database products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
MySQL Enterprise for i5/OS	---	5639-MYS			
DB2 Web Query for System i		5733-QU2			S

Additional and packaged products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Host Access Client Package for iSeries, Version 5.0 Personal Communications V5.8 WebSphere Host On-Demand V9.0		5724-I21	---		
Host Access Client Package for Multiplatforms, Version 5.0 Personal Communications V5.8 WebSphere Host On-Demand V9.0		5724-I20	---		
ValuPak for V5R3: 5722-SS1: 1-45 ipm feature 5722-XW1: iSeries Access 5722-QU1: Query 400 5722-ST1: DB2/400 Query Manager and SQL Development Kit 5722-PT1: Performance Tools (Manager feature)		5722-VP1	---		
DB2 Value Pack for i5/OS 5722-ST1: DB2 Query Manager and SQL Development Kit 5722-SS1, Option 26: DB2 Symmetric Multiprocessing (DB2 SMP) 5722-DE: DB2 UDB Extender 5733-XT1: XML Toolkit for IBM System i5 (XML Toolkit)		5722-DVP			
Operations Value Pack for i5/OS 5722-BR1: Backup Recovery and Media Services (BRMS) 5722-BR1, Option 1: BRMS Network Feature 5722-SS1, Option 18: Media and Storage Extensions 5722-PT1: Performance Tools for i5/OS 5722-PT1, Option 1: Performance Tools Manager		5722-SVP			

Telephony products and packaging	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
System i IP Telephony Express offerings Telephony Express 100 (#7381) Telephony Express 250 (#7382 Telephony Express 500 (#7383) Telephony Express 1000 (#7384) Telephony Express HA100 (#0486) Telephony Express HA250 (#0487) Telephony Express HA500 (#0488 Telephony Express HA1000 (#0489)	---				
3Com IP Telephony Suite for IBM System i		5639-3CM			

12.7 i5/OS V5R3 software

The following tables show the V5R3 i5/OS-based software products that are most commonly ordered. It is not a definitive list of all System i software products that are now available. See 12.10, “Notes for Version 5 software tables” on page 526, for Version 5 software group information.

Operating system and base products	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Operating System/400[6,7]	---	5722-SS1	1000	5050	S
Media and Storage Extensions	---	5722-SS1 Option 18	1500	5103	S
OptiConnect for OS/400	---	5722-SS1 Option 23	1515		S
DB2 Symmetric Multiprocessing	---	5722-SS1 Option 26	1517		S
DB2 MultiSystem	---	5722-SS1 Option 27	1518		S
Print Services Facility (PSF/400) 1-45 IPM 1-100 IPM Any speed	---	5722-SS1 Option 36 Option 37 Option 38	 1501 1502 1503	 5112 5113 5114	S
High Availability Switchable Resource	---	5722-SS1 Option 41	1505	5116	S
High Availability Journal Performance	---	5722-SS1 Option 42	1545	5117	S
IBM Business Solutions	New	5722-BZ1			M
HTTP Server for iSeries	---	5722-DG1	---		S
iSeries Enterprise Edition Installation Edition	---	5733-ED1			-
Software Integration Assistant for iSeries	✓	5722-IA1			S
IBM Toolbox for Java	---	5722-JC1	---		S
IBM Developer Kit for Java	✓	5722-JV1	---		S
Tivoli Management Agent	---	1TME-LCF	---		---
TCP/IP Connectivity Utilities for iSeries	---	5722-TC1	---		S
iSeries Access for Windows	---	5722-XE1	---		S
iSeries Integration for Windows Server	---	5722-WSV	---		S

OS/400 complementary database software	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
DB2 Warehouse Manager V8	P	5724-B08			
DB2 Universal Database Extenders for iSeries V7.2	---	5722-DE1	1004	5050	S
DB2 DataPropagator for iSeries Version 8.1	✓	5722-DP4	1035	5050	S
DB2 QMF Distributed Edition V8.1 for Multiplatforms	New	5724-E86			
DB2 Table Editor for iSeries Version 4.3	P	5697-G84	---		S
DB2 Web Query Tool for iSeries Version 1.3	P	5697-G85	---		S
DB2 OLAP Server for iSeries V8.1[10]	---	5724-B78	---		
DB2 Spatial Extender Version 8	New	5765-F40			
DB2 UDB Workgroup Server Edition	New	5733-LD1			
Query for iSeries[6, 7]	---	5722-QU1	1009	5050	S
System Openness Includes	---	5722-SS1 Option 13	---		S
NetWare Enhanced Integration	---	5722-SS1 Option 25	---		S
Portable Application Solution Environment	---	5722-SS1 Option 33	---		S
iSeries Access for Web	---	5722-XH2			S
iSeries Access for Linux	New	5722-XL1			-
iSeries Access for Wireless	New	5722-XP1			S
iSeries Access Family[6,7]	---	5722-XW1	1012 Client Processor - 1013 Client User	5050	S

Networking products	Skip ship[2]	Product identifier	HIPO feature[2] (5372-IS5)	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Cryptographic Access Provider 128-bit[6]	---	5722-AC3	1017		S
MQSeries® for iSeries Version 5.3[6]	P	5724-B41	---	-	M
iSeries Client Encryption (128-bit)[6]	---	5722-CE3	1019		S
Communications Utilities for iSeries[6]	---	5722-CM1	1003	5050	S
Cryptographic Support for AS/400[6]	✓	5722-CR1	1020		S
iSeries Cryptographic Device Manager	New	5733-CY1			Y
Portable Utilities for i5/OS	New	5733-SC1	---		---
Communications Server for Windows NT Version 6.1	P	5639-F25	---		---
NetView FTP	✓	5798-TBG			---

WebSphere and on demand business products	Skip ship[2]	Product identifier	HIPO features[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Connect for iSeries V2 [10]	P	5733-CO2	---		S
WebSphere Application Server Version 5.1 Developer Edition for iSeries [10]	P	5724-D18			M
WebSphere Application Server - Express V5.1 for iSeries	P	5722-E51			M
Grid Toolbox V3 for OS/400	New	5733-GT1			M
WebSphere Commerce Payments for iSeries V5.5	---	5733-PYS			S
WebSphere Application Server - Express V5.0 for iSeries and Express V5.1 for iSeries	P	5722-IWE 5722-E51	6007		M
WebSphere Advanced Edition V4.0.1[6]	P	5733-WA4			M
WebSphere Commerce for iSeries V5.5	P	5733-WC5			M
WebSphere Advanced Edition Single Server V4.0.1	P	5733-WS4			M
WebSphere Application Server Version 5.0 for iSeries	P	5733-WS5			M
WebSphere Application Server Version 5.1 for iSeries	P	5733-W51			M
WebSphere Application Server Version 6.0 for i5/OS	P	5733-W60			M
WebSphere Enablement	New	5733-WE1	6007		M
Web Enablement for i5/OS	New	5733-WE2			M

Systems management products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Backup Recovery and Media Services for iSeries[6] Network Feature Advanced Feature	---	5722-BR1	1002 1506 1507	5050 5102	S
Director with VE Console for i5/OS V5.10	New	5733-DR1			M
IBM Director V5.20 (replaces 5733-DR1 starting December 2006)		5722-DR1			Product Code
VE Enterprise Workload Manager for i5/OS V2.1	New	5733-EWA			M
PATROL for iSeries – Predict	---	5620-FIF	---		S
Tivoli Storage Manager Enterprise Edition V5.1	P	5698-ISE	---		---
Tivoli Storage Manager V5.1	---	5698-ISM	---		---
Advanced Job Scheduler for iSeries[6]	---	5722-JS1	1007	5050	S
Managed System Services for iSeries[6]	---	5722-MG1	1030		S
Performance Tools for iSeries[6,7] Manager Feature Agent Feature	---	5722-PT1 Option 1 Option2	1008 1508 1509	5050 5101 5102	S
Content Manager OnDemand for iSeries[6] PDF Indexer Feature Web Enablement Kit Feature	---	5722-RD1 Option 12 Option 11	1010 1510 1511		M
VE Resource Dependency Service V2.1	New	5722-RDS			M
System Manager for iSeries[6]	---	5722-SM1	1032		S

Application development products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
WebSphere Commerce for iSeries V5.6, Business Edition, Professional Edition, and Express		5724-I38 5724-I40 5724-I36	---		M
S/38 Utilities for AS/400[6]	---	5722-DB1	1021		S
CICS Transaction Server for iSeries[6]	---	5722-DFH	1025		S
Application Program Driver	✓	5722-PD1	1031		S
DB2 Query Manager and SQL Development Kit for iSeries[6, 7]	---	5722-ST1	1011	5050	S
Visualage Generator Server for iSeries	✓	5769-VG1	1033		S
WebSphere Development Studio (Toolset)	---	5722-WDS	1015	5050	S
XML Toolkit for iSeries	---	5733-XT1	---		S

Office support and printing products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Advanced Function Printing Utilities for AS/400[6]	✓	5722-AF1	1001	5050	S
Advanced DBCS Printer Support for AS/400[6]	---	5722-AP1	1014	5050	S
AFP Font Collect ion for Workstation and OS/400	✓	5648-B45	---		
Business Graphics Utility for AS/400[6]	---	5722-DS1	1027		S
InfoPrint Fonts for Multiplatforms5	New	5648-E77			-
Content Manager for iSeries V8.2	---	5724-F73			M
Facsimile Support for iSeries	✓	5798-FAX	---		S
Advanced Function Printing Fonts for AS/400[6] Font Options	✓	5769-FNT Options 1-15	--- 1520-1534		S
Advanced Function Printing DBCS Fonts for AS/400[6†] Font Options	✓	5769-FN1	--- 1535-1539		S
Domino Fax for iSeries	✓	5733-FXD	---		S
Infoprint Designer for iSeries	✓	5733-ID1	6003		S
Infoprint Server for iSeries	---	5722-IP1	1006	5050	S
Content Manager for iSeries Object Server Advanced Workflow	P	5722-VI1 Option 1 Option 4	1034 --- ---		M

Additional and packaged products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Host Access Client Package for iSeries, Version 4.0 Personal Communications V5.7 WebSphere Host On-Demand V8.0		5724-F68	---		
Host Access Client Package for multiplatforms, Version 4.0 Personal Communications V5.7 WebSphere Host On-Demand V8.0		5724-F69	---		
Lotus Domino 7		5733-LD7			M
Lotus Enterprise Integrator® for iSeries[6]	---	5769-LNP	---		M
ValuPak for V5R3: 5722-SS1: OS/400 5722-SS1: 1-45 ipm feature 5722-XW1: Client Access Family/iSeries Access 5722-QU1: Query 400 5722-ST1: DB2/400 Query Manager and SQL Development Kit 5722-PT1: Performance Tools (Manager feature)		5722-VP1	---		

12.8 OS/400 V5R2 software

The following tables show the V5R2 OS/400-based software products that are most commonly ordered. It is not a definitive list of all iSeries software products that are now available. See 12.10, “Notes for Version 5 software tables” on page 526, for Version 5 software group information.

Operating system and base products	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Operating System/400[6,7]	---	5722-SS1	1000	5050	S
Media and Storage Extensions	---	5722-SS1 Option 18	1500	5103	S
OptiConnect for OS/400	---	5722-SS1 Option 23	1515		S
DB2 Symmetric Multiprocessing	---	5722-SS1 Option 26	1517		S
DB2 MultiSystem	---	5722-SS1 Option 27	1518		S
Print Services Facility (PSF/400) 1-45 IPM 1-100 IPM Any speed	---	5722-SS1 Option 36 Option 37 Option 38	 1501 1502 1503	 5112 5113 5114	S
High Availability Switchable Resource	---	5722-SS1 Option 41	1505	5116	S
High Availability Journal Performance	---	5722-SS1 Option 42	1545	5117	S
S/38 Utilities for AS/400[6]	---	5722-DB1	1021		S

Operating system and base products	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
HTTP Server for iSeries	---	5722-DG1	---		S
IBM Toolbox for Java	---	5722-JC1	---		S
IBM Developer Kit for Java	---	5722-JV1	---		S
DB2 Query Manager and SQL Development Kit for iSeries[6, 7]	---	5722-ST1	1011	5050	S
iSeries Integration for Windows Server	---	5722-WSV	---		S

OS/400 complementary database software	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Warehouse Manager for iSeries	P	5724-B08			
DCE Base Services	P	5769-DC1	1023		S
DCE DES Library Routines	P	5769-DC3	1024		S
DB2 Universal Database Extenders for iSeries V7.2	---	5722-DE1	1004	5050	S
DB2 DataPropagator for iSeries Version 8.1	New	5722-DP4	1035	5050	S
DB2 QMF Distributed Edition V8.1 for Multiplatforms	New	5724-E86			
QMF for Windows for iSeries Version 7.2	P	5697-G24	---		S
DB2 Table Editor for iSeries Version 4.3	P	5697-G84	---		S
DB2 Web Query Tool for iSeries Version 1.3	P	5697-G85	---		S
DB2 Intelligent Miner™ for Data V6.1	P	5733-IM3	---		M
iSeries ODBC Driver for Linux	---	5733-LO1	---		S
DB2 OLAP Server for iSeries V7.1	---	5686-OLP	---		
Query for iSeries[6, 7]	---	5722-QU1	1009	5050	S
Electronic Service Agent™ for iSeries	---	5798-RZG	---		S
System Openness Includes	---	5722-SS1 Option 13	---		S
NetWare Enhanced Integration	---	5722-SS1 Option 25	---		S
Portable Application Solution Environment	---	5722-SS1 Option 33	---		S
TCP/IP Connectivity Utilities for iSeries	---	5722-TC1	---		S
Client Access Express - Windows/iSeries Access for Windows	---	5722-XE1	---		S
iSeries Access for Web	New	5722-XH2			
iSeries Access for Wireless	New	5722-XP1			S
iSeries Access Family[6,7]	---	5722-XW1	1012 Client Processor - 1013 Client User	5050	S

Networking products	Skip ship[2]	Product identifier	HIPO feature[2] (5372-IS5)	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Cryptographic Access Provider 128-bit[6]	---	5722-AC3	1017		S
MQSeries for iSeries Version 5.2[6]	P	5733-A38	---	-	M
Host On-Demand Version 6.0	P	5733-A59	---		M
iSeries Client Encryption (128-bit)[6]	---	5722-CE3	1019		S
Communications Utilities for iSeries[6]	---	5722-CM1	1003	5050	S
Cryptographic Support for AS/400[6]	---	5722-CR1	1020		S
DCE Base Services for AS/400[6]	P	5769-DC1	1023		S
DCE DES Library Routines for AS/400[6]	P	5769-DC3	1024		S
Communications Server for Windows NT Version 6.1 Personal Communications for Windows Version 5.5	P P	5639-F25 5639-I70 5733-A59[a]	---		--- M
iSeries Access for Windows	---	5722-XE1	---		S
iSeries Access for Web	New	5722-XH2 5722-XP1	--- ---		S S

a. Ordering ID

WebSphere and on demand business products	Skip ship[2]	Product identifier	HIPO features[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
WebSphere V4.0.1 for iSeries[6]	P	5722-AS4	---		S
Connect for iSeries V2 [10]		5733-CO2	---		S
WebSphere Application Server - Express for iSeries		5722-IWE	6007		
WebSphere Advanced Edition V4.0.1[6]	P	5733-WA4	6000		M
WebSphere Advanced Edition Single Server V4.0.1	P	5733-WS4	6005		M
WebSphere Application Server		5733-WS5	6006		M

Systems management products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Intelligent Communications Trace Analyzer for iSeries, Version 1.0	New	5733-AZ1			
Backup Recovery and Media Services for iSeries[6] Network Feature Advanced Feature	---	5722-BR1	1002 1507	5050 5101 5102	S
PATROL for iSeries – Predict	New	5620-FIF	---		S
Tivoli Storage Manager Enterprise Edition V5.1	---	5698-ISE	---		---
Tivoli Storage Manager V5.1	---	5698-ISM	---		---
Advanced Job Scheduler for iSeries[6]	---	5722-JS1	1007	5050	S
Tivoli Management Agent	---	1TME-LCF	---		---
Managed System Services for iSeries[6]	---	5722-MG1	1030		S
Performance Tools for iSeries[6,7] Manager Feature Agent Feature	---	5722-PT1 Option 1 Option2	1008 1508 1509	5050 5101 5102	S
Content Manager OnDemand for iSeries[6] PDF Indexer Feature Web Enablement Kit Feature	---	5722-RD1 Option 12 Option 11	1010 1510 1511		M
System Manager for iSeries[6]	---	5722-SM1	1032		S
Software Subscription for iSeries 1-year	New	5733-SU1			
Software Subscription for iSeries 3-years	New	5733-SU3			
Software Technical Support for iSeries 1-year, renewable	New	5733-SX1			---
Software Technical Support for iSeries 3-years, renewable	New	5733-SX3			---

Application development products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
WebSphere Commerce Product V5.5		5724-A18	---		M
Screen Customizer Version 2.0.60	P	5648-D76	---		M
CICS Transaction Server for iSeries[6]	---	5722-DFH	1025		S
ILC C Compiler		5799-GPC	6004		
Lotus Domino for iSeries Version 6.0	P	5733-LD6	---		M
Lotus Domino for iSeries Version 5.0	P	5769-LNT	---		M
QuickPlace for iSeries Version 2.0	P	5733-LQP	---		
Application Program Driver	P	5722-PD1	1031		S
Visualage Generator Server for iSeries	P	5769-VG1	1033		S
WebSphere Development Studio (Toolset)	---	5722-WDS	1015	5050	S
Application Development ToolSet[6]	---	Option 21			
Application Development Manager	---	Option 22	1543		
Application Dictionary Services	---	Option 23	1544		

Application development products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
ILE RPG for iSeries[6]	---	Options 31-35			
ILE COBOL for iSeries[6]	---	Options 41-45			
ILE C++ for AS/400	---	Options 52, 54			
ILE C for AS/400[6]	---	Options 51, 53			
XML Toolkit for iSeries	P	5733-XT1	---		S

Office support and printing products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Advanced Function Printing Utilities for AS/400[6]	---	5722-AF1	1001	5050	S
AFP PrintSuite for AS/400[6] APU Advanced Print Utility PPFA Page Printer Formatting Aid AF3 SAP R3 AFP Print	P	5798-AF3 Option 1	- 1514	5101	S
Advanced DBCS Printer Support for AS/400[6]	---	5722-AP1	1014	5050	S
AFP Font Collect ion for Workstation and OS/400		5648-B45	---		
Dictionaries and Linguistic Tools for iSeries[6]	P	5769-DL1	1026		M
Business Graphics Utility for AS/400[6]	---	5722-DS1	1027		S
Facsimile Support for iSeries	---	5798-FAX	---		S
Advanced Function Printing Fonts for AS/400[6] Font Options	P	5769-FNT Options 1-15	--- --- 1520-1534		S
Advanced Function Printing DBCS Fonts for AS/400[6†] Font Options	P	5769-FN1	--- 1535-1539		S
Domino Fax for iSeries		5733-FXD	---		S
Infoprint Designer for iSeries	P	5733-ID1	6003		S
Infoprint Server for iSeries	---	5722-IP1	1006	5050	S
Content Manager for iSeries Object Server Advanced Workflow	P	5722-VI1 Option 1 Option 4	1034 --- ---		M

Additional and packaged products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Host Access Client Package for iSeries, Version 3.0 Personal Communications V5.6 Screen Customizer Version 1.0.70 WebSphere Host On-Demand V7.0		5733-A78	---		
Host Access Client Package for multiplatforms, Version 3.0 Personal Communications V5.6 Screen Customizer V2.0.70 WebSphere Host On-Demand V7.0		5648-E81	---		
Lotus Enterprise Integrator for iSeries[6]	---	5769-LNP	---		M
Lotus Domino Enterprise Server for iSeries	P	5769-LNT	6001		M
CISC to RISC Upgrade Kit		5798-TBU	---		
ValuPak for V5R2: 5722-SS1: OS/400 5722-SS1: 1-45 ipm feature 5722-XW1: Client Access Family/iSeries Access 5722-QU1: Query 400 5722-ST1: DB2/400 Query Manager and SQL Development Kit 5722-PT1: Performance Tools (Manager feature)		5722-VP1	---		

12.9 OS/400 V5R1 software

The following tables show the V5R1 OS/400-based software products that are most commonly installed. It is not a definitive list of all possible IBM software products for the iSeries or AS/400e. See 12.10, “Notes for Version 5 software tables” on page 526, for Version 5 software group information.

Operating system and base products	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2] V5R1	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Operating System/400[6,7]	---	5722-SS1	1000	5050	S
Media and Storage Extensions	---	5722-SS1 Option 18	1500	5103	S
OptiConnect for OS/400	---	5722-SS1 Option 23	1515		S
DB2 Symmetric Multiprocessing	---	5722-SS1 Option 26	1517		S
DB2 MultiSystem	---	5722-SS1 Option 27	1518		S
Print Services Facility (PSF/400) 1-45 IPM 1-100 IPM Any speed	---	5722-SS1 Option 36 Option 37 Option 38	 --- --- 1503	 5112 5113 5114	S
S/38 Utilities for AS/400[6]	---	5722-DB1	1521		S
HTTP Server for iSeries	---	5722-DG1	---		S
IBM Toolbox for Java	---	5722-JC1	---		S

Operating system and base products	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2] V5R1	Keyed Stamped Media[9]	Software subscription or maintenance[8]
IBM Developer Kit for Java	---	5722-JV1	---		S
DB2 Query Manager and SQL Development Kit for iSeries[6, 7]	---	5722-ST1	1011	5050	S
iSeries Integration for Windows Server	---	5722-WSV	---		S

OS/400 complementary database software	Skip ship[2]	Product identifier	HIPO feature (5372-IS5)[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
DCE Base Services		5769-DC1	1023		S
DCE DES Library Routines		5769-DC3	1024		S
DB2 Universal Database Extenders for iSeries V7.2	---	5722-DE1	---	5050	S
DB2 DataPropagator for iSeries Version 7.1[6] (V5R1)	P	5769-DP3	1005	5050	S
QMF for Windows for iSeries	V5R1	5697-G24	---		S
DB2 Table Editor for iSeries	V5R1	5697-G84	---		S
DB2 Web Query Tool	V5R1	5697-G85	---		S
DB2 Intelligent Miner for Data V6.1	V5R1	5733-IM3	---		S
iSeries ODBC Driver for Linux	---	5733-LO1	---		
DB2 OLAP Server for iSeries V7.1	---	5686-OLP	---		
Query for iSeries[6, 7]	---	5722-QU1	1009	5050	S
Electronic Service Agent for iSeries		5798-RZG	---		
System Openness Includes	---	5722-SS1 Option 13	---		S
NetWare Enhanced Integration	---	5722-SS1 Option 25	---		S
Portable Application Solution Environment	---	5722-SS1 Option 33	1519		S
TCP/IP Connectivity Utilities for iSeries	---	5722-TC1	---		S
Client Access Express - Windows/iSeries Access for Windows	---	5722-XE1	---		S
iSeries Access Family[6,7]	---	5722-XW1	1012	5050	S

Networking products	Skip ship[2]	Product identifier	HIPO feature[2] (5372-IS5)	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Cryptographic Access Provider 56-bit[6] (V5R1)	---	5722-AC2	1016		S
Cryptographic Access Provider 128-bit[6]	---	5722-AC3	1017		S
MQSeries for iSeries (V5.2)[6]	P	5733-A38	---	-	S
iSeries Client Encryption (56-bit)[6] (V5R1)	---	5722-CE2	1018		S
iSeries Client Encryption (128-bit)[6]	---	5722-CE3	1019		S
Communications Utilities for iSeries[6]	---	5722-CM1	1003	5050	S
Cryptographic Support for AS/400[6]	---	5722-CR1	1520		S
DCE Base Services for AS/400[6]	P	5769-DC1	1023		S
DCE DES Library Routines for AS/400[6]	P	5769-DC3	1024		S
Communications Server for Windows NT	V5R1	5639-F25	---		
MQSeries Integrator for iSeries (V5R1)	---	5697-F49	---		S
iSeries Access for Windows	---	5722-XE1	---		S

WebSphere and on demand business products	Skip ship[2]	Product identifier	HIPO features[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
WebSphere Standard Edition[6] (V5R1)	P	5733-AS3	---		S
Connect for iSeries (V5R1)	P	5733-B2B	---		S
WebSphere Advanced Edition V3.5[6]	P	5733-WA3	6002		S
WebSphere Advanced Edition V4.0.1[6]	---	5733-WA4	6000		S
WebSphere Advanced Edition Single Server V4.0.1	---	5733-WS4	---		S

Systems management products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Backup Recovery and Media Services for iSeries[6] Network Feature Advanced Feature	--- ---	5722-BR1	1002 1506 1507	5050 5101 5102	S
Advanced Job Scheduler for iSeries[6]	---	5722-JS1	1007	5050	S
Tivoli Management Agent		1TME-LCF	---		---
Managed System Services for iSeries[6]	---	5722-MG1	1030		S
Performance Tools for iSeries[6,7] Manager Feature Agent Feature	---	5722-PT1 Option 1 Option2	1008 1508 1509	5050 5101 5102	S
Content Manager OnDemand for iSeries[6] PDF Indexer Feature Web Enablement Kit Feature	---	5722-RD1 Option 12 Option 11	1010 1510 1511		S
System Manager for iSeries[6]	---	5722-SM1	1032		S

Application development products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
CICS Transaction Server for iSeries[6]	---	5722-DFH	1025		S
Lotus Domino for iSeries		5733-LD6	---		S
Lotus Domino for iSeries		5769-LNT	---		S
QuickPlace for iSeries		5733-LQP	---		
Application Program Driver	P	5722-PD1	1031		S
WebSphere Payment Manager for iSeries (V5R1)	P	5733-PY2	---		S
Visualage Generator Server for iSeries	P	5769-VG1	1033		S
WebSphere Commerce Suite, Pro Edition for AS/400, Version 4.1	P	5798-WC4	-		S
WebSphere Commerce Suite, Pro Edition for iSeries, Version 5.1	P	5798-WC5	---		S
WebSphere Development Studio (Toolset)	---	5722-WDS	1015	5050	S
ILE COBOL for iSeries[6]	---	Options 41-45			
ILE RPG for iSeries[6]	---	Options 31-35			
ILE C++ for AS/400	---	Options 52, 54			
ILE C for AS/400[6]	---	Options 51, 53			
Application Development ToolSet[6]	---	Option 21			
Application Development Manager	---	Option 22	1543		
Application Dictionary Services	---	Option 23	1544		
XML Toolkit for iSeries		5733-XT1	---		S

Office support and printing products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Advanced Function Printing Utilities for AS/400[6]	---	5722-AF1	1001	5050	S
AFP PrintSuite for AS/400[6] APU Advanced Print Utility PPFA Page Printer Formatting Aid AF3 SAP R3 AFP Print	P	5798-AF3 Option 1	- ---	5101	M
Advanced DBCS Printer Support for AS/400[6]	---	5722-AP1	1014	5050	S
AFP Font Collect ion for Workstation and OS/400		5648-B45	---		
Dictionaries and Linguistic Tools for iSeries[6]	P	5769-DL1	1026		S
Business Graphics Utility for AS/400[6]	---	5722-DS1	1027		S
Facsimile Support for iSeries	---	5798-FAX	-		S
Advanced Function Printing Fonts for AS/400[6]	P	5769-FNT	-		S

Office support and printing products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Font Options		Options 1-15	1520-1534		
Advanced Function Printing DBCS Fonts for AS/400[6†] Font Options	P	5769-FN1	- 1535-1539		S
Domino Fax for iSeries		5733-FXD	---		S
Infoprint Designer for iSeries	---	5733-ID1	6003		S
Infoprint Server for iSeries	---	5722-IP1	1006	5050	S
Content Manager for iSeries Object Server Advanced Workflow	P	5722-VI1 Option 1 Option 4	1034 -- --		S

Additional and packaged products	Skip ship[2]	Product identifier	HIPO feature[2]	Keyed Stamped Media[9]	Software subscription or maintenance[8]
Lotus Enterprise Integrator for iSeries[6]	P	5769-LNP	---		S
Lotus Domino Enterprise Server for iSeries	P	5769-LNT	6001		S
CISC to RISC Upgrade Kit		5798-TBU	---		
ValuPak for V5R1: 5722-SS1: OS/400 5722-SS1: 1-45 ipm feature 5722-XW1: Client Access Family/iSeries Access 5722-QU1: Query 400 5722-ST1: DB2/400 Query Manager and SQL Development Kit 5722-PT1: Performance Tools (Manager feature)		5722-VP1	---		

12.10 Notes for Version 5 software tables

Note 1	V5 is supported on the following AS/400e RISC models *only*. See the overview table in the model chapters for the *minimum* OS/400 release to support each model. ► 9401-150 (V5R1 does not support 5649-*nnn* products. 5722-*nnn* programs in group P05 support the 9401-150.) 9402/4-4xx (V5R1 only) ► 9404/6-5xx (V5R1 only) ► 9402/4/6-620, 630, 640, S20, S30, S40 ► 9406-170 ► 9402/4/6-720, 730, 740 ► 9406-250 ► 9402/4/6-270 ► 9402/4/6-800, 810, 820, 825, 830, 840, 870, 890 ► 9406-SB2/SB3 ► 9405-520 (V5R3 or later) ► 9406-520, 550, 570, 595 (V5R3 or later) ► 9407 515, 9406 525 (V5R4 or later) V5 *is not* supported on any AS/400 CISC models.

Note 2

Products marked with a check mark (✓) in the Skip ship column are unchanged from a previous version or release and are referred to as being “skip shipped”. These products retain their original product identifiers.

The HIPO feature column provides the feature codes that are included in the HIPO (5732-IS5) when a specific product or feature is ordered to be preloaded in the factory. If you order a software upgrade, or if the initial order does not include the #5000 software preload code, the order does not include the HIPO (5732-IS5).

With the introduction of Keyed Stamped Media in V4R4, all products the client ordered are no longer “stacked” on a single set of CDs. The client receives a grouping of CDs. With V5R2, this includes:

- Licensed Internal Code (I_Base_01)
- OS/400 Base Operating System CD (B29xx_01)
- OS/400 No Charge Options (B29xx_02 to B29xx_06)
- No charge License Programs (B29xx_07 to B29xx_09)
- Set of Keyed Stamped Media CDs (L29xx_01 to L29xx_02)
- Individual CD for each product ordered that is not part of Keyed Stamped Media (F29xx_01 and higher)
- Cumulative PTF CDs (Cydddvrm_01)
- Secondary Languages if ordered (N29xx_01)
- iSeries Information Center (SK3T-4091)

Note 4

Alternate IPL device feature codes

The following feature codes are hardware features. They are used to specify which storage device is to be used as an alternate IPL device. They are not required when ordering Models 800, 810, 825, 870, and 890.

- #5502 840 MB Mini ¼-inch Cartridge Tape Unit (not 250, 270, 520, 550, 570, 595, 720, 730, 740, 800, 810, 820, 825, 830, 840, 870, 890)
- #5503 9347 Tape Unit (not 250, 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890)
- #5504 3490 E01/E11 Tape Units*
- #5505 2440 Tape Unit (not 250, 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890)
- #5506 4 GB ¼-inch Cartridge Tape Unit*
- #5507 9348 Tape Unit*
- #5508 3422 Tape Subsystem (not 250, 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890)
- #5509 3430 Tape Subsystem (not 250, 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890)
- #5511 3480 Tape Subsystem*
- #5512 3490 C10/C11/C22 Tape Unit*
- #5513 3490 Tape Subsystem*
- #5514 7208 8 mm Tape Drive and Internal 8 mm Tape Unit*
- #5515 3570 Tape Subsystem*
- #5516 1.2 GB ¼-inch Cartridge Tape Unit
- #5517 2.5 GB ¼-inch Cartridge Tape Unit*
- #5518 13 GB ¼-inch Cartridge Tape Unit
- #5519 3590 Tape System*
- #5521*
- #5531 16 GB or 30 GB ¼-inch Cartridge Tape Unit*
- #5536 25 GB or 50 GB ¼-inch Cartridge Tape Unit*
- #5537 358x Ultrium*
- #5538 DVD-RAM*
- #5599 No Save/Restore Device*

Refer to Chapter 8, “Storage and media for IBM System i family models” on page 359, and the internal tape unit sections of each processor’s chapter to see which tapes are supported for that model.

***:** Those features marked with an asterisk (*) – #5504, #5506, #5507, #5511, #5512, #5513, #5514, #5515, #5517, #5519, #5521, #5531, #5536, #5537, #5538, and #5599 – were withdrawn from marketing as of 1 December 2005.

Note 5

Maximum number of chargeable users by product

		Maximum number of users						
		P05	**P10**	**P20**	**P30**	**P40**	**P50**	**P60**
5722-DFH	CICS for iSeries	450	450	450	450	450	450	450
5722-RD1	OnDemand for iSeries - concurrent user	--	--	No maximum limit			--	--
5769-VI1	Content Manager for iSeries	--	--	No maximum limit			--	--

The number of individual user licenses that, when priced, equate the tier (based on processor) pricing and are the maximum that can be used in a conversion for user based to tier (processor) pricing in that tier:

5722-XW1	iSeries Access Family	10	40	100	150	200	250	300

Note 6	These products are licensed using the International Program License Agreement (IPLA). For Version 4 level software, the remaining V4 licensed programs are licensed under the International Customer Agreement (ICA) or IBM Agreement for Programs (IAP) terms. Three documents, *Proof of Entitlement (POE)*, *License Information Document (LID)*, and *International Program License Agreement*, are provided with IPLA software as proof of a valid license. Some IPLA software can be sold to another party. **See the important note listed below.** You must notify the purchaser of the program's terms and provide the POE, LID, and IPLA documents to the purchaser. IBM licenses the purchaser when that party accepts the program's license terms by initial use of the program. The seller's license is terminated at this time. **Important:** **For Version 4 and OS/400 V5R1 AND V5R2 products purchased prior to 11 June 2004, the capability to transfer those products outside the enterprise will continue to require a hardcopy POE. For V5R1 and V5R2 software releases purchased after 11 June 2004, an ePoE is available. When a product is upgraded, destroy the original IBM-printed POE.** **Starting with i5/OS V5R3, these programs are not transferable to another party outside of the enterprise and its subsidiaries (where a subsidiary is more than 50% owned by the enterprise).** When ordering upgrades to software licensed under the IPLA, such as IBM i (i5/OS, OS/400), a copy of the POE should be provided by the client to validate the license to the software.
Note 7	The following products are also offered in software packages: **5722-VP1 ValuPak for OS/400 (not available on OS/400 V4R5) includes:** 5722-SS1 Operating System/400 5722-PSF 1-45 ipm Option 36 of OS/400 Provides this number of users 5722-XW1 iSeries Access Family : P05/10 P10/20 P20/50 P30/70 P40/125 P50/150 5722-QU1 Query/400 P60/175 5722-ST1 DB2/400 Query Manager and SQL Development Kit 57xx-PT1 Performance Tools (Option 1 Manager feature)

Note 8	New versions and updates to these products are covered by one of the following three methods: ► iSeries Software Maintenance (SWMA) ► Passport Advantage (PA) Software Maintenance ► Product Code = Separate Maintenance by individual product codes SWMA indicates that the product is on the Eligible Products List for Software Subscription. Clients must purchase the Software Maintenance Subscription when they move to Version 4 or later to upgrade to new versions or releases. Software Subscription is available at prepaid options of one year or three years. For some products, Software Maintenance is covered by Passport Advantage. To register products via the Passport Advantage Web page and for more information, go to the following Web address: http://www-142.ibm.com/software/sw-lotus/services/cwepassport.nsf/wdocs/softwaremaintenance The third method is to purchase an individual product code that covers an individual product. For example, clients who purchase VE Enterprise Workload Manager for i5/OS V2.1 (5733-EWA) must also purchase 5662-EWA to have a 3-year registration for the product. The price of Software Subscription is the same regardless of whether the software has been licensed to a system. Most iSeries software delivered by HIPO is covered by Software Subscription. Clients who do not have a valid Software Maintenance are not entitled to new versions or releases and must either re-license the software or purchase the After License For iSeries license to join if they want to upgrade to a new version or release. You can find a current list of program products covered by Software Subscription on the Web at: http://www-1.ibm.com/servers/eserver/iseries/sftsol/subscript2.htm Software Subscription is ordered as a unique product/model combination depending upon the method of payment: ► 5733-SW1 Software Subscription for AS/400 1-Year Prepay. *Withdrawn from marketing.* ► 5733-SW3 Software Subscription for AS/400 3-Year Prepay. *Withdrawn from marketing.* ► 5733-CA1 After License for iSeries For the prepayment options and the Subscription After License, specify the corresponding processor-based feature for 5733-SWx. “M” indicates Software Maintenance, which differs from Software Subscription. It requires maintenance to be purchased separately based on an individual product. Some products that were covered by Software Subscription are now covered by Software Maintenance. Clients who have these products covered under an existing Software Subscription are still eligible for upgrades under Software Subscription, but need to carefully plan their requirements when that Software Subscription expires. You can find a list of program products covered by Software Maintenance and their Maintenance product codes on the Web address listed previous in this note.
Note 9	A number (representing the Installation ID of the product) in the Keyed Stamped Media column indicates that the product is one of those provided in V5R1 on iSeries Keyed Stamped Media and shipped with OS/400. This number indicates on demand delivery of these products and features and allows a 70-day evaluation period for any of the provided products or features. To use the software distributed on the Keyed Stamped Media after the 70-day evaluation period, order a Software License Key. New Software License Keys are also required when the version, release, or modification level of the software changes. If the software is transferred to a different system, a new software key is required. Some software is keyed based on the Software group, and a new software key must be obtained when the Software group changes. When a Software License Key is ordered, retain the *Software License Key Sheet* that IBM provides. If a Keyed Stamped Media product or feature is to be upgraded, the current Software License Key Sheet for the product must be provided as proof of license.
Note 10	DB2 OLAP Server for iSeries V8.1 (5724-B78) was withdrawn from IBM marketing as of 09 November 2005. Connect for iSeries V2 (5733-CO2) was withdrawn from IBM marketing as of 13 December 2005. WebSphere Application Server Version 5.1 Developer Edition for iSeries (5724-D18) was withdrawn from IBM marketing as of 14 September 2005. The replacement product is WebSphere Application Server Version 6.0 Developer Edition for iSeries (5724-H89).

12.11 i5/OS and OS/400 software pricing groups

OS/400 software is priced by software groups. In this section, we show the software group for each iSeries and AS/400e processor for Version 5 and Version 4. Use the Work with License

Information (WRKLICINF) command to display the software group of the installed AS/400e or iSeries server.

For information about software groups for earlier systems, refer to *IBM eServer AS/400e RISC System Builder Version 3 Release 6 - Version 5 Release 2*, REDP-0342.

12.11.1 i5/OS and OS/400 Version 5 software groups

In the following table, we show the software group for each IBM System i processor supported by i5/OS Version 5 Release 4 or Release 3, or OS/400 Version 5 Release 2 or Release 1.

Hardware models	Processor feature	Interactive feature or Server/Edition feature	Version 5 group
515	#8327 (1 proc) / #8330 (2 proc)	#4901(1) / #6010, #6011, #6018; #4903 (2) / #6021, #6028	P05
520	#8325	#0970 / #7140, #7141, #7142	P05
	#8325	#0975 / #7350	P05
	#8327	#0906 / #7366, #7373, #7374, #7734, #7735, #7784	P10
	#8327	#0970 / #7143, #7144, #7148, #7152	P10
	#8327	#0975 / #7352	P10
	#8330	#0906 / #7375, #7736, #7785	P20
	#8950	#0900 / #7450, #7390, #7391, #7393	P05
	#8951	#0901 / #7392, #7394, #7451	P10
	#8952	#0902 / #7458, #7459, #7541, #7552	P10
	#8953	#0903 / #7452, #7453, #7553	P10
	#8954	#0904 / #7454, #7455, #7553	P20
	#8955	#0905 / #7456, #7457, #7455	P20
	#8972	#8972 / #7395, #7396	P10
525	#8330(1/2)	#0909 / #7791, #7792, #7793, #6910 CBU, #6913, #6914	P10
550	#8958	#0915 / #7462, #7463, #7530, #7531, #7532, #7533, #7534, #7558	P20
	#8312	#0910 / #7154, #7155, #7551, #7629, #7630, #7631, #7632, #7640, #7641	P20
570	#8961	#0919 / #7488, #7489	P30
	#8961	#0920 / #7469, #7470	P30
	#8971	#0921 / #7494, #7495, #7560	P30
	#8971	#0922 / #7471, #7472, #7561	P40
	#8971	#0924 / #7473, #7474, #7562	P40
	#8971	#0926 / #7475, #7476, #7563	P40
	#8971	#0928 / #7570	P30
	#8971	#0930 / #7490, #7491, #7559	P30
	#8338	#0934 / #7747, #7757, #7763	P30
	#8338	#0935 / #7748, #7758, #7764	P40
	#8338	#0936 / #7749, #7759, #7765	P40
	#8338	#0937 / #7760	P30

Hardware models	Processor feature	Interactive feature or Server/Edition feature	Version 5 group
595	#8981	#0946 / #7496, #7497	P50
	#8981	#0947 / #7498, #7499	P50
	#8981	#0952/ #7984, #7985	P60
	#8966	#0940 / #7480, #7481, #7580	P50 (1.9 GHz)
	#8966	#0941/ #7482, #7483, #7581	P50 (1.9 GHz)
	#8966	#0943 / #7486, #7487, #7583	P60 (1.9 GHz)
	#8966	#0944 / #7590	P50 (1.9 GHz)
	8973	#0940 / #7900, #7901, #7580	P50 (1.9 GHz)
	8973	#0942 / #7903, #7904, #7581	P50 (1.9 GHz)
	8973	#0943 / #7906, #7907, #7583	P60 (1.9 GHz)
	8973	#0957 / #7910 (CBU Std), #7911 (CBU)	P50 (1.9 GHz)
	8973	#0944 / #7912 (CBU Std), #7909 (CBU)	P50 (1.9 GHz)
	8968	#0953 / #5870, #5890	P50 (2.3 GHz)
	8968	#0954 / #5871, #5891	P50 (2.3 GHz)
	8968	#0955 / #5872, #5892	P60 (2.3 GHz)
	8968	#0958 / #5875 (CBU Std), #5895(CBU)	P50 (2.3 GHz)
	8968	#0959 / #5876 (CBU Std), #5896 (CBU)	P50 (2.3 GHz)
720	#2061	#1500	P10
		#1501, #1502	P20
	#2062	#1500	P10
		#1501, #1502, #1503	P20
	#2063	#1500	P20
		#1502, #1503, #1504	P30
	#2064	#1500	P20
		#1502, #1503, #1504, #1505	P30
730	#2065	#1506	P20
		#1507, #1508, #1509	P30
	#2066	#1506	P20
		#1507, #1508, #1509, #1510	P30
	#2067	#1506	P30
		#1508, #1509, #1510, #1511	P40
	#2068	#1506	P30
		#1508, #1509, #1510, #1511	P40
740	#2069	#1510, #1511, #1512	P50
		#1514	P40
	#2070	#1510, #1511, #1512, #1513	P50
		#1514	P40
800	#2463	#7400	P05
	#2464	#7408	P10
810	#2465	#7404, #7406	P10
	#2466	#7407, #7408, #7409	P10
	#2467	#7410, #7411, #7412	P10
	#2469	#7428, #7429, #7430	P20

Hardware models	Processor feature	Interactive feature or Server/Edition feature	Version 5 group
820	#0150, #0151	-	P20
	#0152	-	P30
	#2395	#1521	P10
		#1522, #1523, #1524	P20
	#2396	#1522, #1523, #1524, #1525	P30
	#2397	#1521	P20
		#1522, #1523, #1524, #1525, #1526	P30
	#2398	#1521	P30
		#1522, #1523, #1524, #1525, #1526, #1527	P40
	#2425	-	P05
	#2426, #2427	-	P10
	#2435	#1521	P10
		#1522, #1523, #1524	P20
	#2436	#1521	P20
		#1522, #1523, #1524	P30
	#2437	#1521	P20
		#1522, #1523, #1524, #1526, #1527	P30
	#2438	#1521	P30
		#1522, #1523, #1524, #1525, #1526, #1527	P40
	#2456	-	P05
	#2457, #2458	-	P10
825	#2473, #2495	#7416, #7418, #7434, #7439	P30
830	#0153	-	P30
	#2349	#1531	P30
		#1532, #1533, #1534, #1535, #1536, #1537	P40
	#2400	#1531	P20
		#1532, #1533, #1534, #1535	P30
	#2402	#1531	P30
		#1532, #1533, #1534, #1535, #1536	P40
	#2403	#1531	P40
		#1532, #1533, #1534, #1535, #1536, #1537	P50

Hardware models	Processor feature	Interactive feature or Server/Edition feature	Version 5 group
840	#0158, #0159	-	P40
	#2352	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546	P50
	#2353	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547	P50
	#2354	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547, #1548	P50
	#2416	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546	P40
	#2417	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546	P50
	#2418	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546	P50
	#2419	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547	P50
	#2420	#1540	P40
	#2420	#1541, #1542, #1543, #1544, #1545, #1546, #1547	P50
	#2461	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547, #1548	P50
870	#2486	#7419, #7421, #7436	P40
	#2489	#7431, #7433, #7435	P40
	#2496	#7440	P40
890	#0197, #0198	-	P50
	#2487	#1576	P50
	#2487	#1577, #1578, #1579, #1581, #1583, #1585, #1587, #1588	P60
	#2488	#1576	P50
		#1577, #1578, #1579, #1581, #1583, #1585, #1587, #1588, #1591	P60
	#2497, #2498, #2499	#7422, #7424 #7425, #7427, #7437, #7438, #7441	P50
9411-100	9117-570	-	P30
	9119-595	-	P30

12.11.2 OS/400 Version 4 software groups

The following table shows the software group for each iSeries and AS/400e processor supported by OS/400 Version 4.

Hardware model	Processor feature	Interactive feature	Version 4 group
250	#2295, #2296	-	PPS
270	#2248	#1517	P05
	#2250	#1516, #1518	P10
	#2252	#1516, #1519	P10
	#2253	#1516, #1520	P20
	#2422, #2423	-	P05
	#2424	-	P10
	#2431	#1518	P10
	#2432	#1516, #1519	P10
	#2434	#1516, #1520	P20
	#2452, #2454	-	P05
720	#2061	#1500	P10
		#1501, #1502	P20
	#2062	#1500	P10
		#1501, #1502, #1503	P20
	#2063	#1500	P20
		#1502, #1503, #1504	P30
	#2064	#1500	P20
		#1502, #1503, #1504, #1505	P30
730	#2065	#1506	P20
		#1507, #1508, #1509	P30
	#2066	#1506	P20
		#1507, #1508, #1509, #1510	P30
	#2067	#1506	P30
		#1508, #1509, #1510, #1511	P40
	#2068	#1506	P30
		#1508, #1509, #1510, #1511	P40
740	#2069	#1510, #1511, #1512	P50
		#1514	P40
	#2070	#1510, #1511, #1512, #1513	P50
		#1514	P40
820	#2395	#1521	P10
		#1522, #1523, #1524	P20
	#2396	#1521	P20
		#1522, #1523, #1524, #1525	P30
	#2397	#1521	P20
		#1522, #1523, #1524, #1525, #1526	P30
	#2398	#1521	P30
		#1522, #1523, #1524, #1525, #1526, #1527	P30 or P40
	#2425	---	P05
	#2426, #2427	---	P10

Hardware model	Processor feature	Interactive feature	Version 4 group
830	#2400	#1531	P20
		#1532, #1533, #1534, #1535, #1536, #1537	P30
	#2402	#1531	P30
		#1532, #1533, #1534, #1535, #1536	P40
	#2403	#1531	P40
		#1532, #1533, #1534, #1535, #1536, #1537	P50
840	#2416	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547	P50
	#2417	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547	P50
	#2418	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547	P50
	#2419	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547	P50
	#2420	#1540	P40
		#1541, #1542, #1543, #1544, #1545, #1546, #1547	P50
SB2	#2315	-	P30
SB3	#2316, #2318	-	P40

12.12 Release-to-release software product mapping

The following table shows a list of System i software products, with the product number associated with each i5/OS and OS/400 release level. Use this information to understand how a particular software product is offered for a given i5/OS or OS/400 installed release.

The products are listed in sequential order by the software product's model number in the right-most column (the latest release of i5/OS). For example, 5722-SS1 is listed prior to 5722-TC1 and after 5733-CO2. V5R2 is the column used as a sorting reference.

An asterisk (*) in the column indicates the product is skip-shipped for that release. The dashes (---) indicate that the product was not offered for that release. The letters N/A indicate that the product is not supported for that release.

Refer to *IBM eServer AS/400e RISC System Builder Version 3 Release 6 - Version 5 Release 2*, REDP-0342, for a software product map for releases prior to OS/400 V4R2.

For a list of withdrawn software products and their recommended replacements, as well as further information, refer to the iSeries Planning Web page at:

http://www.ibm.com/servers/eserver/iseries/support/planning

V4R2	V4R3	V4R4	V4R5	V5R1	V5R2	V5R3	V5R4
---	---	---	---	---	5724-A18	*	N/A
5769-MQ2	*	*	5733-A38	*	*	P/N	P/N
---	---	---	5733-A47	*	N/A	N/A	N/A
---	---	5648-DO1	5648-DO1	5733-A61	5733-A78	5724-F68	5724-I20
---	---	5748-C54	*	5733-A61	5733-A78	5724-F68	5724-I20
---	5769-AC2	*	*	5722-AC2	N/A	N/A	N/A
---	5769-AC1	*	*	5722-AC3	5722-AC3	5722-AC3	N/A
5769-AF1	*	*	*	5722-AF1	5722-AF1	*	*
5798-AF3	*	*	*	*	*	N/A	N/A
5769-AP1	*	*	*	5722-AP1	5722-AP1	5722-AP1	*
---	---	5769-AS1	*	5733-AS3	5724-D06	5722-WE2	5722-WE2
---	---	---	---	---	5733-AZ1		
5769-BR1	*	*	*	5722-BR1	5722-BR1	5722-BR1	5722-BR1
---	---	---	---	---	5724-B08	5724-E66	N/A
---	---	---	---	---	5648-B45	*	*
---	---	---	5733-B2B	*	5733-CO2	*	N/A
5716-CP2*	5769-CP4	*	5648-C69	*	N/A	N/A	N/A
---	---	5769-CE1	*	N/A	N/A	N/A	N/A
---	---	5769-CE2	*	5722-CE2	N/A	N/A	N/A
---	---	5769-CE3	*	5722-CE3	5722-CE3	5722-CE3	N/A
5769-CF1	*	5769-CF1	*	N/A	N/A	N/A	N/A
5769-CM1	*	5769-CM1	*	5722-CM1	5722-CM1	5722-CM1	5722-CM1
5769-CP4	*	*	N/A	N/A	N/A	N/A	N/A
5769-CR1	*	5769-CR1	*	5722-CR1	5722-CR1	*	*
---	---	---	---	---	---	5733-CY1	5733-CY1
5769-DB1	*	5769-DB1	*	5722-DB1	5722-DB1	5722-DB1	---
---	5769-DC1	*	*	*	*	N/A	N/A
---	5769-DC3	*	*	*	*	N/A	N/A
---	---	---	---	---	---	5733-DIR	5733-DIR
---	---	---	---	---	---	5733-DR1	5733-DR1
---	---	---	---	5722-DE1	5722-DE1	5722-DE1	5722-DE1
5769-DFH	5769-DFH	5769-DFH	*	5722-DFH	5722-DFH	5722-DFH	5722-DFH
5716-DCT*	*	*	5769-DL1	*	*	N/A	N/A
5769-DP1	5769-DP2	*	5769-DP3	*	5722-DP4	*	*
5769-DS1	*	*	*	5722-DS1	5722-DS1	5722-DS1	5722-DS1
---	---	---	---	---	----	5648-E77	5648-E77
---	---	---	5648-E09	5733-A57	5733-E81	5724-F69	5724-I20
---	---	---	---	---	---	5733-EWA	5733-EWA
---	---	---	---	---	---	5733-EWM	5733-EWM
5798-TBY	*	*	*	5798-FAX	5798-FAX	*	*
---	---	---	---	---	5620-FIF	*	*
5769-FN1	*	*	*	*	*	*	*
5769-FNT	*	*	*	*	*	*	*
5769-FW1	*	5769-FW1	5769-FW1	N/A	N/A	N/A	N/A
---	---	5733-FXD	*	*	*	*	*
				5639-F25	5639-F25	*	*
---	---	---	---	5697-G14	N/A	N/A	N/A
---	---	---	---	5697-G23	N/A	N/A	N/A
---	---	---	---	5697-G24	*	5724-E86	5724-E86

V4R2	V4R3	V4R4	V4R5	V5R1	V5R2	V5R3	V5R4
---	---	---	---	5697-G84	*	*	N/A
---	---	---	---	---	5697-G85	*	N/A
---	---	---	---	5733-ID1	*	*	*
---	---	---	---	5733-IM3	*	N/A	N/A
---	---	---	---	---	5698-ISE	*	N/A
---	---	---	---	5722-IP1	5722-IP1	5722-IP1	*
---	---	---	---	---	5722-IWE	N/A	N/A
---	---	5798-JC1	*	*	*	N/A	N/A
5769-JS1	5769-JS1	*	5769-JS1	5722-JS1	5722-JS1	5722-JS1	5722-JS1
---	---	---	---	---	1TME-LCF	*	*
---	---	---	---	---	5733-LD6	N/A	N/A
---	---	---	---	---	5733-LE1		N/A
---	---	5769-LNP	*	*	P/N	P/N	P/N
---	---	5769-LNT	*	*	P/N	P/N	P/N
5769-MG1	*	*	*	5722-MG1	5722-MG1	5722-MG1	5722-MG1
5769-PD1	*	*	*	5722-PD1	*	*	N/A: For assistance, see http://www.softlanding.com
5769-PT1	*	5769-PT1	5769-PT1	5722-PT1	5722-PT1	5722-PT1	5722-PT1
---	---	5733-PY1	5733-PY2	*	5733-PY3	N/A	N/A
5716-QU1	5769-QU1	5769-QU1	5769-QU1	5722-QU1	5722-QU1	5722-QU1	5722-QU1
5769-RD1	*	5769-RD1	5769-RD1	5722-RD1	5722-RD1	P/N	P/N
N/A	N/A	N/A	N/A	N/A	N/A	5733-RDS	5733-RDS
5716-SM1	5769-SM1	5769-SM1	5769-SM1	5722-SM1	5722-SM1	5722-SM1	5722-SM1
5716-PM1	---	5769-PM1	*	5722-SS1	*	*	*
5769-SS1	*	*	*	5722-SS1	5722-SS1	5722-SS1	5722-SS1
5716-ST1	5769-ST1	5769-ST1	5769-ST1	5722-ST1	5722-ST1	5722-ST1	5722-ST1
5716-SV2	5769-SV3	*	*	N/A	N/A	N/A	N/A
---	5798-TBG	*	*	*	*	*	*
5716-VG1	*	*	5769-VG1	*	*	*	N/A
---	---	5733-A18	5769-VI1	5722-VI1	5722-VI1	P/N	P/N
---	5733-WA2	*	*	N/A	N/A	N/A	N/A
---	5733-WA3	*	*	*	5733-WA4	*	N/A
---	---	5798-WC4	*	*	N/A	N/A	N/A
---	---	5798-NC3	5798-WC5	*	N/A	N/A	N/A
5769-PW1	*	5769-PW1	5769-WDS	5722-WDS	5722-WDS	5722-WDS	5722-WDS
5769-CL3	*	5769-CL3	5769-WDS	5722-WDS	5722-WDS	5722-WDS	5722-WDS
5769-CX2	5769-CX2	5769-CX2	5769-WDS	5722-WDS	5722-WDS	5722-WDS	5722-WDS
5716-CX4*	*	*		Windows and CX5	5722-WDS	5722-WDS	5722-WDS
5769-CB1	*	*	5769-WDS	5722-WDS	5722-WDS	5722-WDS	5722-WDS
5716-CX5*	*	5769-CX5	5769-WDS	5722-WDS	5722-WDS	5722-WDS	5722-WDS
		5769-PW1	5769-WDS	5722-WDS	5722-WDS	5722-WDS	5722-WDS
5769-RG1	*	*	5769-WDS	5722-WDS	5722-WDS	5722-WDS	5722-WDS
---	---	---	---	---	5733-WS5	*	N/A
---	---	---	---	---	5733-XT1	5733-XT1	5733-XT1
5769-XW1	5769-XW1	5769-XW1	5769-XW1	5722-XW1	5722-XW1	5722-XW1	5722-XW1

13

HSL, 12X, SPCN, line cord, and communication cables for the System i family of models

In this chapter, we provide feature code descriptions for the high-speed link (HSL), 12X, System Power Connection Network (SPCN), dual line cords, and communication cables that are used with the System i5, eServer i5, and iSeries servers.

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13.1 HSL cables

Use the following tables as a reference for the HSL, 12X, and SPCN cables that are supported on the System i5, eServer i5, and iSeries servers. For more information, refer to the IBM System Hardware Information Center at:

http://publib.boulder.ibm.com/infocenter/systems/scope/hw/index.jsp

Refer to the following publications for an explanation of HSL configuration rules and placement considerations:

- *IBM eServer iSeries Migration: A Guide to Upgrades and Migrations to POWER Technology*, SG24-7200

  This book also contains configuration rules for eServer i5 Models and towers.
- *IBM eServer iSeries Migration: System Migration and Upgrades at V5R1 and V5R2*, SG24-6055

  This book also contains configuration rules for iSeries models and towers.
- *IBM eServer i5 and iSeries System Handbook i5/OS Version 5 Release 3 October 2005 - Draft*, GA19-5486
- *High-speed Link Loop Architecture for the IBM eServer iSeries Server: OS/400 Version 5 Release 2*, REDP-3652

Cable feature	520	525	550	570	595	570 (POWER6)	800 810	825	870/890
Copper									
#1307 1.75m Copper HSL-2 Cable	X[a]	X[a]	X	X	X	X		X	X
#1308 2.5m Copper HSL-2 Cable	X	X	X	X	X	X		X	X
#1460 3m Copper HSL Cable	X	X	X	X	X	X	X		
#1461 6m Copper HSL Cable	X	X	X	X	X	X	X		
#1474 6m HSL to HSL-2 Cable	X	X	X	X	X	X	X	X	X
#1475 10m HSL to HSL-2 Cable	X	X	X	X	X	X		X	X
#1481 1m HSL-2 Cable	X[a]	X[5a]	X[a]	X	X	X		X	
#1482 3.5m HSL-2 Cable	X	X	X	X	X	X	X[b]	X	X
#1483 10m HSL-2 Cable	X	X	X	X	X	X		X	X
#1485 15m HSL-2 Cable[c]	X	X	X	X	X	X		X	X
Fiber optic[d]									
#1470 6m Optical HSL Cable			X	X	X	X		X	X
#1471 30m Optical HSL Cable			X	X	X	X		X	X
#1472 100m Optical HSL Cable			X	X	X	X		X	X
#1473 250m Optical HSL Cable			X	X	X	X		X	X
12X									
#1829 0.6 Meter 12X Cable						X			
#1830 1.5 Meter 12X Cable						X			

Cable feature	520	525	550	570	595	570 (POWER6)	800 810	825	870/890
#1834 8.0 Meter 12X Cable						X			
#1840 3.0 Meter 12X Cable						X			
SPCN [e]									
#0369 100m Optical SPCN Cable [f]			X	X	X	X		X	X
#1463 2m SPCN Cable	X	X	X	X	X	X	X	X	X
#1464 6m SPCN Cable	X	X	X	X	X	X	X	X	X
#1465 15m SPCN Cable	X	X	X	X	X	X	X	X	X
#1466 30m SPCN Cable	X	X	X	X	X	X	X	X	X
#1468 250m Optical SPCN Cable [g]			X	X	X	X		X	X
#6001 Power Control Cable - 2M	X[h]	X[h]	X[h]	X	X	X			
#6006 SPCN Power Cable 3m	X	X	X	X	X	X			
#6007 Power Control Cable - 15M	X	X	X	X	X	X			
#6008 Power Control Cable - 6M	X	X	X	X	X	X			
#6029 Power Control Cable - 30M	X	X	X	X	X	X			

a. Cannot be plugged into a rack-mounted model system unit.
b. Maximum of one when in a cluster environment.
c. Use when a greater distance is required. Performance can be degraded.
d. A fiber optic cable requires a base or feature optical HSL port card in the system.
e. Fiber optic SPCN cables include two copper to fiber adapter, p/n 90H6827.
f. Cannot be directly attached to an SPCN port on a Model 550 or 570 system unit. Can be attached to SPCN ports of I/O tower/drawers.
g. Cannot be directly attached to an SPCN port on a Model 550, 570, or 595 system unit. Can be attached to SPCN ports of I/O tower/drawers.
h. Cannot be plugged into a rack mounted model.

Cable feature	#5074	#5079 #8079	IXA card	#5094 #9094	#5095 #0595	#5088 #0588	#5294 #8094	#5790	#5796
Copper									
#1307 1.75m Copper HSL-2 Cable				X	X[a]	X[a]	X	X	
#1308 2.5m Copper HSL-2 Cable				X	X	X	X	X	
#1460 3m Copper HSL Cable	X	X	X						
#1461 6m Copper HSL Cable	X	X	X						
#1462 15m Copper HSL Cable	X	X	X						
#1474 6m HSL to HSL-2 Cable	X	X	X	X	X	X	X	X	
#1475 10m HSL to HSL-2 Cable	X	X	X	X	X	X	X	X	
#1481 - 1 m HSL-2 Cable				X	X	X	X	X	
#1482 3.5m HSL-2 Cable				X	X	X	X	X	
#1483 10m HSL-2 Cable				X	X	X	X	X	
#1485 15m HSL-2 Cable				X	X	X	X	X	
Fiber optic[b]									

Cable feature	#5074	#5079 #8079	IXA card	#5094 #9094	#5095 #0595	#5088 #0588	#5294 #8094	#5790	#5796
#1470 6m Optical HSL Cable	X	X		X	X	X	X		
#1471 30m Optical HSL Cable	X	X		X	X	X	X		
#1472 100m Optical HSL Cable	X	X		X	X	X	X		
#1473 250m Optical HSL Cable	X	X		X	X	X	X		
12X									
#1829 0.6 Meter 12X Cable									X
#1830 1.5 Meter 12X Cable									X
#1834 8.0 Meter 12X Cable									X
#1840 3.0 Meter 12X Cable									X
SPCN[c, d]									
#1463 2m SPCN Cable	X	X	X	X	X	X	X	X	X
#1464 6m SPCN Cable	X	X	X	X	X	X	X	X	X
#1465 15m SPCN Cable	X	X	X	X	X	X	X	X	X
#1466 30m SPCN Cable	X	X	X	X	X	X	X	X	X
#1468 250m Optical SPCN Cable	X	X		X	X	X	X		
#0369 100m Optical SPCN Cable	X	X		X	X	X	X		
#6001 Power Control Cable - 2M	X	X	X	X[a]	X[a]	X[a]	X		
#6006 SPCN Power Cable 3m	X	X	X	X	X	X	X	X	X
#6007 Power Control Cable - 15M	X	X	X	X	X	X	X	X	X
#6008 Power Control Cable - 6M	X	X	X	X	X	X	X	X	X
#6029 Power Control Cable - 30M	X	X	X	X	X	X	X	X	X

a. Cannot be used on rack mounted towers.
b. Optical cable requires a base or feature optical HSL port card in the tower.
c. Fiber optic SPCN cables include two copper to fiber adapter, p/n 90H6827.
d. On Models 520, 550, 570, and 595, SPCN cabling must be a single closed loop across all I/O towers or drawers.

13.1.1 HSL cable feature descriptions

HSL cables	
#1307	**#1307 -1.75m Copper HSL-2 Cable** The #1307 -1.75m Copper HSL-2 Cable is used to connect HSL-2/RIO-G ports in towers and system units. Supported on Models 520, 550, 570, 570 (POWER6), and 590 Not supported in rack-mounted 520 or 550 system units Minimum operating system level: i5/OS V5R3 The #1307 is a Customer Install Feature.
#1308	**#1308 - 2.5m Copper HSL-2 Cable** The #1308 - 2.5m Copper HSL-2 Cable is used to connect HSL-2/RIO-G ports in towers and system units. Supported on Models 520, 550, 570, 570 (POWER6), and 595 Minimum operating system level: i5/OS V5R3 The #1308 is a Customer Install Feature.
#1460	**#1460 - 3.0m Copper HSL Cable** The #1460 - 3.0m HSL Cable is used to connect HSL ports in towers and system units. Some restrictions apply. On Models 520, 550, 570, 570 (POWER6), 595, 825, 870, and 890, this cable cannot be directly attached to any system HSL-2 adapter port. However, it can be used in between I/O expansion towers on the HSL loop that. A different HSL or HSL-2 adapter cable must be used to connect to the system's HSL adapter port. Supported on Models 270, 520, 550, 570, 570 (POWER6), 595, 800, 810, 825, 820, 830, 840, 870, and 890 Minimum operating system level: OS/400 V4R5 The #1460 is a Customer Install Feature.
#1461	**#1461 - 6.0m Copper HSL Cable** The #1461 - 6.0m HSL Cable is used to connect HSL ports in towers and system units. Some restrictions apply. On Models 520, 550, 570, 570 (POWER6), 595, 825, 870, and 890, this cable cannot be directly attached to any system HSL-2 adapter port. However, it can be used in between I/O expansion towers on the HSL loop that. A different HSL or HSL-2 adapter cable must be used to connect to the system's HSL adapter port. Supported on Models 270, 520, 550, 570, 570 (POWER6), 595, 800, 810, 820, 830, and 840 Minimum operating system level: OS/400 V4R5 The #1461 is a Customer Install Feature.
#1462	**#1462 - 15.0m Copper HSL Cable** The #1462 - 15.0m HSL Cable is used to connect HSL ports in towers and system units. Some restrictions apply. The #1462 cable cannot be attached to system port A1 of a Model 820 unless only a migration tower is connected. On Models 270, 800, and 810, the #1462 cable cannot be attached directly to any system port. It can be used to connect I/O expansion towers that are attached to those systems. On Models 520, 550, 570, 570 (POWER6), 595, 825, 870, and 890, the #1462 cable cannot be attached directly to any system port. It can be used to connect I/O expansion towers (HSL) that are attached to those systems via an HSL to HSL-2 adapter cable. Supported on Models 270, 520, 550, 570, 570 (POWER6), 595, 800, 810, 820, 830, and 840 Minimum operating system level: OS/400 V4R5 The #1462 is a Customer Install Feature.
#1470	**#1470 - 6.0m Optical HSL Cable** The #1470 - 6.0m HSL cable is used to connect optical HSL ports in towers and system units. Supported on Models 550, 570, 595, 825, 830, 840, 870, and 890 Minimum operating system level: OS/400 V5R1 The #1470 is a Customer Install Feature.
#1471	**#1471 - 30.0m Optical HSL Cable** The #1471 - 30.0m HSL cable is used to connect optical HSL ports in towers and system units. Supported on Models 550, 570, 595, 825, 830, 840, 870, and 890 Minimum operating system level: OS/400 V5R1 The #1471 is a Customer Install Feature.

#1472	**#1472 - 100.0m Optical HSL Cable** The #1472 - 100.0m HSL cable is used to connect optical HSL ports in towers and system units. Supported on Models 550, 570, 595, 825, 830, 840, 870, and 890 Minimum operating system level: OS/400 V5R1 The #1472 is a Customer Install Feature.
#1473	**#1473 - 250.0m Optical HSL Cable** The #1473 - 250.0m HSL cable is used to connect optical HSL ports in towers and system units. Supported on Models 550, 570, 595, 825, 830, 840, 870, and 890 Minimum operating system level: OS/400 V5R1 The #1473 is a Customer Install Feature.
#1474	**#1474 - 6m HSL to HSL-2 Cable** The #1474 - 6m HSL to HSL-2 Cable is used to connect HSL and HSL-2/RIO-G ports in towers and system units. Supported on Models 520, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, and 890 Minimum operating system level: i5/OS V5R3 The #1474 is a Customer Install Feature.
#1475	**#1475 - 10m HSL to HSL-2 Cable** The #1475 - 10m HSL to HSL-2 Cable is used to connect HSL and HSL-2/RIO-G ports in towers and system units. Supported on Models 520, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, and 890 Minimum operating system level: i5/OS V5R3 The #1475 is a Customer Install Feature.
#1481	**#1481 - 1.2m HSL-2 Cable** The #1481 - 1.2m HSL-2 Cable is used to connect HSL-2/RIO-G ports in towers and system units. Supported on Models 520, 550, 570, 570 (POWER6), and 595 Minimum operating system level: i5/OS V5R3 The #1481 is a Customer Install Feature.
#1482	**#1482 - 3.5m HSL-2 Cable** The #1482 - 3.5m HSL-2 Cable is used to connect HSL-2/RIO-G ports in towers and system units. Supported on Models 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, and 890 Minimum operating system level: i5/OS V5R3 The #1482 is a Customer Install Feature.
#1483	**#1483 - 10m HSL-2 Cable** The #1483 - 10m HSL-2 Cable is used to connect HSL-2/RIO-G ports in towers and system units. Supported on Models 520, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, and 890 Minimum operating system level: i5/OS V5R3 The #1483 is a Customer Install Feature.
#1485	**#1485 - 15.0m Copper HSL-2 Cable** The #1485 - 15m HSL-2 Cable is used to connect HSL-2/RIO-G ports in towers and system units. Some restrictions apply. On Models 800 and 810, this cable cannot be attached directly to any system port. However, it can be used in between I/O Expansion towers that are attached to those systems. Supported on Models 520, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, and 890 Minimum operating system level: i5/OS V5R3 The #1485 is a Customer Install Feature.
#1487	**#1487 - 3m HSL to HSL-2 Cable** The #1487 - 3m HSL/RIO to HSL-2/RIO-G Cable is used to connect a tower and system unit with an HSL/RIO port to a tower and system unit with an HSL-2/RIO-G port. Supported on Models 520, 550, 570, 570 (POWER6), 595, 800, 810, 825, 870, and 890 Minimum operating system level: i5/OS V5R3 The #1487 is a Customer Install Feature.

13.1.2 12X cable feature descriptions

HSL cables	
#1829	**#1829 0.6 Meter 12X Cable** The #1829 0.6 Meter 12X Cable is used to connect 12X ports in drawers and system units. Supported on Model 570 (POWER6). Because of the short length of the #1829, it cannot be used for attaching a 12X drawer to a system unit. It does not allow the system unit to be pulled out for service. The #1829 can be used to connect adjacent 12X I/O drawers in a rack. The #1829 is a Customer Install Feature.
#1830	**#1830 1.5 Meter 12X Cable** The #1830 1.5 Meter 12X Cable is used to connect 12X ports in drawers and system units. Supported on Model 570 (POWER6). Because of the short length of the #1830, it cannot be used for attaching a 12X drawer to a system unit. It does not allow the system unit to be pulled out for service. The #1830 can be used to connect adjacent 12X I/O drawers in a rack. The #1830 is a Customer Install Feature.
#1834	**#1834 8.0 Meter 12X Cable** The #1834 provides an 8.0 meter 12X cable that is used in a 12X loop. Supported on Model 570 (POWER6). The #1834 is a Customer Install Feature.
#1840	**#1840 3.0 Meter 12X Cable** The #1840 provides a 3.0 meter 12X cable that is used in a 12X loop. Supported on Model 570 (POWER6). The #1840 is a Customer Install Feature.

13.2 SPCN (power) cables

Use the following table as a reference for the power cords that are supported on the System i5, eServer i5, iSeries and AS/400e systems. For more information, use the following online resource.

http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/index.htm

SPCN cables	
#6001	**#6001 Power Control Cable - 2M** The #6001 is a 2m SPCN Power Control Cable. It can also be used for rack mounted systems, but is too short. We recommend that you use longer SPCN cables for rack mounted systems. The #6001 is a Customer Install Feature.
#6006	**#6006 Power Control Cable - 3M** The #6006 is a 3m SPCN Power Control Cable. The #6006 is also supported on Model 570 (POWER6). The #6006 is a Customer Install Feature.
#6007	**#6007 Power Control Cable - 15M** The #6007 is a 15m SPCN Power Control Cable. The #6007 is also supported on Model 570 (POWER6). The #6007 is a Customer Install Feature.
#6008	**#6008 Power Control Cable - 6M** The #6008 is a 6m SPCN Power Control Cable. The #6008 is also supported on Model 570 (POWER6). The #6008 is a Customer Install Feature.

#6029	**#6029 Power Control Cable - 30M** The #6029 is a 30m SPCN Power Control Cable. The #6029 is also supported on Model 570 (POWER6). The #6029 is a Customer Install Feature.
Special Power and Control Cables	
#1422	**#1422 PDU Line Cord** The #1422 PDU Line Cord is used from a rack-mounted device to a #5160, #5161, #5162, #5163, or #7188 Power Distribution Unit in that same rack. Supported on Models 520, 550, 570, 570 (POWER6), 595, 800, 810, 820, 825, 830, 840, 870, 890, and #0578, #0595, #7104 and #7188 expansion units Minimum operating system level: OS/400 V5R1 The #1422 is a Customer Install Feature.
#1827	**#1827 Serial-UPS Conversion Cable** The #1827 is a 0.14M adapter cable with a female 9-pin D-shell connector on each end. The #1827 converts the system unit system port 2 to an SPCN/uninterruptible power supply port, providing an additional port for uninterruptible power supply control. The mode of the port cannot be changed during runtime. A re-IPL is required to change the mode when the adapter cable is connected or disconnected. THe #1827 Serial-UPS Conversion Cable is required to provide uninterruptible power supply control and feedback information for the Models 520, 550, 570, and 570 (POWER6). This does not impact the ability of the uninterruptible power supply to provide power in case of an outage. Its presence enables the uninterruptible power supply for alerting the Model 520, 550, and 570 that it is under uninterruptible power supply power and advising the server of the amount of remaining uninterruptible power supply battery power. System i5 servers use a different physical port, not the J14 port, to attach the uninterruptible power supply communications control cable. The J14 port was used by previous iSeries servers. This applies to any uninterruptible power supply that must provide control information to the eServer i5 port. The #1827 Serial-UPS Conversion Cable attaches to one of the system ports on the back of Models 520, 550, and 570 and to the previously existing control cable provided with the uninterruptible power supply. Supported on Models 520, 550, 570, and 570 (POWER6). Minimum operating system level: The latest level of Model 520, 550, 570, and 570 (POWER6) Licensed Internal Code is required for full uninterruptible power supply communications capability.
#6458	**#6458 14-Ft Int 250V/10A Pwr Cd** The #6458 PDU Power Cord is used from a rack-mounted device to a #5160, #5161, #5162, #5163, or #7188 PDUs in the same rack. Supported with Models 515, 520, 525, 550, 570, 570 (POWER6), and 9411-100 and the 7310-CR2 rack mounted Hardware Management Console (HMC) Minimum operating system level: i5/OS V5R3
#6459	**#6459 12-Ft 250V/10A RA Pwr Cd** The #6459 is a 12-foot 250V/10A power cord that distributes power from a Power Distribution Unit to a drawer in an expansion tower/rack. The #6459 has an IEC320 C14 plug and a right-angle IEC320 C13 connector. Supported on Models 520, 525, 550, 570, 570 (POWER6), 595, and 9411-100.
#6654	**#6654 14-Ft 1PH/24-30A Pwr Cd** The #6654 is a 14-FT/4.3m 200-240V/24A locking power cord with a Type 12 plug that distributes power from a power source to a Power Distribution Unit. Supported on Models 515, 520, 525, 550, 570, 570 (POWER6), 595, and 9411-100.
#6655	**#6655 14-Ft 1PH/24-30A WR Pwr Cd** The #6655 is a 14-FT/4.3m 200-240V/24A water-resistant power cord with a Type 40 plug that distributes power from a power source to a Power Distribution Unit. Supported on Models 515, 520, 525, 550, 570, 570 (POWER6), 595, and 9411-100
#6671	**#6671 9Ft IEC 320 C13/C14 PDU Cord** This power cord is used from a racked device to a power distribution unit in that same rack. This cord is primarily intended for use with the smaller #0554 11U and #0555 25U racks. Supported on Models 515, 520, 525, 550, 570, 570 (POWER6), 595, and 9411-100

#6672	**#6672 5Ft IEC 320 C13/C14 PDU Cord** This power cord is used from a racked device to a Power Distribution Unit in that same rack. This cord is primarily intended for use with the smaller #0554 11U and #0555 25U racks. Use care before ordering this cord to ensure that it has sufficient length, especially when used with a drawer that slides out for concurrent maintenance service. Supported on Models 515, 520, 525, 550, 570, 570 (POWER6), 595, and 9411-100

13.3 Dual line cords

Use the following table as a reference for the dual line cords that are supported on System i5, eServer i5, or iSeries systems. For more Information use the following online resource:

http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/index.htm

Dual line cords	
#5105	**#5105 Dual Line Cords - I/O Tower** The #5105 Dual Line Cords - I/O Tower provides dual line cord capability for a #5079 and a top unit in an #8079 Optional Base 1.8 M I/O Rack or #8093 Optional 1.8 M I/O Rack. Two #14xx line cords must be ordered for each #5074 PCI Expansion Tower with a #5105 when a #5105 is ordered on an initial order of a #5074. When ordering a #5105 as an MES against an existing #5074, one additional #14xx line cord is required to be ordered (for a total of two line cords for a #5074). A #5074 mounted in a #0551 iSeries Rack is supported with the #5105. Convert any #5101 30 Disk Unit Expansion features installed in the #5074 to #5111 30 Disk Expansion with Dual Line Cords features. No parts are shipped. Supported on standalone #5074 or the top unit in a #8079 Minimum operating system level: OS/400 V5R1
#5106	**#5106 Dual Line Cords - #5079 Tower** The #5106 Dual Line Cords - #5079 Tower provides dual line cord capability for a single unit in a #5079 1.8 M I/O Tower. Two #14xx line cords must be ordered for each #5106 present, when a #5106 is ordered on an initial order of a #5079. When ordering a #5106 as an MES, against an existing #5079, one additional #14xx line cord is required to be ordered for each #5106 ordered. The IBM marketing configurator defaults a quantity of two #5106s, for each #5079 ordered, on a system that has dual line cords on the system unit. Convert any #5101 30 Disk Unit Expansion features installed in the #5079 to #5111 30 Disk Expansion with Dual Line Cords features. No parts are shipped. Minimum operating system level: OS/400 V5R1
#5114	**#5114 Dual Line Cords Tower** The #5114 Dual Line Cords Tower provides dual line cord capability for the #9094 Base PCI I/O Enclosure and the lower unit in an #8093 Optional 1.8 M I/O Rack/#8094 Optional 1.8 M I/O Rack. Two #14xx line cords must be ordered on an initial order or a model upgrade into a Model 890 from a non-Model 890. When ordering a #5114 as an MES, one additional #14x line cord is required to be ordered. One 840W power supply is shipped. The #5114 has country-specific or region-specific usage. Minimum operating system level: OS/400 V5R2
#5115	**#5115 Dual Line Cords Tower** The #5115 Dual Line Cords Tower is a dual line cord enabler for the upper unit in an #8094 Optional 1.8 M I/O Rack and for the #5094 PCI-X Expansion Tower. One 840W power supply is shipped. A second line cord must be ordered for each tower that is installing a #5115. Maximum: One #5115 per #5094 PCI-X Expansion Tower and one per top unit of an #8094 Optional 1.8 M I/O Rack Minimum operating system level: OS/400 V5R2 Supported on Models 520, 525, 550, 570, 570 (POWER6), 595, and 9411-100, and 870, 890, and #5094/#5294.
#5116	**#5116 Dual Line Cords - #5294** The #5116 Dual Line Cords - #5294 provides dual line cord capability for a single unit in a #5294 1.8m I/O Tower. Two line cords are required for each #5116 present. One 840W power supply is shipped. The IBM marketing configurator defaults a quantity of two #5116s for each #5294 ordered on a system that has dual line cords on the system unit. Minimum operating system level: OS/400 V5R2 Supported on Models 520, 525, 550, 570, 570 (POWER6), 595, and 9411-100, and #5294.

#5164	**#5164 Dual Power Cords - #8294/#9194** The #5164 provides dual line cord capability for the #9194 Base PCI-X Expansion Tower and the lower enclosure in the #8294 Optional Base 1.8m Rack. An additional line cord must be specified if #5164 is ordered on the #9194/#8294. When ordering a #5164 for an installed #9194/#8294, an additional line cord must also be ordered. The configurator defaults to a #5164 if the #9194/#8294 is ordered on a system that has dual line cords on the system unit. Plugging in the second line cord, even if to the same outlet, enables the ac power modules to be redundant. A #9194 Base PCI-X Expansion Tower or #8294 Optional Base 1.8m Rack is required. Initial order or MES supported Supported on Model 595 attached towers Minimum operating system level: i5/OS V5R3 The #5164 is an IBM Service Representative setup feature.
#5165	**#5165 Dual Power Cords - #8294** The #5165 provides dual line cord capability for the upper enclosure in the #8294 Optional Base 1.8m Rack. An additional line cord must be specified if the #5165 is ordered on the #8294. When ordering a #5165 for an installed #8294, an additional line cord must also be ordered. The configurator defaults to a #5165 if the #8294 is ordered on a system that has dual line cords on the system unit. Plugging in the second line cord, even if to the same outlet, enables the ac power modules to be redundant. A #8294 Optional Base 1.8m Rack is required. Initial order or MES Supported on Model 595 attached towers Minimum operating system level: i5/OS V5R3 The #5165 is an IBM Service Representative setup feature.

13.4 Communication cables

Use the following part numbers to order cables for the System i5, eServer i5, and iSeries models. The following part numbers might not be available in all countries or regions, or on all models, and can change.

Description	Length	Part number	Feature code
SPD communication cables non-enhanced			
RS232 Cable	6.1m (20 ft)	22F0149	#9022
RS232 Cable - Germany	6.1m (20 ft)	22F0150	#9022
RS232 Cable - Japan	6.1m (20 ft)	22F0151	#9022
RS232 Cable	15.2m (50 ft)	22F9348	#9836
RS232 Cable - Germany	15.2m (50 ft)	21F9953	#9836
RS232 Cable - Japan	15.2m (50 ft)	21F9349	#9836
RS366 Cable	6.1m (20 ft)	72X5643	#9840
RS366 Cable - Japan	6.1m (20 ft)	21F4415	#9840
SPD communication cables enhanced			
V.24 Cable	6.1m (20 ft)	22F0152	#9023
V.24 Cable - Germany	6.1m (20 ft)	22F0153	#9023
V.24 Cable - Japan	6.1m (20 ft)	22F0154	#9023
V.24 Cable	15.2m (50 ft)	21F9350	#9835
V.24 Cable - Germany	15.2m (50 ft)	21F9352	#9835
V.24 Cable - Japan	15.2m (50 ft)	21F9351	#9835
V.24 Cable	24.2m (80 ft)	74F1837	#9869
Other SPD communication cables			
V.35 Cable	6.1m (20 ft)	72X5641	#9020
V.35 Cable	15.2m (50 ft)	21F9357	#9838
V.35 Cable	24.4m (80 ft)	74F1839	#9870
X.21 Cable	6.1m (20 ft)	72X5640	#9021
X.21 Cable	15.2m (50 ft)	21F9356	#9839
2 Port Communication Cable	3m (10 ft)	21F9345	#9843

#2666 High-Speed Communications Adapter (SPD)			
RS449 Cable	6.1m (20 ft)	17G4000	#9882
RS449 Cable	24.4m (80 ft)	17G4001	#9883
RS449 Cable	45.7m (150 ft)	17G4002	#9884
V.35 Cable	6.1m (20 ft)	17G3991	#9879
V.35 Cable	24.4m (80 ft)	17G3992	#9880
X.21 Cable	6.1m (20 ft)	17G3987	#9885
PCI/SPD miscellaneous server cables			
BBU Cable	2.4m (8 ft)	86G7712	#5144
Diskette Cable	2.4m (8 ft)	46G3658	#9886
Diskette/Twinaxial Cable	2.4m (8 ft)	46G3585	#9887
Ethernet Cable	3.0m (10 ft)	86G7691	#9025
Token Ring Cable	2.4m (8 ft)	6339098	#9024
PCI Communication Cables for Models 150, 600, S10, 620, S20, 720, 250, 270, 820, 830, SB2, 840, SB3, and 890			
RS232 Cable	6.1m (20 ft)	44H7480	#0348
RS232 Cable - Germany	6.1m (20 ft)	44H7482	#0348
RS232 Cable - Japan	6.1m (20 ft)	44H7484	#0348
V.24 Cable	6.1m (20 ft)	44H7486	#0350
V.24 Cable	6.1m (20 ft)	44H7489	#0350
V.24 Cable	6.1m (20 ft)	44H7492	#0350
V.35 Cable	6.1m (20 ft)	44H7495	#0353
V.36 Cable	6.1m (20 ft)	44H7498	#0356
X.21 Cable	6.1m (20 ft)	44H7501	#0359
Client Access Console Cable	6.1m (20 ft)	44H7504	#0362
Operations Console Cable	6.1m (20 ft)	97H7557	#0367
Remote Control Panel Cable	6.1m (20 ft)	97H7591	#0381
PCI Communication Cables for Models 170, 600, S10, 620, S20, 720, 250, 270, 820, 830, SB2, 840, SB3, and 890			
RS232 Cable	15.2m (50 ft)	44H7481	#0349
RS232 Cable - Germany	15.2m (50 ft)	44H7483	#0349
RS232 Cable - Japan	15.2m (50 ft)	44H7485	#0349
V.24 Cable	15.2m (50 ft)	44H7487	#0351
V.24 Cable - Germany	15.2m (50 ft)	44H7490	#0351
V.24 Cable - Japan	15.2m (50 ft)	44H7493	#0351
V.24 Cable	24.4m (80 ft)	44H7488	#0352
V.24 Cable - Germany	24.4m (80 ft)	44H7491	#0352
V.24 Cable - Japan	24.4m (80 ft)	44H7494	#0352
V.24 Cable	24.4m (80 ft)	97H7386	#0365
V.24 Cable - Germany	24.4m (80 ft)	97H7387	#0365
V.24 Cable - Japan	24.4m (80 ft)	97H7388	#0365
V.35 Cable	15.2m (50 ft)	44H7496	#0354
V.35 Cable	24.4m (80 ft)	44H7497	#0355
V.36 Cable	15.2m (50 ft)	44H7499	#0357
V.36 Cable	45.7m (150 ft)	44H7500	#0358
X.21 Cable	15.2m (50 ft)	44H7502	#0360

SPD Communication Cables for Models 600, 620, 640, 650, S10, S20, S30, S40 and SB1			
RS232 Cable	6.1m (20 ft)	21H3764	#0330
RS232 Cable - Germany	6.1m (20 ft)	21H3765	#0330
RS232 Cable - Japan	6.1m (20 ft)	21H3766	#0330
RS232 Cable	15.2m (50 ft)	21H3767	#0331
RS232 Cable - Germany	15.2m (50 ft)	21H3768	#0331
RS232 Cable - Japan	15.2m (50 ft)	21H3769	#0331
V.24 Cable	6.1m (20 ft)	21H3770	#0332
V.24 Cable - Germany	6.1m (20 ft)	21H3771	#0332
V.24 Cable - Japan	6.1m (20 ft)	21H3772	#0332
V.24 Cable	15.2m (50 ft)	21H3773	#0333
V.24 Cable - Germany	15.2m (50 ft)	21H3774	#0333
V.24 Cable - Japan	15.2m (50 ft)	21H3775	#0333
V.24 Cable	24.4m (80 ft)	21H3776	#0334
V.24 Cable - Germany	24.4m (80 ft)	21H3777	#0334
V.24 Cable - Japan	24.4m (80 ft)	21H3778	#0334
V.35 Cable	6.1m (20 ft)	21H3787	#0335
V.35 Cable	15.2m (50 ft)	21H3788	#0336
V.35 Cable	45.7m (150 ft)	21H3789	#0337
V.36 Cable	6.1m (20 ft)	21H3783	#0341
V.36 Cable	6.1m (20 ft)	21H3792	#0338
V.36 Cable	15.2m (50 ft)	21H3785	#0339
X.21 Cable	24.4m (80 ft)	21H3786	#0340
X.21 Cable	15.2m (50 ft)	21H3779	#0342
Client Access Console Cable	6.1m (20 ft)	21H3782	#0344
Operations Console Cable	6.1m (20 ft)	97H7556	#0328
Remote Control Panel Cable	6.1m (20 ft)	97H7584	#0380
Client Access Console Cable	6m (20 ft)	46G0450	#9026
Client Access Console Cable	2.5m (8 ft)	46G0479	#9027
Modem (telephone) Cables for #9771 Base PCI Two-Line WAN with integrated modem, #2761 Integrated Analog Modem, and #4761 PCI Integrated Analog Modems			
Modem Cable - Africa	9.1m (30 ft)	39J5808	#1012
Modem Cable - Australia	9.1m (30 ft)	39J5813	#1019
Modem Cable - Austria	9.1m (30 ft)	39J5818	#1010
Modem Cable - Belgium	9.1m (30 ft)	39J5819	#1011
Modem Cable - Denmark	9.1m (30 ft)	39J5807	#1024
Modem Cable - Finland/Norway	9.1m (30 ft)	39J5815	#1021
Modem Cable - France	9.1m (30 ft)	39J5810	#1015
Modem Cable - Germany	9.1m (30 ft)	39J5811	#1016
Modem Cable - China (Hong Kong S.A.R.)/New Zealand	9.1m (30 ft)	39J5817	#1020
Modem Cable - Iceland/Sweden	9.1m (30 ft)	39J5812	#1018
Modem Cable - Israel	9.1m (30 ft)	21H4905	#1013
Modem Cable - Italy	9.1m (30 ft)	39J5809	#1014
Modem Cable - Netherlands	9.1m (30 ft)	39J5816	#1022
Modem Cable - Switzerland	9.1m (30 ft)	39J5806	#1023
Modem Cable - United Kingdom	9.1m (30 ft)	39J5817	#1017
Modem Cable - U.S./Canada	9.1m (30 ft)	42R5087	#1025

For a complete list of System i cables, see the iSeries Information Center Web sites at:

- For POWER6 technology systems

  http://publib.boulder.ibm.com/infocenter/systems/index.jsp

  - Search on “cables”.
  - In the left navigation area, expand **Systems hardware** → **System i information** → **Planning** and select **Plan for cables**.

- For POWER5 technology systems

  http://publib.boulder.ibm.com/infocenter/eserver/v1r3s/index.jsp

  Select **IBM Systems Hardware Information Center**. In the left navigation area expand **Planning** and select **Plan for cables**.

14

Withdrawals announced January 2007 through October 2007

In this chapter, we list the withdrawal announcements of software products, hardware features and model conversions from January 2007 through October 2007.

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14.1 Selected System i program features withdrawn

The following features of the indicated programs are withdrawn. While only the features are withdrawn, the programs remain available.

Program number	Feature name	Feature number	Effective date
5639-3CM	Conferencing/Server	0003	10 July 2007
5639-3CM	IP Presence 200 Client	0016	10 July 2007
5639-3CM	3ComIP Teleph Msg & Conf on DVD	0018	10 July 2007
5639-3CM	Audio Conferencing/Port Lic	0036	10 July 2007
5639-3CM	Audio Confer/Port Lic Blk 25	0037	10 July 2007
5722-WE2	V5.3 WebSphere Express 5.1	5901	10 July 2007

14.2 Products and features no longer marketed by IBM

When products and features are withdrawn from marketing, they are removed from this paper. The tables in this section identify such products.

Review the System i Upgrade Planning Web page for the latest information about supported hardware and withdrawn hardware. It also provides guidance in replacing the withdrawn hardware from the marketing hardware features:

http://www.ibm.com/servers/eserver/support/iseries/planning/upgrade/

You can find alternate solutions for features that are no longer supported at V5R3 and V5R4 (and earlier releases) on the Web at the following Upgrade planning pages:

- For V5R3

  http://www.ibm.com/servers/eserver/support/iseries/planning/upgrade/v5r3/index.html
- For V5R4

  http://www.ibm.com/servers/eserver/support/iseries/planning/upgrade/v5r4/index.html

14.2.1 Hardware no longer marketed by IBM

The following table lists the hardware that was withdrawn from marketing. It shows the hardware products and features with the withdrawal dates.

Feature	Description	Withdrawal date	Type	Models
#0554	#0554 System i 11U .6m Rack	1 April 2008	9405, 9406 System Unit Rack	515, 520 525, 550, 570, 570 (POWER6), 9411-100
#0627, #0628, #0648, #0649 #0650, #0651	AIX/Linux direct attach for #2780, #5703, #5737, #5583, #5778, and #5782 large cache disk controllers	9 October 2007	9406 570 (POWER6)	All POWER6 models
#0649 #0650, #0651, #0654	AIX/Linux direct attach for #5583, #5778, #5782, and #5800 large cache disk controllers	9 October 2007	9405, 9406	All POWER5 processors: 515, 520, 535, 550, 570, 595
#9844	Base PCI IOP	9 October 2007	9407, 9406	515, 525 Express, and CBU editions except support remains for 515 Express #6011
#1894	73.4 GB 10k rpm Disk Unit	13 July 2007	9405, 9406	520, 550, 570
#1895	146.8 GB 10k rpm Disk Unit	13 July 2007	9405, 9406	520, 550, 570
#6251	Slimline Doors-Primary Rack	13 July 2007	9406	595
#6252	Acoustic Doors-Primary Rack	13 July 2007	9406	595
#0496	Force i5/OS Preload	24 July 2007	9405, 9406, 9407	515, 520, 525, 550, 570, 595
#1268	141.12 GB 15k rpm Disk Unit	24 July 2007	9406	800, 810, 825, 870, 890
#5555	Mirror 70 GB Disk/ Controller Package	24 July 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890
#5556	Mirror 141 GB Disk/ Controller Package	24 July 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#7522	Quantity 150 of #1268	24 July 2007	9406	825, 870, 890
#1299	300 GB 10k rpm Disk Unit	24 October 2007 Feature is withdrawn for new orders only. Conversions to feature remain available.	9405, 9406	520, 525, 550, 570, 595
#4494	6 GB DDR-1 Main Storage	24 October 2007	9406	570
#7049	8/16 GB DDR-1 Main Storage	24 October 2007	9406	570
#7211	Quantity 150 of #1299	24 October 2007	9406	550, 570, 595
#0356	V.36 20-Ft PCI Cable	1 December 2007	9401, 9402, 9404, 9405, 9406, 9407, 9411	All
#0940	8/16W Server Feature 1x8966/73	1 December 2007	9406	595

Feature	Description	Withdrawal date	Type	Models
#0941	16/32W Server Feature 2x8966/73	1 December 2007 Feature is withdrawn for new orders only. Conversions to feature remain available.	9406	595
#0943	32/64W Server Feature 4x8966/73	1 December 2007 Feature is withdrawn for new orders only. Conversions to feature remain available.	9406	595
#0944	4/32W Server Feature 2x8966/73	1 December 2007 Feature is withdrawn for new orders only. Conversions to feature remain available.	9406	595
#0957	2/16W Server Feature 595 1x8973	1 December 2007	9406	595
#1398	4.3m 100V/10A Power Cord Brazil	1 December 2007	9405, 9406, 9411	100, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890
#1406	200V 16A 14-Ft TL Line Cord	1 December 2007	9405, 9406, 9411	All
#1410	200V 6-Ft Line Cord	1 December 2007	9405, 9406, 9411	100, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, SB2, SB3
#1411	200V 14-Ft Line Cord	1 December 2007	9405, 9406, 9411	100, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890, SB2, SB3
#1412	125V 6-Ft Line Cord	1 December 2007	9405, 9406, 9411	100, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840
#1414	200V 6-Ft Locking Line Cord	1 December 2007	9405, 9406, 9411	100, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, SB2, SB3
#1415	200V 6-Ft Watertight Line Cord	1 December 2007	9405, 9406, 9411	100, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, SB2, SB3
#1422	3m IEC 320 C13/14 PDU Cord	1 December 2007	9405, 9406, 9411	100, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890, SB2, SB3
#1440	4.3m 200V/10A Power Cord Denmark	1 December 2007	9405, 9406, 9411	100, 250, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, SB2, SB3
#1442	4.3m 200V/10A Power Cord Swiss	1 December 2007	9405, 9406, 9411	100, 250, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, SB2, SB3
#1443	4.3m 200V/10A Power Cord UK	1 December 2007	9405, 9406, 9411	100, 250, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, SB2, SB3
#1444	4.3m 200V/10A Power Cord Italy	1 December 2007	9405, 9406, 9411	100, 250, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, SB2, SB3

Feature	Description	Withdrawal date	Type	Models
#1445	4.3m 200V/10A Power Cord Israel	1 December 2007	9405, 9406, 9411	100, 250, 270, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, SB2, SB3
#1457	200V 6-Ft Upper Line Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890
#1458	200V 6-Ft Upper Locking Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890
#1468	250m Optical SPCN Cable	1 December 2007	9406	550, 570, 595, 825, 830, 840, 870, 890
#2887	HSL-2 Bus Adapter	1 December 2007	9406, 9411	100, 520, 525, 550, 570, 595, 825, 830, 840, 870, 890
#4319	#4319 35.16 GB 10k RPM Disk Unit	1 December 2007	9402, 9404, 9406	All
#6451	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6452	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6453	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6454	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6455	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6456	14-Ft 200-240V/12A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6461	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6462	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6463	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6464	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6465	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6466	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6467	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6495	9-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9407, 9411	100, 515, 520, 525, 550, 570, 595, 800, 810, 825, 870, 890
#6498	6-Ft 250V/15A Power Cord	1 December 2007	9405, 9406, 9407, 9411	100, 515, 520, 525, 550, 570
#6499	14-Ft 250V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6663	14-Ft 240V/15A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6664	7-Ft 200V PDU Power Cable	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6681	14-Ft 200-240V/10A Power Cord	1 December 2007	9405, 9406, 9411	100, 520, 525, 550, 570, 595
#6690	14-Ft 200-240V/15A Power Cord	1 December 2007	9405, 9406, 9407, 9411	100, 515, 520, 525, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890
#7194	Easy-Access Front Cover	1 December 2007	9406	550
#7373	HA Edition for #0906	1 December 2007	9406	520
#7374	HA Edition for #0906	1 December 2007	9406	520

Feature	Description	Withdrawal date	Type	Models
#7375	HA Edition for #0906	1 December 2007	9406	520
#7750	Easy-Access Front Cover	1 December 2007	9405, 9406	520
#7751	Easy-Access Front Cover	1 December 2007	9406	550
#7900	Standard Edition for #0940	1 December 2007	9406	595
#7901	Enterprise Edition for #0940. Feature is withdrawn for new orders only. Conversions to feature remain available.	1 December 2007	9406	595
#7903	Standard Edition for #0941. Feature is withdrawn for new orders only. Conversions to feature remain available.	1 December 2007	9406	595
#7904	Enterprise Edition for #0941. Feature is withdrawn for new orders only. Conversions to feature remain available.	1 December 2007	9406	595
#7906	Standard Edition for #0943. Feature is withdrawn for new orders only. Conversions to feature remain available.	1 December 2007	9406	595
#7907	Enterprise Edition for #0943. Feature is withdrawn for new orders only. Conversions to feature remain available.	1 December 2007	9406	595
#7909	CBU Edition for #0944. Feature is withdrawn for new orders only. Conversions to feature remain available.	1 December 2007	9406	595
#7910	CBU Std Edition for #0957	1 December 2007	9406	595
#7911	CBU Edition for #0957	1 December 2007	9406	595
#7912	CBU Std Edition for #0944. Feature is withdrawn for new orders only. Conversions to feature remain available.	1 December 2007	9406	595

The following table shows the hardware products and features with the withdrawal date and the recommended replacement.

Product or feature	Withdrawal date	Types	Models	Recommended replacement
#3641 T115 TFT 15-inch Color Display	13 July 2007	9405, 9406	520, 550, 570, 595	#3645 T117 TFT 17-inch Color Display
#5580-#2780 Controller with Auxiliary Write Cache	13 July 2007	9402, 9404, 9405, 9406, 9411	100, 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890	#5590 #2780 Controller with Auxiliary Write Cache
#5581-#2757 Controller with Auxiliary Write Cache	13 July 2007	9402, 9404, 9405, 9406, 9411	100, 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890	#5591 #2757 Controller with Auxiliary Write Cache

The following table lists replacement product information.

Product or feature	Recommended replacement
Models 810 and 825 to 5xx conversions	Model 5xx
#0940 8/16W Server Feature 1x8966/73	#0953 8/16W Server Feature 595 1x8968
#0941 16/32W Server Feature 2x8966/73	#0954 16/32W Server Feature 595 2x8968
#0943 32/64W Server Feature 4x8966/73	#0955 32/64W Server Feature 595 4x8968
#0944 4/32W Server Feature 2x8966/73	#0959 4/32W Server Feature 595 2x8968
#0957 2/16W Server Feature 1x8973	#0958 2/16W Server Feature 595 1x8968
#1398 4.3m 100V/10A Power Cord Brazil	#6471 9-Ft 125V/15A Power Cord
#1410 200V 6-Ft Line Cord	#6487 6-Ft 250V/15A Power Cord
#1411 200V 14-Ft Line Cord	#6469 14-Ft 250V/15A Power Cord
#1414 200V 6-Ft Locking Line Cord	#6497 6-Ft 250V/15A Power Cord
#1440 4.3m 200V/10A Power Cord Denmark	#6473 9-Ft 250V/10A Power Cord
#1442 4.3m 200V/10A Power Cord Swiss	#6476 9-Ft 250V/10A Power Cord
#1443 4.3m 200V/10A Power Cord UK	#6474 9-Ft 250V/13A Power Cord
#1444 4.3m 200V/10A Power Cord Italy	#6478 9-Ft 250V/16A Power Cord
#1445 4.3m 200V/10A Power Cord Israel	#6475 9-Ft 250V/16A Power Cord
#1457 200V 6-Ft Upper Line Cord	#1452 200V 14-Ft Line Cord
#1458 200V 6-Ft Upper Locking Cord	#1454 200V 12A 14-Ft TL Line Cord
#4494 16 GB DDR-1 Main Storage	#4491 16GB DDR-1 Main Storage
#7049 8/16 GB DDR-1 Main Storage	#4491 16GB DDR-1 Main Storage
#7373 HA Edition for #0906	#7710 CBU Edition for #0906
#7374 HA Edition for #0906	#7711 CBU Edition for #0906
#7375 HA Edition for #0906	#7721 CBU Edition for #0906
#7900 Standard Edition for #0940	#5870 Standard Edition for #0953
#7901 Enterprise Edition for #0940	#5890 Enterprise Edition for #0953
#7903 Standard Edition for #0941	#5871 Standard Edition for #0954
#7904 Enterprise Edition for #0941	#5891 Enterprise Edition for #0954
#7906 Standard Edition for #0943	#5872 Standard Edition for #0955
#7907 Enterprise Edition for #0943	#5892 Enterprise Edition for #0955
#7909 CBU Edition for #0944	#5896 CBU Edition for #0959
#7910 CBU Std Edition for #0957	#5875 CBU Std Edition for #0958
#7911 CBU Edition for #0957	#5895 CBU Edition for #0958
#7912 CBU Std Edition for #0944	#5876 CBU Std Edition for #0959
Model 870 and 890 to 570 and 595 conversions	Model 5xx

The following table lists the feature conversion withdrawals from 13 July 2007.

From feature	To feature	To machine type	To model
#9726	#0446	9406	550, 570, 595
#2780	#5580	9405, 9406, 9411	100, 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890
#2757	#5581	9405, 9406, 9411	100, 270, 520, 550, 570, 595, 800, 810, 820, 825, 830, 840, 870, 890

The following table lists the feature conversion withdrawals from 24 July 2007.

From feature	To feature	Machine type	To model
#7734	#7790	9402, 9404, 9406	All

The following table lists the feature conversion withdrawals from 24 October 2007.

From feature	To feature	Type	Model
#7199	#7194	9406	550
#7753	#7750	9405, 9406	520
#7754	7751	9406	550
#9793	#9493	9405, 9406, 9407	515, 520, 525,550, 570, 595
#9794	#9494	9406, 9407	515, 520, 525,550, 570, 595

The following table shows model conversions.

Machine type	From model	Withdrawal date	To model
9406	825	1 December 2007	System i POWER6 model 570
9406	870, 890	1 April 2008	System i POWER6 model 570

The following table lists the feature conversions withdrawals from 1 December 2007 by ascending order in the To feature column.

From feature	To feature	Type	Model
#5705	#0624	9406	525
#0946, #2486, #2487, #2488, #2489, #2497, #2498	#0940	9406	595
#0920, #0921, #0922, #0924, #0926, #0934, #0935, #0936, #0946, #0947, #2486, #2487, #2488, #2489, #2497, #2498	#0941	9406	595
#0922	#0943	9406	All
#0920, #0921, #0924, #0926, #0934, #0935, #0936, #0946, #0947, #0952, #2486, #2487, #2488, #2489, #2497, #2498	#0943	9406	595
#0928, #0937, #0938, #0939, #2486, #2488, #2489, #2497, #2498, #2499	#0944	9406	595

From feature	To feature	Type	Model
#2486, #2489, #2497, #2498	#0957	9406	595
#9749	#2849	9406	525
#4525	#4625	9406	525
#4530	#4630	9406	525
#4531	#4631	9406	525
#4533	#4633	9406	525
#4582	#4682	9406	525
#4583	#4683	9406	525
#4584	#4684	9406	525
#4585	#4685	9406	525
#4587	#4687	9406	525
#2473, #2495	#4910	9406	System i POWER6 model 570
#2473, #2495	#4911	9406	System i POWER6 model 570
#2473, #2495	#4912	9406	System i POWER6 model 570
#7416, #7418	#5460	9406	System i POWER6 model 570
#7416, #7418	#5461	9406	System i POWER6 model 570
#7416, #7418	#5462	9406	System i POWER6 model 570
#5705	#5702	9406	525
#2793	#6833	9406	System i POWER6 model 570
#2794	#6834	9406	System i POWER6 model 570
#7439	#7053	9406	System i POWER6 model 570
#7439	#7058	9406	System i POWER6 model 570
#7439	#7063	9406	System i POWER6 model 570
#7419, #7422, #7425, #7431, #7496	#7900	9406	595
#1576, #1577, #1578, #1579, #1581, #1583, #1585, #1587, #1588, #1591, #7421, #7424, #7427, #7433, #7497	#7901	9406	595
#7419, #7422, #7425, #7431, #7469, #7471, #7473, #7475, #7480, #7494, #7496, #7498, #7757, #7758, #7759	#7903	9406	595
#1576, #1577, #1578, #1579, #1581, #1583, #1585, #1587, #1588, #1591, #7421, #7424, #7427, #7433, #7470, #7472, #7474, #7476, #7481, #7495, #7497, #7499, #7747, #7748, #7749	#7904	9406	595
#7419, #7422, #7425, #7431, #7469, #7471, #7473, #7475, #7480, #7482, #7494, #7496, #7498, #7757, #7758, #7759, #7984	#7906	9406	595

From feature	To feature	Type	Model
#1576, #1577, #1578, #1579, #1581, #1583, #1585, #1587, #1588, #1591, #7421, #7424, #7427, #7433, #7470, #7472, #7474, #7476, #7481, #7483, #7495, #7497, #7499, #7747, #7748, #7749, #7985	#7907	9406	595
#1576, #1577, #1578, #1579, #1581, #1583, #1585, #1587, #1588, #1591, #7421, #7424, #7427, #7433, #7570, #7760, #7915, #7917	#7909	9406	595
#7419, #7422, #7425, #7431,	#7910	9406	595
#7421, #7424, #7427, #7433,	#7911	9406	595
#7419, #7422, #7425, #7431, #7914, #7916, #7918	#7912	9406	595

The following table lists the feature conversion withdrawals for 1 April 2008, by ascending order in the To feature column.

From feature	To feature	Type	Model
#5766	#0647	9406	525
#9943	#2843	9406	525
4586	4686	9406	525
#2489	#4910	9406	System i POWER6 model 570
#2486, #2489, #2496	#4911	9406	System i POWER6 model 570
#2486, #2487, #2488, #2489, #2496, #2497, #2498	#4912	9406	System i POWER6 model 570
8094	5294	9406	System i POWER6 model 570
#7431, #7433	#5460	9406	System i POWER6 model 570
#7419, #7421, #7431, #7433	#5461	9406	System i POWER6 model 570
#1576, #1577, #1578, #1579, #1581, #1583, #1585, #1587, #1588, #1591, #7419, #7421, #7422, #7424, #7425, #7427, #7431, #7433	#5462	9406	System i POWER6 model 570
#5766	#5736	9406	525
#7440	#7058	9406	System i POWER6 model 570
#7440	#7063	9406	System i POWER6 model 570
#9887	#9877	9406	525

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iSeries Model 800, 810, 825, 870, 890 processor features

In this chapter, we provide summary charts and diagrams, as well as identify the processor features that are associated with each iSeries 800, 810, 825, 870, and 890 server. You can find feature descriptions, including details about power and packaging and main memory, in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

Model	Processor	Announce date	General availability date	Withdrawn from marketing
800	#2463, #2464	28 January 2003	28 February 2003	01 October 2005
810	#2465	13 May 2003	23 May 2003	01 October 2005
	#2466, #2467, #2469	28 January 2003	28 February 2003	01 October 2005
825	#2473	28 January 2003	28 February 2003	01 October 2005
	#2495, #2496	5 September 2003	12 September 2003	01 October 2005
870	#2486	28 January 2003	28 February 2003	01 October 2005
	#2489	22 July 2003	30 July 2003	01 October 2005
890	#0197, #0198, #2487, #2488	14 May 2002	30 August 2002	07 May 2003
	#2497, #2498	28 January 2003	28 February 2003	01 October 2005
	#2499	5 September 2003	12 September 2003	01 October 2005

Note: The darker shaded areas in the following tables and figures represent the base configuration of the system. The capacities that are shown might require prerequisites. Some combinations of features are not valid.

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15.1 iSeries Model 800 overview

The following tables provide the minimum and maximum system capacities for the Model 800. To review the footnotes for these tables, see 15.6, “Notes for iSeries Models 800, 810, 825, 870, and 890 overview” on page 570.

	Model 800		
Processor feature	**#2463 and #2463**		**#2464**
Server feature	**#0863**	**#0864**	**#0865**
Relative system performance[1, 2]			
Processor CPW	300	300	950
5250 CPW			
Value and Standard[6a]	25	25	-
Advanced[6a]	-	-	50
Number/type/speed of processor	1/SStar/540 MHz	1/SStar/540 MHz	1/SStar/540 MHz
L2 Cache (MB)	0	0	2
Main storage (MB minimum to maximum)	256 to 8192	512 to 8192[9a]	512 to 8192[9a]
Main storage DIMMs (minimum/maximum)	1/8	1/8	1/8
Minimum OS/400 level[8a]	V5R2	V5R2	V5R2
Software group[6a]	P05	P05	P10

Numbers are for all 800 processor	**Base system**	**#7116 System**	**#5095/#0595 PCI-X**	**#5094 PCI-X**	**Total system**
Disk storage (GB)					
Integrated minimum	17.5	17.5	17.5	17.5	
Integrated maximum	423.3	846.7	846.7	3175.2	4445
External maximum[7]	-	-	-	-	4375
Total maximum	-	-	-	-	4445
DASD arms maximum	6	12	12	45	63
Internal arms	6	12	12	45	63
External LUNs	-	-	-	-	62
Physical packaging					
External HSL ports	2	-	-	-	2
External HSL loops	1	-	-	-	1
PCI-X Expansion Tower	1	-	-	-	1
External xSeries Servers	3	-	-	-	3
Embedded IOP	1	-	-	-	1
PCI card slots	7	-	7	14	21
Maximum PCI IOA cards	6	-	5	11	17
Communication lines[3]	18	-	20	44	60
LAN ports	3	-	5	8	11
Integrated xSeries Servers[10a]	1	-	1	3	4
Twinaxial workstation controllers	4	-	5	11	15

Numbers are for all 800 processor	Base system	#7116 System	#5095/#0595 PCI-X	#5094 PCI-X	Total system
Twinaxial workstations	160	-	200	440	600
Internal CD/DVD/tape[4]	2	-	-	2	4
External tape	4	-	5	11	15
External optical/CD/DVD	4	-	5	11	15
Cryptographic coprocessor	4	-	3	4	4
Cryptographic accelerator	2	-	2	2	2

15.2 iSeries Model 810 overview

The following tables provide the minimum and maximum system capacities for the Model 810. To review the footnotes for these tables, see 15.6, “Notes for iSeries Models 800, 810, 825, 870, and 890 overview” on page 570.

	Model 810			
Processor feature	**#2465**	**#2466**	**#2467**	**#2469**
Server feature	**#0868**	**#0866**	**#0867**	**#0869**
Relative system performance[1, 2]				
Processor CPW	750	1020	1470	2700
5250 CPW[5a]				
Standard[6b]	0	0	0	0
Enterprise[6b]	750	1020	1470	2700
High Availability[6b]	750	1020	1470	2700
Number/type/speed of processor	1/SStar/540 MHz	1/SStar/540 MHz	1/SStar/750 MHz	2/SStar/750 MHz
L2 Cache (MB) per processor	2	2	4	4
Main storage (MB minimum to maximum)	512 to 16384	512 to 16384	512 to 16384	512 to 16384
Main storage DIMMs (minimum/maximum)	1/8	1/8	1/8	2/16
Minimum OS/400 level[8b]	V5R2	V5R2	V5R2	V5R2
Software group[6b]	P10	P10	P10	P20

The following tables provide the minimum and maximum system capacities for the Model 810 iSeries for Domino.

	Model 810 iSeries for Domino		
Processor feature	**#2466**	**#2467**	**#2469**
Server feature[9c]	**#0769**	**#0770**	**#0771**
Relative system performance[1, 2]			
Processor CPW	1020	1470	2700
Mail and Calendar Users (MCU)[2a]	3100	4200	7900
5250 CPW[5a]			
Domino[6b]	0	0	0
Number/type/speed of processor	1/SStar/540 MHz	1/SStar/750 MHz	2/SStar/750 MHz
L2 Cache (MB) per processor	2	4	4
Main storage (GB minimum to maximum)[9b]	1.5 to 16	3.5 to 16	5.5 to 16
Main storage DIMMs (maximum)	8	8	16
Minimum OS/400 level[8b]	V5R2	V5R2	V5R2
Software group[6b]	P10	P10	P20

Numbers are for all 810 processor features	**Base system**	**#7116 System Unit Expansion**	**#5095/#0595 PCI-X Expansion Tower**	**#5094 PCI-X Expansion Tower**	**Total system maximum**
Disk storage (GB)					
Integrated minimum	17.5	17.5	17.5	17.5	
Integrated maximum	423.3	846.7	846.7	3172.5	13971
External maximum[7]	-	-	-	-	13901
Total maximum	-	-	-	-	13971
DASD arms maximum	6	12	12	45	198
Internal arms	6	12	12	45	198
External LUNs	-	-	-	-	197
Physical packaging					
External HSL ports	2	-	-	-	-
External HSL loops	1	-	-	-	1
PCI/PCI-X Expansion Tower	4	-	-	-	4
External xSeries Servers	7	-	-	-	7
Embedded IOP	1	-	-	1	5
PCI card slots	7	-	7	14	63
Maximum PCI IOA cards	6	-	5	11	50
Communication lines[3]	18	-	20	44	192
LAN ports	3	-	5	11	36
Integrated xSeries Servers	1	-	1	3	13
Twinaxial workstation controllers	4	-	5	11	48
Twinaxial workstations	160	-	200	440	1920
Internal CD/DVD/tape[4]	2	-	-	2	10
External tape	4	-	5	11	18

Numbers are for all 810 processor features	Base system	#7116 System Unit Expansion	#5095/#0595 PCI-X Expansion Tower	#5094 PCI-X Expansion Tower	Total system maximum
External optical/CD/DVD	4	-	5	11	18
Cryptographic coprocessor	4	-	3	8	8
Cryptographic accelerator	2	-	2	2	2

15.3 iSeries Model 825 overview

The following tables provide the minimum and maximum system capacities for the Model 825. To review the footnotes for these tables, see 15.6, “Notes for iSeries Models 800, 810, 825, 870, and 890 overview” on page 570.

	Model 825			
Processor feature	**#2473**			**#2495**
Server feature[7]	**#0873**	**-**	**-**	**#0890**
Server feature for Domino[9c]	**-**	**#0772**	**#0773**	**-**
Relative system performance[1, 2]				
Processor CPW	3600/6600	-	-	1250/6600
Mail and Calendar Users (MCU) [2a]	-	11600	17400	-
5250 CPW[5b]				
Standard and Domino[6c]	-	0	0	-
Enterprise[6c]	Maximum	-	-	-
High Availability[6c]	Maximum	-	-	-
Capacity Backup[6c]	-	-	-	Maximum
Number/type/ speed of processor	3/6 / POWER4/ 1.1 GHz	4 / POWER4/ 1.1 GHz	6 / POWER4 1.1 GHz	1/6 / POWER4/ 1.1 GHz
L3 Cache (MB per processor)	16	16	16	16
L2 Cache (MB per processor)	0.72	0.72	0.72	0.72
Main storage (GB minimum to maximum)[9b]	2 to 48	6 to 48	12 to 48	2 to 48
Main storage DIMMs (minimum/maximum)	8/24	8/24	8/24	8/24
Minimum OS/400 level[8b]	V5R2	V5R2	V5R2	V5R2
Software group[6c]	P30	P30	P30	P30

Numbers are for all 825 processor features	Base system	#5095/#0595 PCI-X Expansion Tower	#5094 PCI-X Expansion Tower	Total maximum
Disk storage (GB)[9b]				
Integrated minimum	17.5	-	-	17.5
Integrated maximum	1058.4	846.7	3175.2	58216
External maximum[7]	-	-	-	58145
Total maximum	-	-	-	58216
DASD arms maximum				
Internal arms	15	12	45	825
External LUNs	-	-	-	824
Physical packaging				
External RIO-G ports	6	-	-	6
External RIO-G loops	3	-	-	3
PCI Expansion Towers	16	-	-	16
PCI-X Expansion Towers	18	-	-	18
External xSeries Servers	18	-	-	18
Embedded IOP	1	-	1	19
Embedded IOA	1	-	-	1
PCI card slots	10	7	14	262
Maximum PCI IOA cards	8	5	11	205
Communication lines[3a]	30	20	44	320
LAN ports	6	5	11	96
Integrated xSeries Servers	1	1	3	36
Twinaxial workstation controllers	5	5	11	135
Twinaxial workstations	200	200	440	5400
Internal CD-ROM/DVD-RAM/tape[4]	2	-	2	18
External tape/optical/CD/DVD	5	5	11	18
Cryptographic coprocessor	5	3	8	8
Cryptographic accelerator	4	4	4	4

15.4 iSeries Model 870 overview

The following tables provide the minimum and maximum system capacities for the Model 870. To review the footnotes for these tables, see 15.6, “Notes for iSeries Models 800, 810, 825, 870, and 890 overview” on page 570.

	Model 870		
Processor feature	**#2486**	**#2489**	**#2496**
Server feature	**#0886**	**#0889**	**#0891**
Relative system performance[1, 2] Processor CPW 5250 CPW[5c] Standard[6d] Enterprise[6d] High Availability[6d] Capacity BackUp[6d]	 11500/20000 0 Maximum Maximum --	 7700/11500 0 Maximum Maximum --	 3200/20000 -- 0 -- -- Maximum
Number/type/speed of processor	8/16/POWER4/1.3 GHz	5/8/POWER4/1.3 GHz	2/16/POWER4/1.3 GHz
L2 and L3 Cache (MB/processor)	16.72	16.72	16.72
Main storage (GB minimum to maximum)	8 to 128	8 to 64	8 to 128
Main storage cards (minimum/maximum)	2/4	2/2	2/4
Minimum OS/400 level[8b]	V5R2	V5R2	V5R2
Software group[6d]	P40	P40	P40

Numbers are for all 870 processor features	**#9094 Base Tower**	**#5095/#0595 PCI-X Expansion Tower**	**#5094 PCI-X Expansion Tower**	**Total system maximum**
Disk storage (GB)				
Integrated minimum	17.5	17.5	17.5	
Integrated maximum	3175.2	846.7	3175.2	144446
External maximum[7]	-	-	-	144375
Total maximum	-	-	-	144446
DASD arms maximum				
Internal arms	45	12	45	2047
External LUNs	-	-	-	2046
Physical packaging				
External HSL/RIO-G ports	-/16	-	-	-/16
External HSL/RIO-G loops	-/8	-	-	-/8
PCI/PCI-X Expansion Towers	47	-	-	47
External xSeries Servers	60	-	-	60
Embedded IOP	-	-	-	-
Embedded IOA	-	-	-	-
PCI card slots	14	7	14	672
Maximum PCI IOA cards	11	5	11	528
Communication lines[3]	38	20	44	480
LAN ports	7	5	8	128
Integrated xSeries Servers	2	1	3	48

Numbers are for all 870 processor features	#9094 Base Tower	#5095/#0595 PCI-X Expansion Tower	#5094 PCI-X Expansion Tower	Total system maximum
Twinaxial workstation controllers	9	5	11	180
Twinaxial workstations	360	200	440	7200
Internal CD/DVD/tape[4a]	2	-	2	26
External tape/optical/CD/DVD	9	5	11	26
Cryptographic coprocessor	8	3	8	32
Cryptographic accelerator	4	4	4	8

15.5 iSeries Model 890 overview

The following tables provide the minimum and maximum system capacities for the Model 890. To review the footnotes for these tables, see 15.6, “Notes for iSeries Models 800, 810, 825, 870, and 890 overview” on page 570.

	Model 890		
Processor feature	**#2497**	**#2498**	**#2499**
Server feature	**#0897**	**#0898**	**#0892**
Relative system performance[1, 2] Processor CPW 5250 CPW[5c] Standard[6e] Enterprise[6e] High Availability[6e] Capacity Backup[6e]	 20000/29300 0 Maximum Maximum -	 29300/37400 0 Maximum Maximum -	 5600/37400 0 - - Maximum
Number/type/speed of processor	16/24 / POWER4/1.3 GHz	24/32 / POWER4/1.3 GHz	4/32 / POWER4/1.3 GHz
L2 and L3 Cache (MB/processor)	16.72	16.72	16.72
Main storage (GB minimum to maximum)	8 to 192	16 to 256	16 to 256
Main storage cards (minimum/maximum)	2/6	4/8	4/8
Minimum OS/400 level[8b]	V5R2	V5R2	V5R2
Software group[6e]	P50	P50	P50

	Model 890			
Processor feature	**#2487**	**#2488**	**#0197**	**#0198**
Relative system performance[1, 2]				
Processor CPW	20200 - 29300	29300 - 37400	29300	37400
5250 CPW[5c]			0	0
#1576 (Base)	120	120	-	-
#1577	240	240	-	-
#1578	560	560	-	-
#1579	1050	1050	-	-
#1581	2000	2000	-	-
#1583	4550	4550	-	-
#1585	10000	10000	-	-
#1587	16500	16500	-	-
#1588	20200	20200	-	-
#1591	-	37400	-	-
Number/type/ speed of processor	16/24/ POWER4/ 1.3 GHz	24/32/ POWER4/ 1.3 GHz	24/POWER4/ 1.3 GHz	32/POWER4/ 1.3 GHz
L2 Cache (MB)	1.5 MB/chip set	1.5 MB/chip set	1.5 MB/chip set	1.5 MB/chip set
L2 and L3 Cache (MB/processor)	16.72	16.72	16.72	16.72
Main storage (GB minimum to maximum)	16 to 192	24 to 256	16 to 192	24 to 256
Main storage cards (minimum/maximum)	2/6	4/8	2/6	4/8
Minimum OS/400 level[8b]	V5R2	V5R2	V5R2	V5R2
Software group[6e]	P50 or P60	P50 or P60	P50	P50

Numbers are for all 890 processor features	**#9094 Base Tower**	**#5095/#0595 PCI-X Expansion Tower**	**#5094 PCI-X Expansion Tower**	**Total maximum**
Disk storage (GB)				
Integrated minimum	17.5	17.5	17.5	
Integrated maximum	3172.5	846.7	3175.2	144446
External maximum[7]	11290	3175	13548	144375
Total maximum	14462	4021	16720	144446
DASD arms maximum				
Internal arms	45	12	45	2047
External LUNs	160	127	192	2046
Physical packaging				
External HSL/RIO-G ports	-/24	-	-	-/24
External HSL/RIO-G loops	-/12	-	-	-/12
PCI/PCI-X Expansion Towers	47	-	-	47
External xSeries Servers	60	-	-	60
Embedded IOP	-	-	-	-
Embedded IOA	-	-	-	-
PCI card slots	14	7	14	672
Maximum PCI IOA cards	11	5	11	528
Communication lines[3]	38	20	44	480
LAN ports	7	5	8	128

Numbers are for all 890 processor features	#9094 Base Tower	#5095/#0595 PCI-X Expansion Tower	#5094 PCI-X Expansion Tower	Total maximum
Integrated xSeries Servers	2	1	3	48
Twinaxial workstation controllers	9	5	11	180
Twinaxial workstations	360	200	440	7200
Internal CD-ROM/DVD-RAM/tape[4a]	2	-	2	26
External tape/optical/CD/DVD	9	5	11	26
Cryptographic coprocessor	8	3	8	32
Cryptographic accelerator	4	4	4	8

15.6 Notes for iSeries Models 800, 810, 825, 870, and 890 overview

Note 1	Commercial processing workload (CPW) is used to measure the performance of all iSeries and AS/400e processors announced from September 1996 onward. The CPW value is measured on maximum configurations. The type and number of disk devices, the number of workstation controllers, the amount of memory, the system model, other factors, and the application running determine what performance is achievable.
Note 2	Processor performance represents the relative performance (maximum capacity) of a processor feature running CPW in a client/server environment. Processor capacity is achievable when the commercial workload is not constrained by main storage and direct access storage device (DASD). Performance of the 5250 CPW represents the relative performance that is available to perform host-centric workloads. The amount of 5250 CPW capacity consumed reduces the available processor capacity by the same amount.
Note 2a	Mail and Calendar Users (MCU) is a relative performance measurement derived by performing mail and calendar functions using Domino and Notes clients. The MCU workload represents concurrent users on a Notes client who are reading, updating, or deleting documents in an e-mail database. It also represents users who are performing lookups in the Domino Directory and scheduling calendar appointments and invitations. Reported values reflect 70% processor utilization to allow for growth and peak loads in excess of customer workload estimates.
Note 3	One line is used if the #5544 System Console on Operations Console is used. One line can be used if the #5546 System Console on 100 Mbps Token Ring or #5548 System Console on 100 Mbps Ethernet is selected and the #0367 Operations Console PCI Cable is connected.
Note 3a	One line is used if the #5544 System Console on Operations Console is used. One line can be used if the #5548 System Console on 100 Mbps Ethernet is selected and the #0367 Operations Console PCI Cable is connected.
Note 4	There must be one DVD-ROM or DVD-RAM per system.
Note 4a	There must be one DVD-RAM or DVD-ROM in the #9094 Base PCI I/O Enclosure.
Note 5a Model 810	5250 CPW (Interactive) is an approximate value that reflects the amount of Processor CPW that can be used for workloads that perform 5250-based tasks. Remember the following points: ► The iSeries Enterprise Edition provides maximum 5250 CPW support (up to 100% of the capacity of the active processor CPW). The iSeries Standard Edition provides zero CPW for 5250 work. ► Any task that uses a 5250 data stream is considered 5250 online transaction processing (OLTP) work and requires some amount of 5250 CPW to process regardless of how the task started. ► A task submitted through a 5250 session (5250 device or 5250 emulation) that does display or printer input/output (I/O) requires 5250 CPW. ► A task submitted through a 5250 session (5250 device or 5250 emulation) as a “batch” job is not considered 5250 OLTP work and does not require any 5250 CPW unless the task does display or printer I/O. ► Limited 5250 CPW is available with the Standard Edition for a system administrator to use 5250 display device I/O to manage various aspects of the server. Multiple administrative jobs exceed this capability.

Note 5b Model 825	5250 CPW (Interactive) is an approximate value that reflects the amount of Processor CPW that can be used for workloads that perform 5250-based tasks. Remember the following points: ► The iSeries Enterprise Edition provides maximum 5250 CPW support (up to 100% of the capacity of the active processor CPW). The iSeries Standard Edition provides limited CPW for 5250 work. ► Any task that uses a 5250 data stream is considered 5250 OLTP work and requires some amount of 5250 CPW to process regardless of how the task started. ► A task submitted through a 5250 session (5250 device or 5250 emulation) that does display or printer I/O requires 5250 CPW. ► A task submitted through a 5250 session (5250 device or 5250 emulation) as a “batch” job is not considered 5250 OLTP work and does not require any 5250 CPW unless the task does display or printer I/O. ► Limited 5250 CPW is available with the Standard Edition for a system administrator to use 5250 display device I/O to manage various aspects of the server. Multiple administrative jobs exceed this capability. ► Maximum 5250 CPW is equivalent to the processor CPW for the active processor.
Note 5c Models 870 890	5250 CPW (Interactive) is an approximate value that reflects the amount of Processor CPW that can be used for workloads performing 5250-based tasks. Remember the following points: ► The iSeries Enterprise Edition provides maximum 5250 CPW support (up to 100% of the capacity of the active processor CPW). The iSeries Standard Edition provides zero CPW for 5250 work. ► Any task that uses a 5250 data stream is considered 5250 OLTP work and requires some amount of 5250 CPW to process regardless of how the task started. ► A task submitted through a 5250 session (5250 device or 5250 emulation) that does display or printer I/O requires 5250 CPW. ► A task submitted through a 5250 session (5250 device or 5250 emulation) as a “batch” job is not considered 5250 OLTP work and does not require any 5250 CPW unless the task does display or printer I/O. ► Limited 5250 CPW is available with the Standard Edition for a system administrator to use 5250 display device I/O to manage various aspects of the server. Multiple administrative jobs exceed this capability. ► Maximum 5250 CPW is equivalent to the processor CPW for the active processor.

Note 6a Model 800

Software group is determined by the combination of Processor feature and Edition feature. This table provides a cross-reference. Display the QPRCFEAT system value on DSPHDWRSC TYPE(*AHW) to display the processor feature code value.

Processor	Server feature	Edition feature	Software group	Processor feature code or QPRCFEAT value
#2463	#0863	#7400 Value	P05	7400
	#0864	#7400 Standard	P05	7400
#2464	#0865	#7408 Advanced	P10	7408

Note 6b Model 810

Software group is determined by the combination of Processor feature and Edition feature. This table provides a cross reference. Display the QPRCFEAT system value on DSPHDWRSC TYPE(*AHW) to view the processor feature code value.

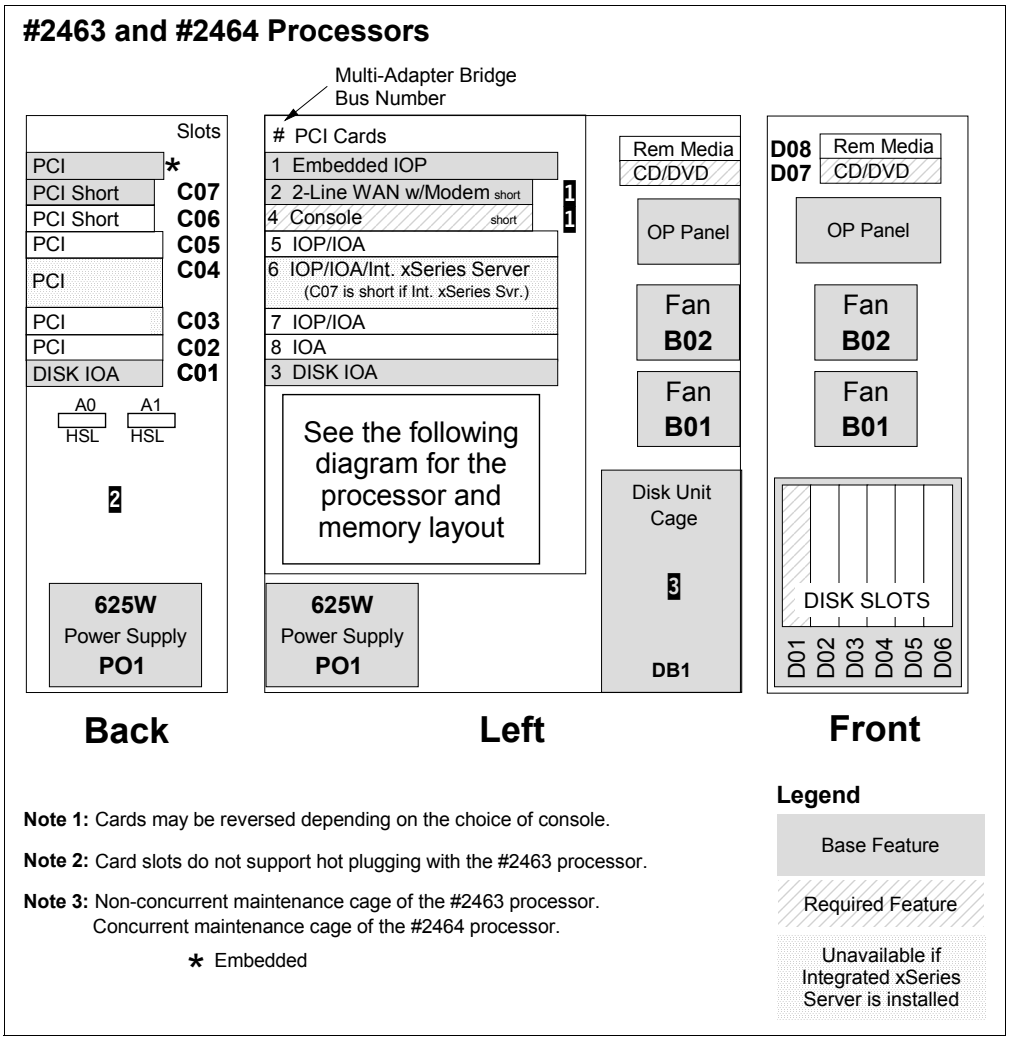
Processor	Server feature	Edition feature	Software group	Processor feature code or QPRCFEAT value
#2465	#0868	#7404 Standard	P10	7404
		#7406 Enterprise	P10	7406
		#7445 High Availability	P10	7406
#2466	#0866	#7407 Standard	P10	7407
		#7409 Enterprise	P10	7409
		#7446 High Availability	P10	7409
	#0769	#7407 Domino	P10	7407
#2467	#0867	#7410 Standard	P10	7410
		#7412 Enterprise	P10	7412
		#7447 High Availability	P10	7412
	#0770	#7410 Domino	P10	7410

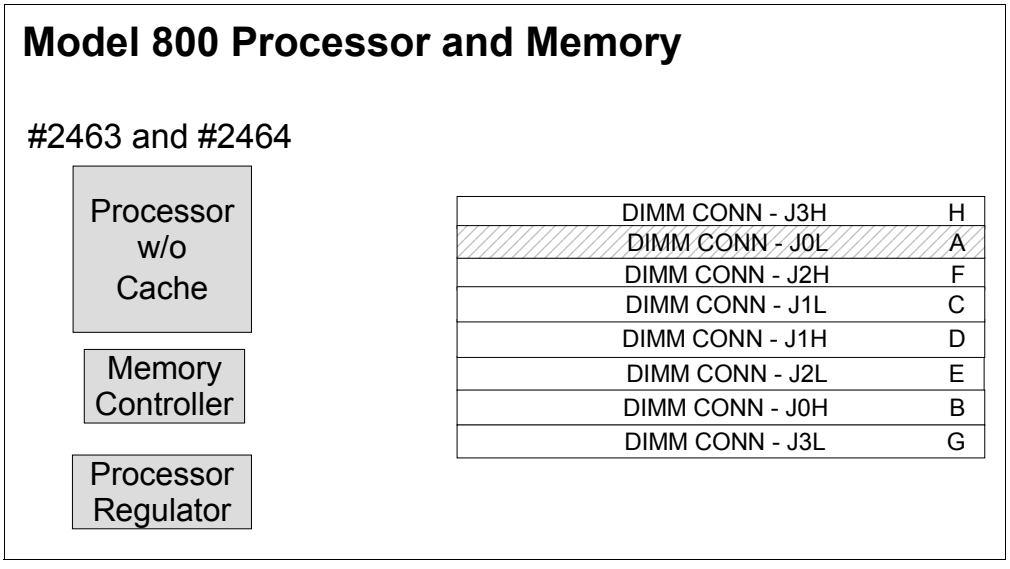
Note 6b Model 810 (contd.)	**Processor**	**Server feature**	**Edition feature**	**Software group**	**Processor feature code or QPRCFEAT value**
	#2469	#0869	#7428 Standard	P20	7428
			#7430 Enterprise	P20	7430
			#7448 High Availability	P20	7430
		#0771	#7428 Domino	P20	7428
Note 6c Model 825	Software group is determined by the combination of Processor feature and Edition feature. This table provides a cross-reference. Display the QPRCFEAT system value on DSPHDWRSC TYPE(*AHW) to view the processor feature code value. This value is also shown for the Capacity Card CCIN value when using SST to display system capacity information.				
	Processor feature	**Server feature**	**Edition feature**	**Software group**	**Processor feature code or QPRCFEAT value**
	#2473	#0873	#7416 Standard	P30	7416
			#7418 Enterprise	P30	7418
			#7434 High Availability	P30	7418
		#0772	#7416 Domino	P30	7416
		#0773	#7416 Domino	P30	7416
	#2495	#0890	#7439 Capacity BackUp	P30	7439
Note 6d Model 870	Software group is determined by the combination of Processor feature and Edition feature. This table provides a cross reference. Display the QPRCFEAT system value on DSPHDWRSC TYPE(*AHW) to view the processor feature code value. This value is also shown for the Capacity Card CCIN value when using SST to display system capacity information.				
	Processor feature	**Server feature**	**Edition feature**	**Software group**	**Processor feature code or QPRCFEAT value**
	#2486	#0886	#7419 Standard	P40	7419
			#7421 Enterprise	P40	7421
			#7436 High Availability	P40	7421
	#2489	#0889	#7431 Standard	P40	7431
			#7433 Enterprise	P40	7433
			#7435 High Availability	P40	7433
	#2496	#0891	#7440 Capacity BackUp	P40	7440

<table>
<tr><td>Note 6e
Model
890</td><td colspan="5">Software group is determined by the combination of processor feature and edition feature. Display the QPRCFEAT system value or DSPHDWRSC TYPE(*AHW) to display the processor feature code value. This value is also shown for the Capacity Card CCIN value when using SST to perform a Capacity Upgrade on Demand.
<table>
<tr><th colspan="2">Processor feature</th><th>Interactive feature</th><th>Software group</th><th>Processor feature code or QPRCFEAT value</th></tr>
<tr><td colspan="2">#0197</td><td>N/A</td><td>P50</td><td>0197</td></tr>
<tr><td colspan="2">#0198</td><td>N/A</td><td>P50</td><td>0198</td></tr>
<tr><td colspan="2" rowspan="9">#2487</td><td>#1576</td><td>P50</td><td>2AF0</td></tr>
<tr><td>#1577</td><td>P60</td><td>2AF1</td></tr>
<tr><td>#1578</td><td>P60</td><td>2AF2</td></tr>
<tr><td>#1579</td><td>P60</td><td>2AF3</td></tr>
<tr><td>#1581</td><td>P60</td><td>2AF5</td></tr>
<tr><td>#1583</td><td>P60</td><td>2AF7</td></tr>
<tr><td>#1585</td><td>P60</td><td>2AF9</td></tr>
<tr><td>#1587</td><td>P60</td><td>2AFB</td></tr>
<tr><td>#1588</td><td>P60</td><td>2AFC</td></tr>
<tr><td colspan="2" rowspan="9">#2488</td><td>#1576</td><td>P50</td><td>2AD0</td></tr>
<tr><td>#1577</td><td>P60</td><td>2AD1</td></tr>
<tr><td>#1578</td><td>P60</td><td>2AD2</td></tr>
<tr><td>#1579</td><td>P60</td><td>2AD3</td></tr>
<tr><td>#1581</td><td>P60</td><td>2AD5</td></tr>
<tr><td>#1583</td><td>P60</td><td>2AD7</td></tr>
<tr><td>#1585</td><td>P60</td><td>2AD9</td></tr>
<tr><td>#1587</td><td>P60</td><td>2ADB</td></tr>
<tr><td>#1588</td><td>P60</td><td>2ADC</td></tr>
<tr><td>#1591</td><td>P60</td><td>2ADF</td></tr>
<tr><td rowspan="3">#2497</td><td rowspan="3">#0897</td><td>#7422 Standard</td><td>P50</td><td>7422</td></tr>
<tr><td>#7424 Enterprise</td><td>P50</td><td>7424</td></tr>
<tr><td>#7437 High Availability</td><td>P50</td><td>7424</td></tr>
<tr><td rowspan="3">#2498</td><td rowspan="3">#0898</td><td>#7425 Standard</td><td>P50</td><td>7425</td></tr>
<tr><td>#7427 Enterprise</td><td>P50</td><td>7427</td></tr>
<tr><td>#7438 High Availability</td><td>P50</td><td>7427</td></tr>
<tr><td>#2499</td><td>#0892</td><td>#7441 Capacity BackUp</td><td>P50</td><td>7441</td></tr>
</table></td></tr>
<tr><td>Note 7</td><td colspan="5">External DASD capacity assumes 70.56 GB LUNs. External DASD cannot exceed maximum system capacity or the maximum number of disk arms.</td></tr>
<tr><td>Note 8a
Model
800</td><td colspan="5">OS/400 V5R2 with the February 2003 level of Licensed Internal Code and Cumulative PTF package identified in Information APAR II13365 on the Support for IBM System i Web page at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027</td></tr>
</table>

<table>
<tr><td>Note 8b
Models
810 825
870 890
(#2497
#2498)</td><td colspan="3">OS/400 V5R2 with the February 2003 level of Licensed Internal Code (LIC) and PTFs identified in Information APAR II13551 on the Support for IBM System i Web page at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027</td></tr>
<tr><td>Note 9a</td><td colspan="3">System can run with 256 MB, but the #0864 and #0865 server features require a minimum of 512 MB of main storage.</td></tr>
<tr><td>Note 9b
Models
810 825</td><td colspan="3">The Domino Edition servers require a minimum disk and memory capacity as follows.
<table><tr><th>Server feature</th><th>Disk</th><th>Memory</th></tr><tr><td>#0769</td><td>105 GB</td><td>1.5 GB</td></tr><tr><td>#0770</td><td>315 GB</td><td>3.5 GB</td></tr><tr><td>#0771</td><td>525 GB</td><td>5.5 GB</td></tr><tr><td>#0772</td><td>560 GB</td><td>6 GB</td></tr><tr><td>#0773</td><td>945 GB</td><td>12 GB</td></tr></table></td></tr>
<tr><td>Note 9c</td><td colspan="3">The server features used for iSeries for Domino specify the minimum amount of disk, memory, and Domino licenses required for an initial order.</td></tr>
<tr><td>Note 10a</td><td colspan="3">Not supported in the #5094 by the IBM marketing configurator.</td></tr>
</table>

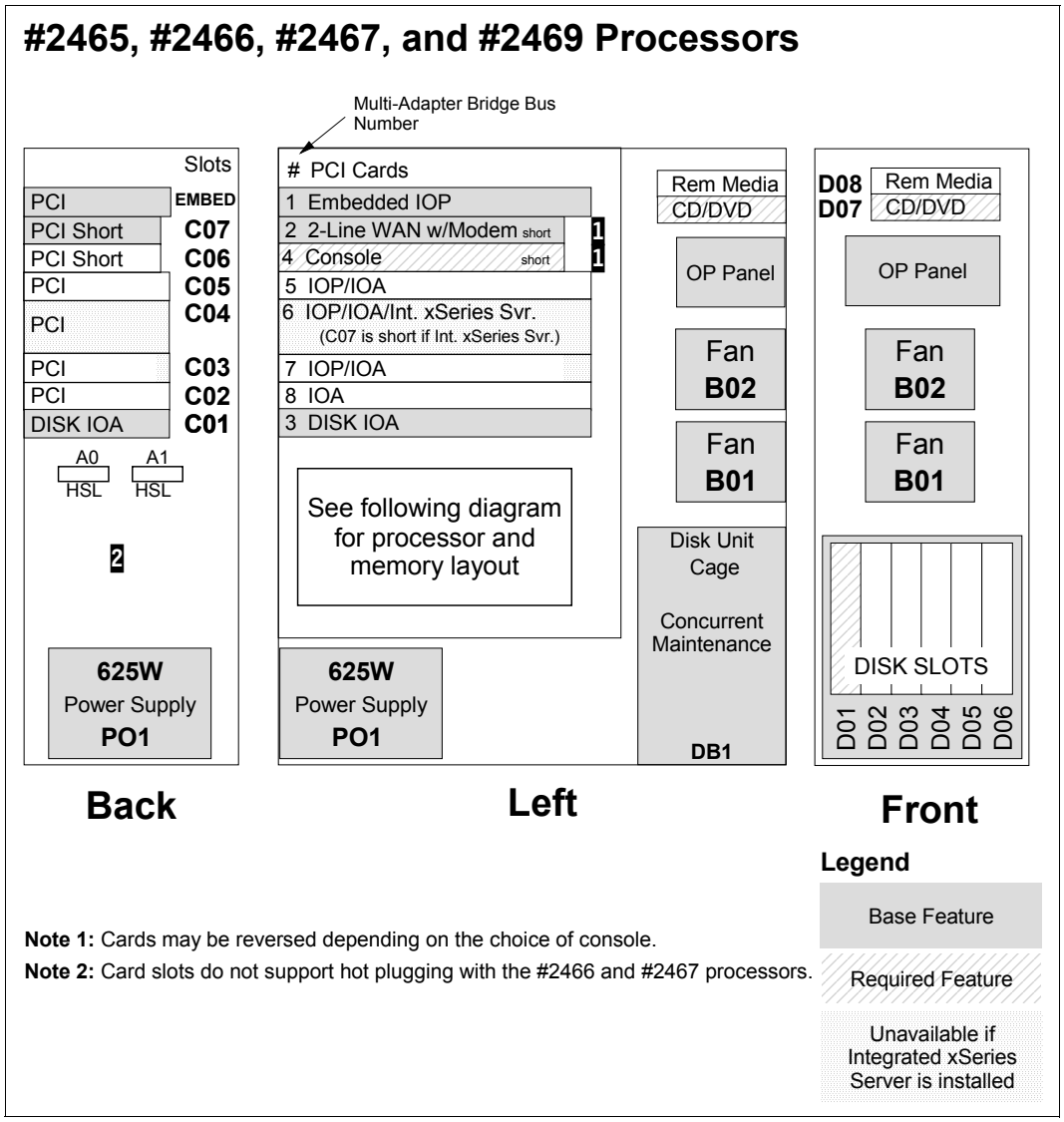
15.7 9406 Model 800 system unit schematic

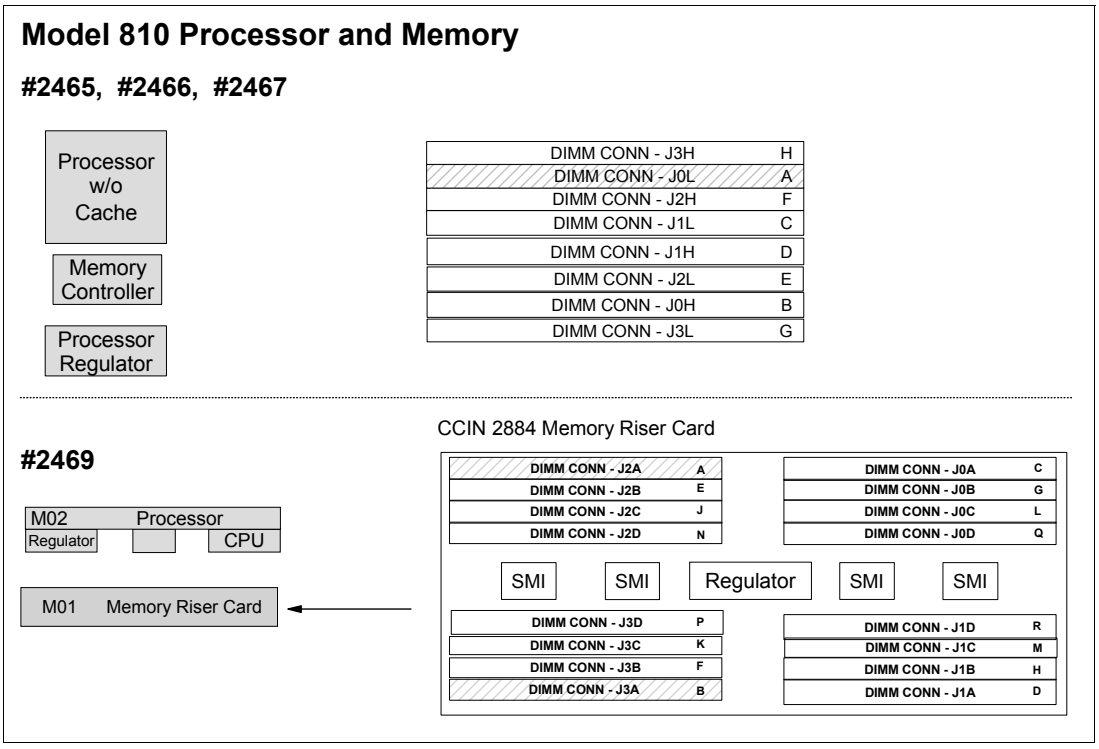




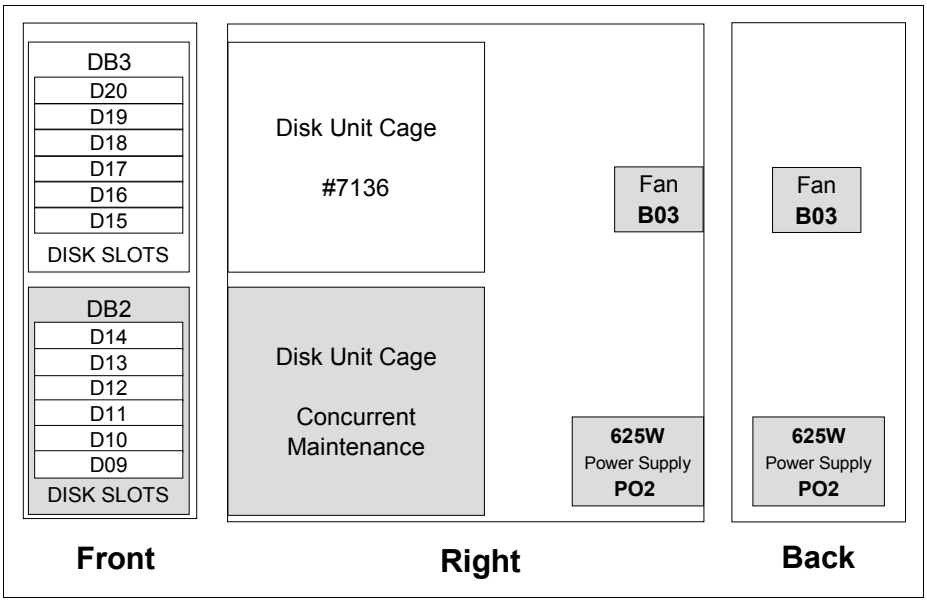
For a schematic of the #7116 System Unit Expansion for the Model 800, refer to 15.9, “iSeries Models 800 and 810 #7116 System Unit Expansion schematic” on page 577.

15.8 9406 Model 810 system unit schematic

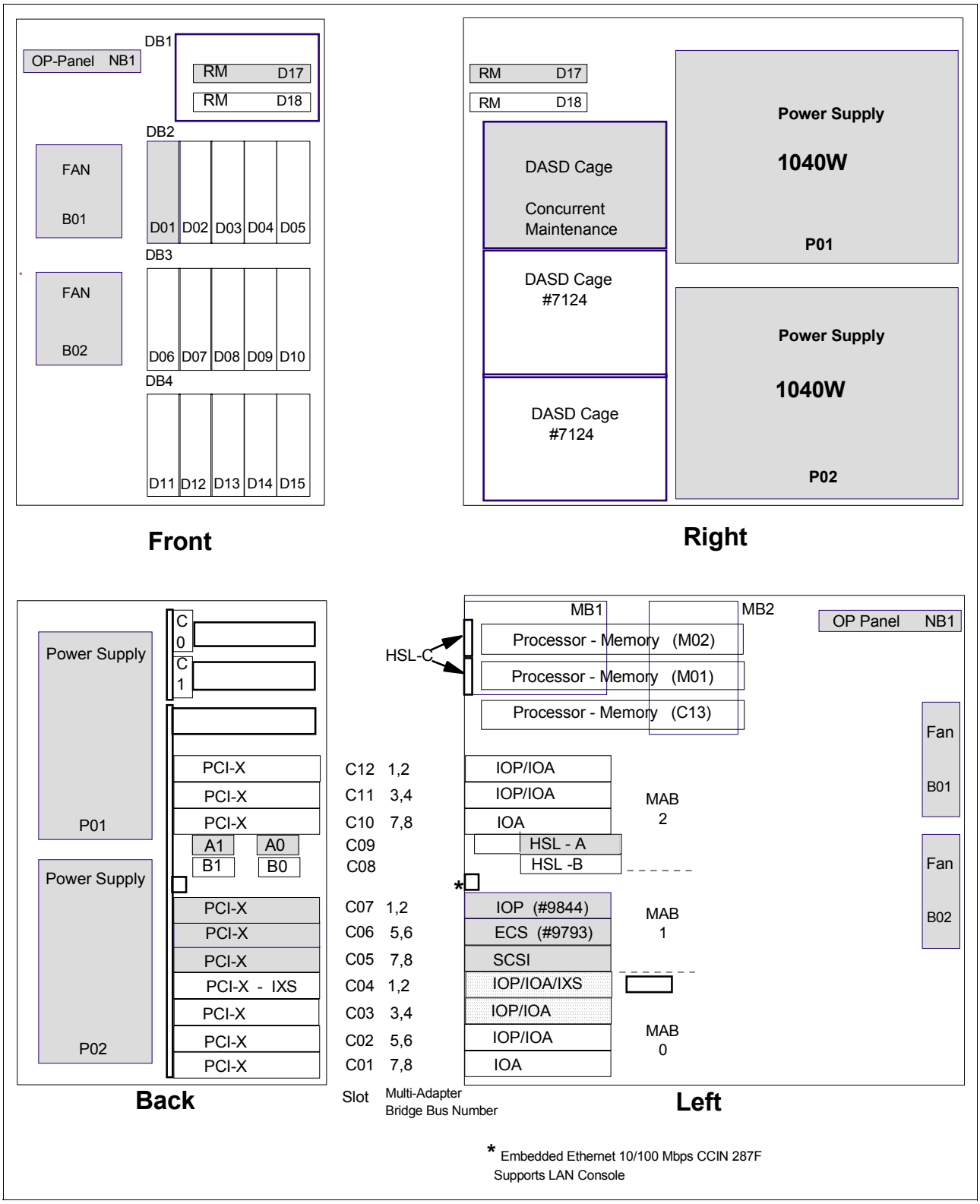




15.9 iSeries Models 800 and 810 #7116 System Unit Expansion schematic



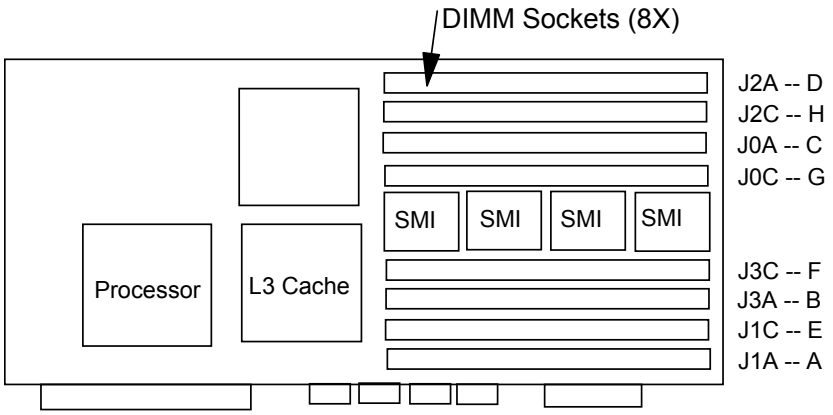
15.10 9406 Model 825 system unit schematic



Note: Hot plug and concurrent add of the following components are supported:

- PCI cards
- Disk units
- Removable media
- Power supplies
- Fans

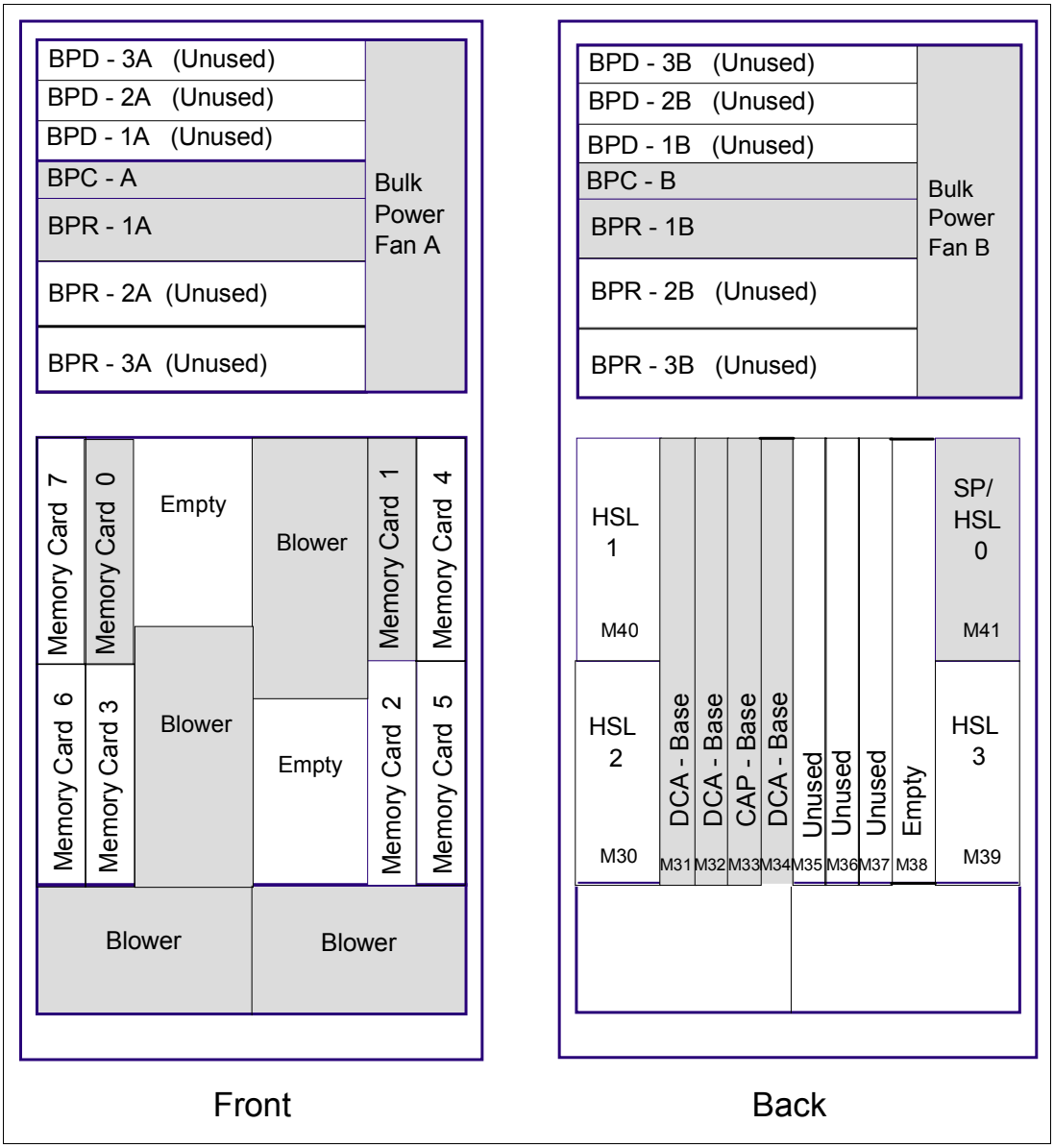
9406 Model 825 Processor and Memory



Note: DIMM quad plugging is A, B, C, D and then E, F, G, H

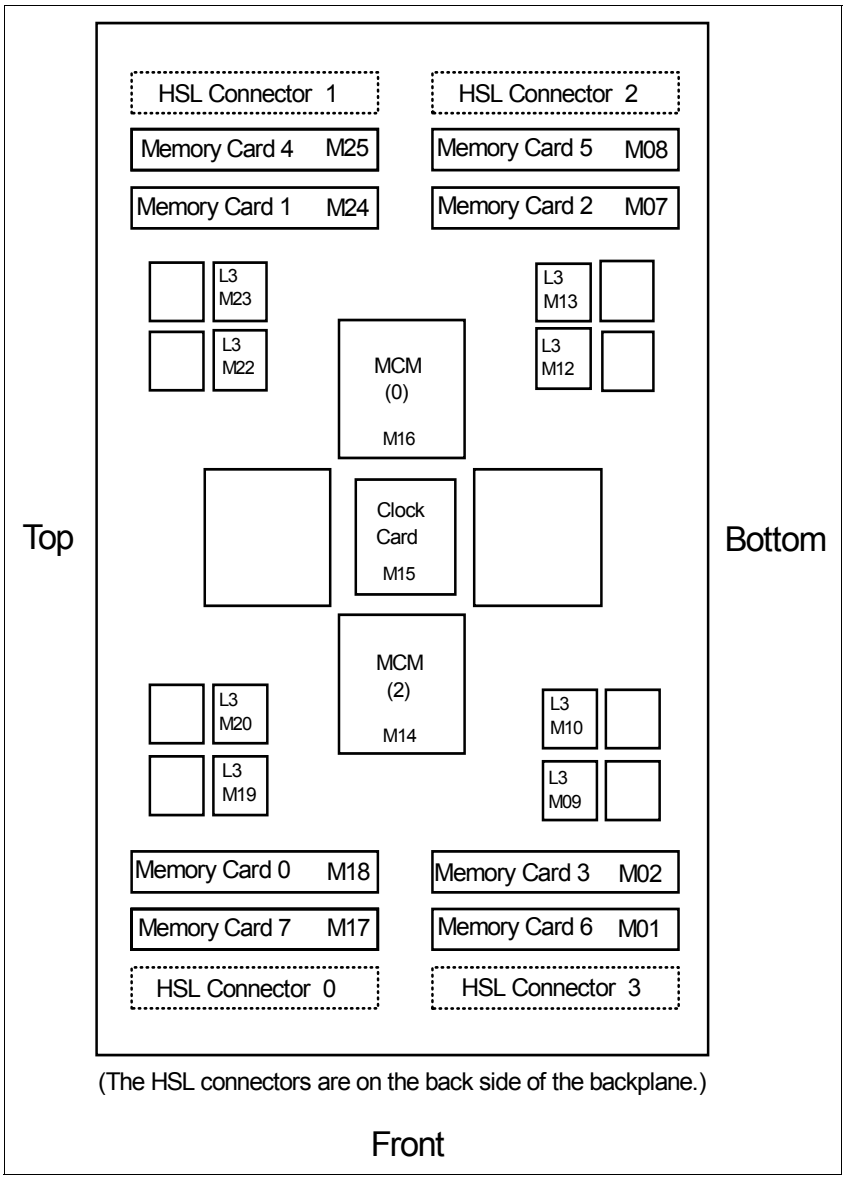
15.11 9406 Model 870 system unit schematic

The following figure shows a schematic of the Model 870 system unit.



For a schematic of the #9094 Base PCI I/O Enclosure for the Model 870, refer to 15.13, “iSeries Models 870 and 890 #9094 Base PCI I/O Enclosure schematic” on page 587.

The following figure shows a schematic of the backplane of the Model 870 system unit.

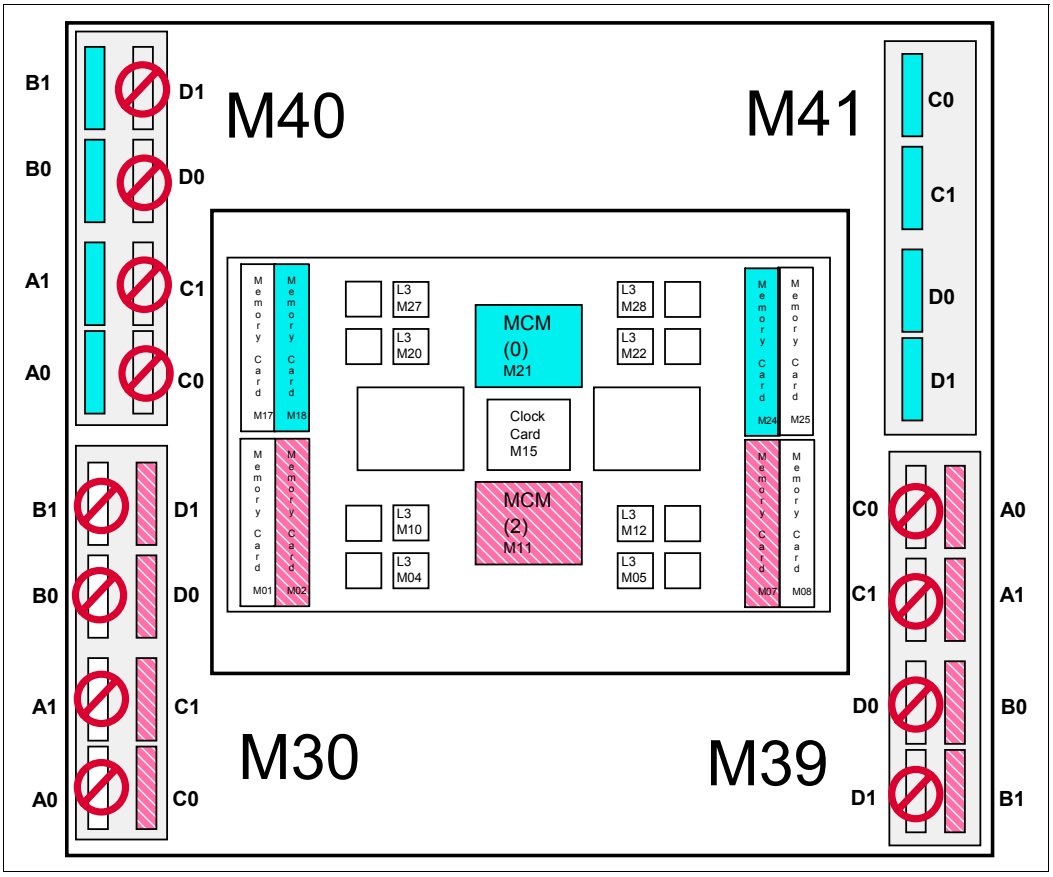


Note: Multichip module (MCM) slots 0 and 2 contain processor modules. MCM slots 1 and 3 have pass-through cards (CCIN 272D) installed.

15.11.1 Model 870 MCM and HSL relationship

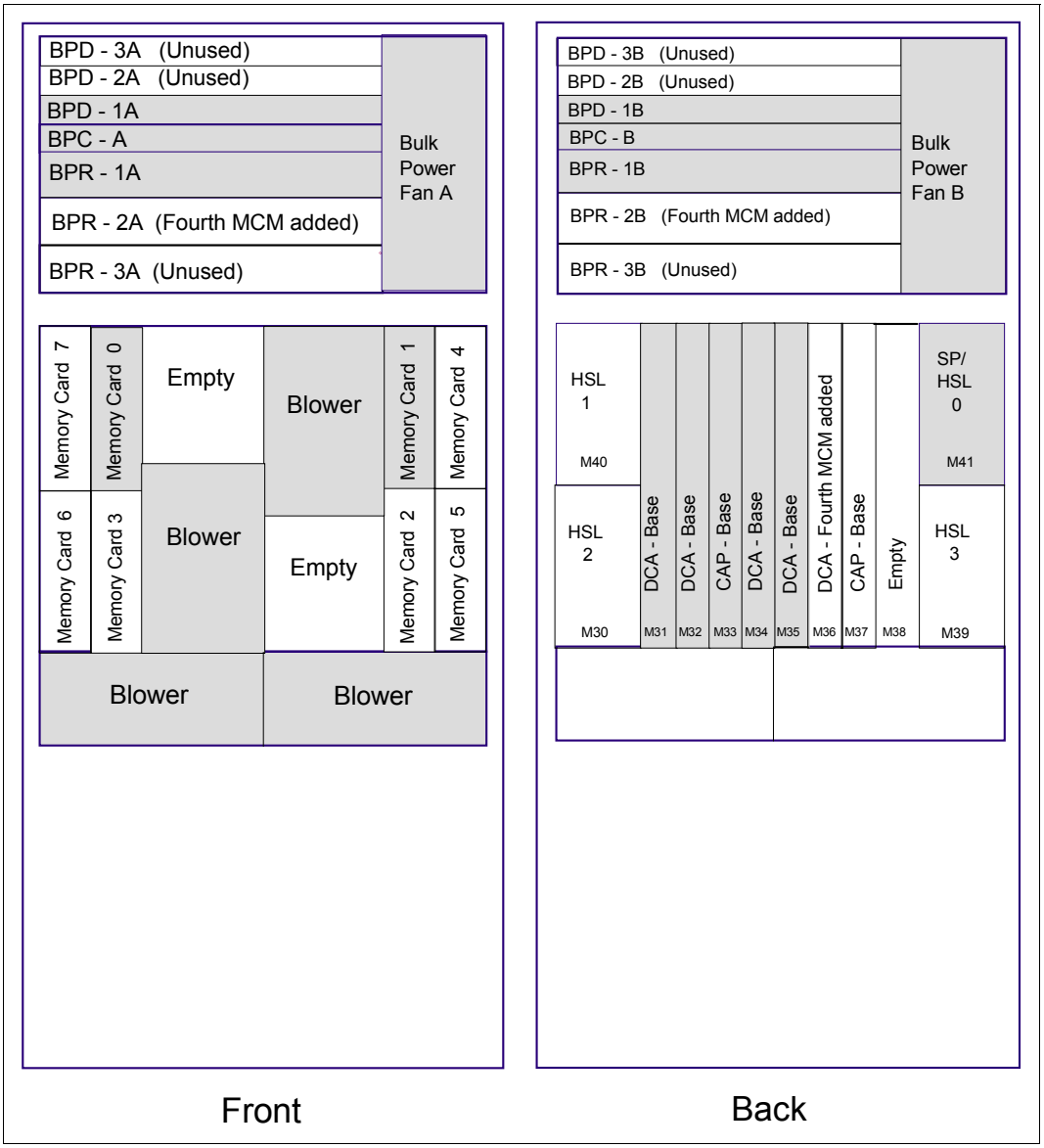
The following figure represents the relationship of high-speed link (HSL) and MCM in a Model 870.

Note: The M40 and M41 are positioned at the rear of the card.

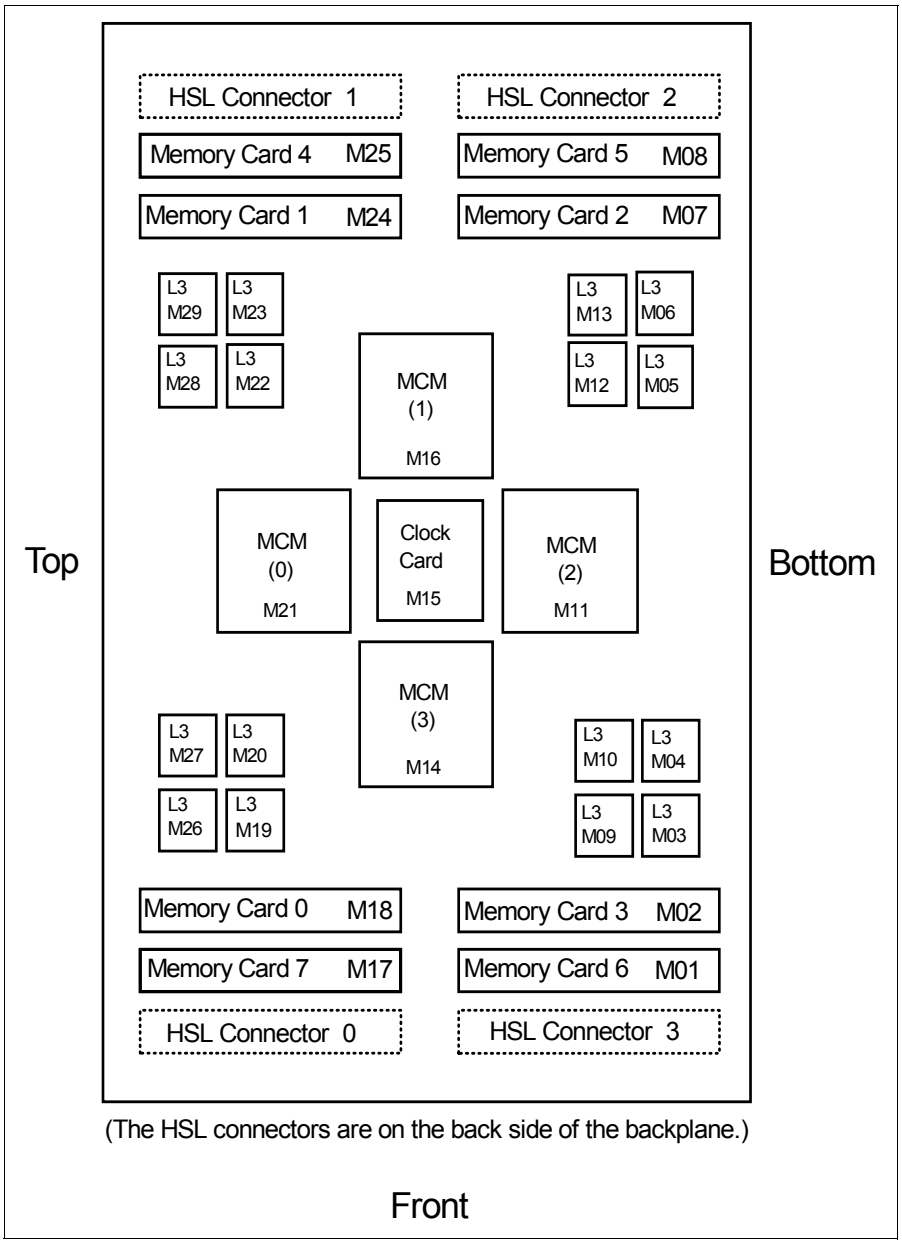


15.12 9406 Model 890 system unit schematic

The following figure shows a schematic of the Model 890 system unit.



The following figure shows a schematic of the backplane of the Model 890 system unit.

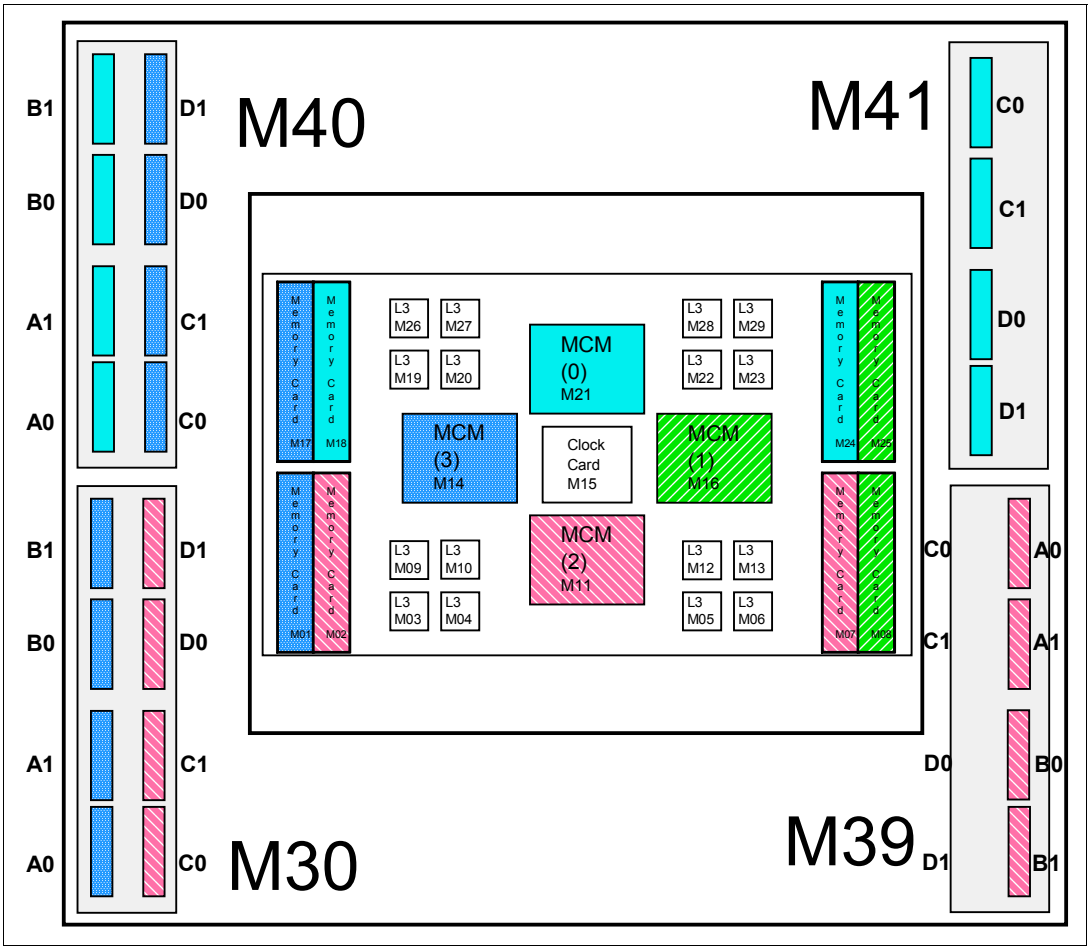


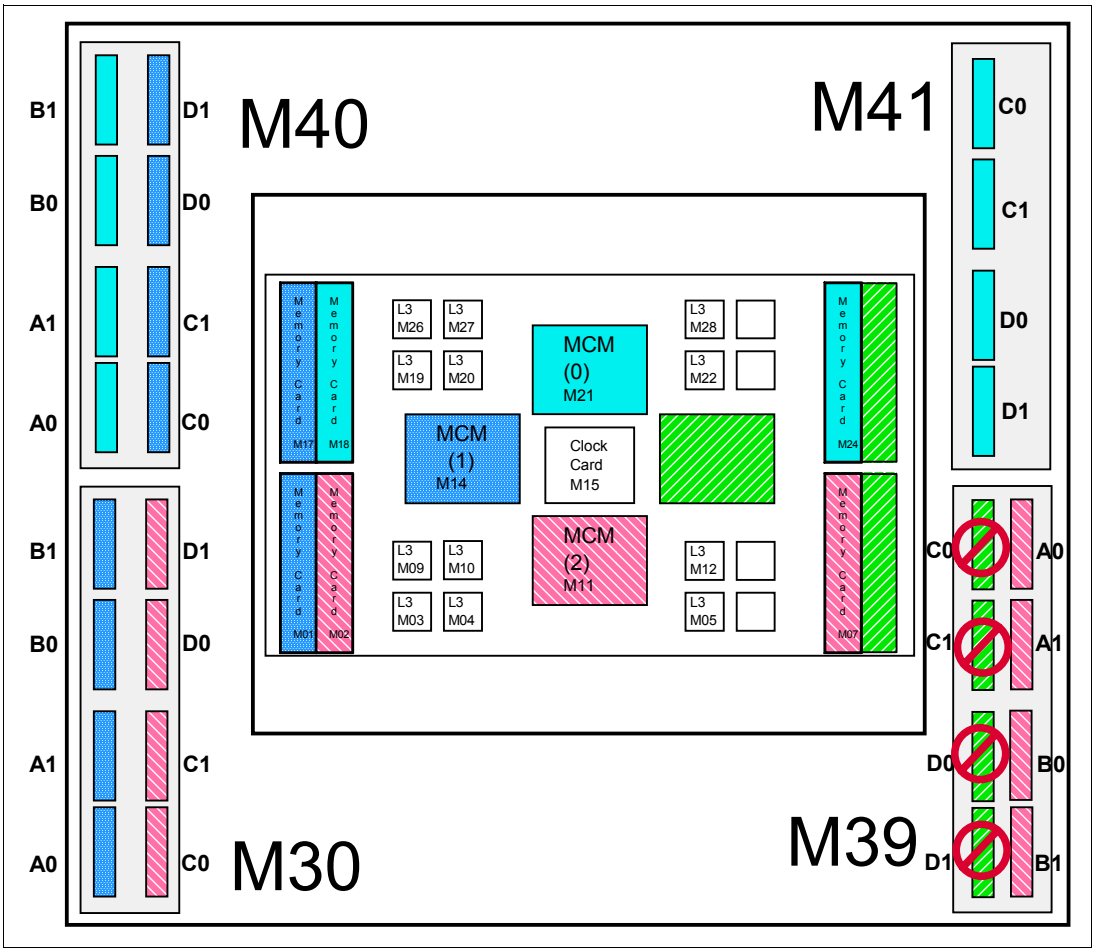
Note: One pass-through card (CCIN 272D) is installed with the 16/24-way processor to fill the empty MCM slot 1.

15.12.1 Model 890 MCM and HSL relationship

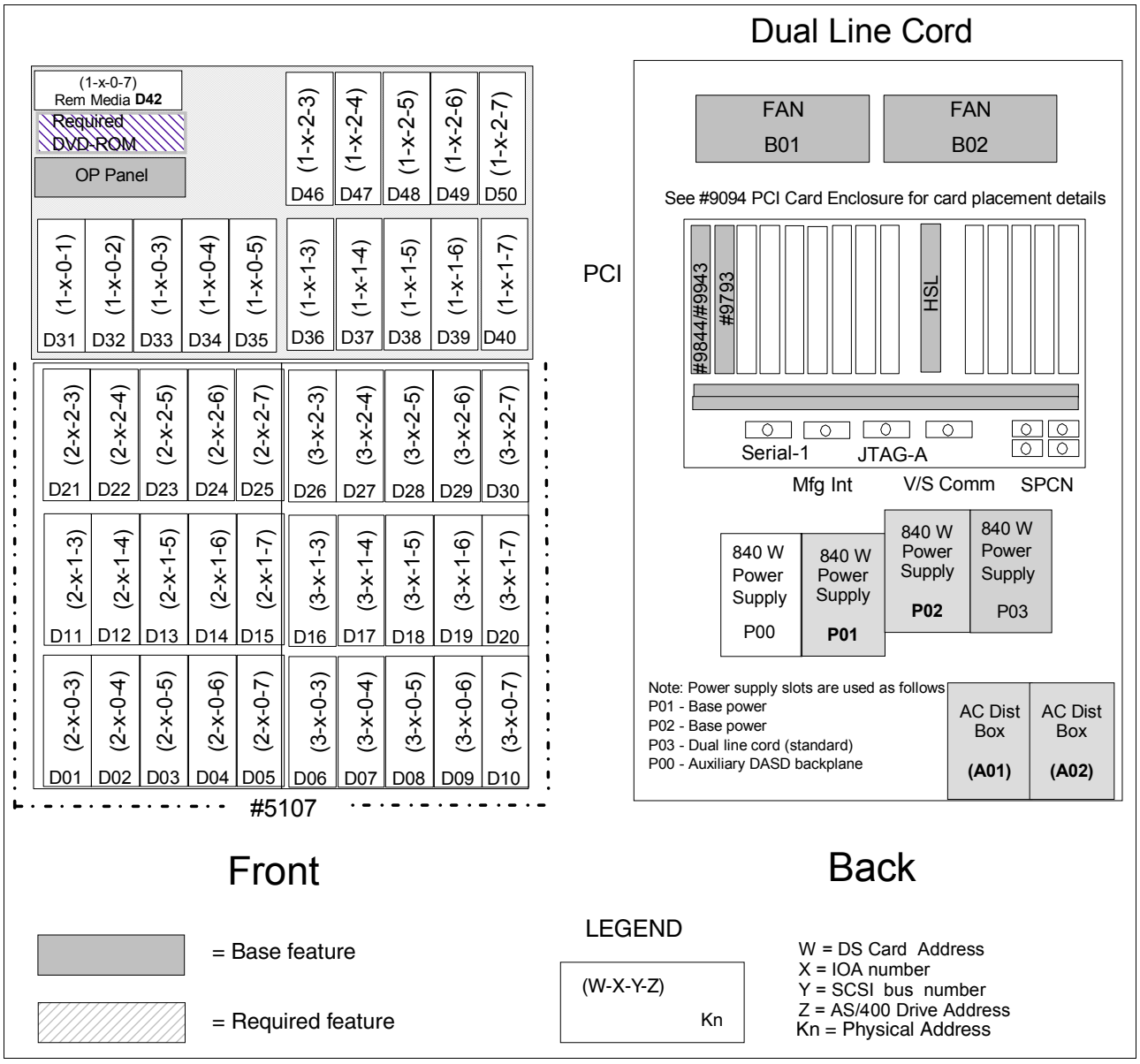
The following figures represent the relationship of HSL and MCM in a Model 890.

Note: The M40 and M41 are positioned at the rear of the card.



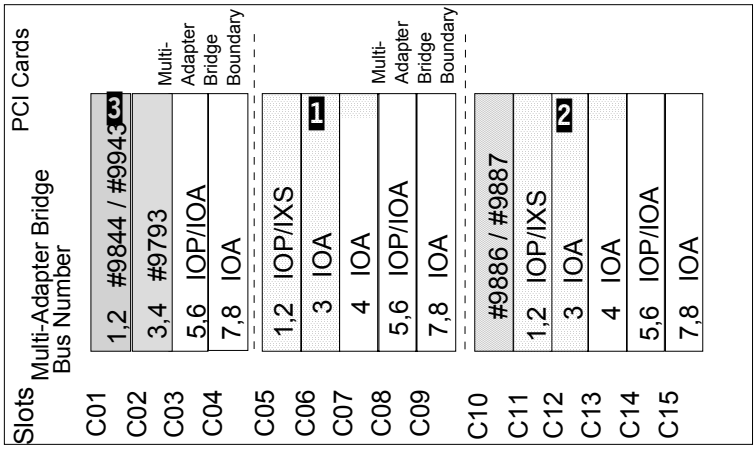

M40
M41
M30
M39
B1
D1
B0
D0
A1
C1
A0
C0
C0
A0
C1
A1
D0
B0
D1
B1
L3 M26
L3 M27
L3 M19
L3 M20
L3 M28
L3 M22
L3 M09
L3 M10
L3 M03
L3 M04
L3 M12
L3 M05
MCM (0) M21
MCM (1) M14
MCM (2) M11
Clock Card M15
Memory Card M17
Memory Card M18
Memory Card M01
Memory Card M02
Memory Card M24
Memory Card M07

15.13 iSeries Models 870 and 890 #9094 Base PCI I/O Enclosure schematic



Note: Hot plug and concurrent add of PCI cards, disk units, and removable media devices are supported.

15.13.1 #9094 PCI Card Enclosure schematic



Legend

Base Feature

Required Feature

Unavailable if Integrated xSeries Server is installed

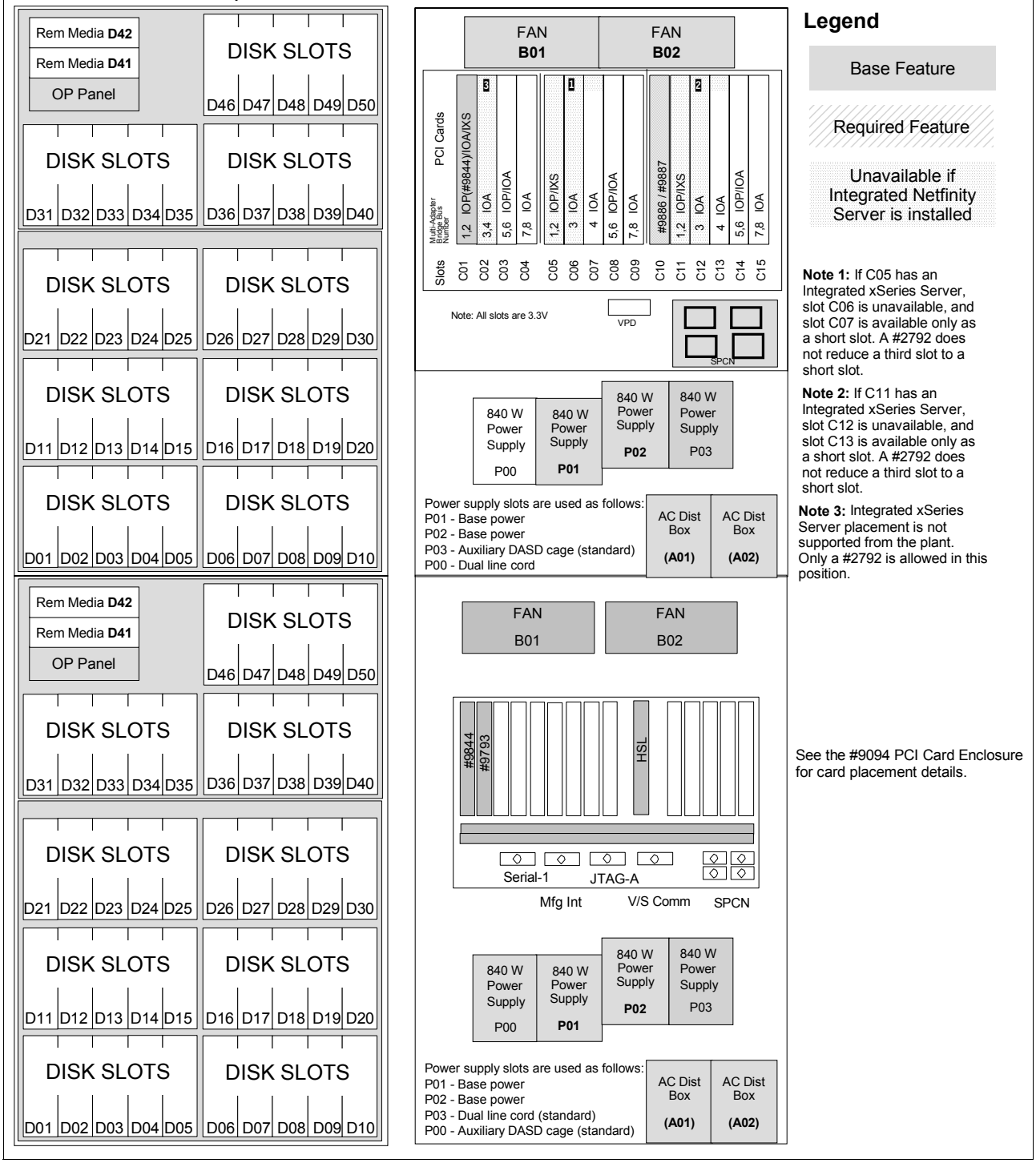
Note 1: If C05 has an Integrated xSeries Server, slot C06 is unavailable, and slot C07 is available only as a short slot. A #2792 does not reduce a third slot to a short slot.

Note 2: If C11 has an Integrated xSeries Server, slot C12 is unavailable, and slot C13 is available only as a short slot. A #2792 does not reduce a third slot to a short slot.

Note 3: Slot C01 in the #9094 for a Model 870 has a #9844, and a #9844 or #9943 for a Model 890.

15.14 iSeries Models 870 and 890 #8094 Optional 1.8 m I/O Rack schematic

Note: The total number of disk bays is 2 x 45.



Legend

Base Feature

Required Feature

Unavailable if Integrated Netfinity Server is installed

Note 1: If C05 has an Integrated xSeries Server, slot C06 is unavailable, and slot C07 is available only as a short slot. A #2792 does not reduce a third slot to a short slot.

Note 2: If C11 has an Integrated xSeries Server, slot C12 is unavailable, and slot C13 is available only as a short slot. A #2792 does not reduce a third slot to a short slot.

Note 3: Integrated xSeries Server placement is not supported from the plant. Only a #2792 is allowed in this position.

See the #9094 PCI Card Enclosure for card placement details.

15.15 iSeries Model 800 processors

The iSeries Model 800 initial installation is CSU. Processor upgrades within models are performed by IBM Service Representatives.

Processor feature	Server feature	Edition feature	Model 800 processor
#2463	#0863		**300 CPW Uni-Processor in Client/Server Environment** ► SStar 540 MHz Uni (CCIN 25B9) ► Includes eight DIMM memory positions (plug directly into the backplane, direct attach) ► Includes embedded Base PCI IOP (CCIN 286C) ► Includes Common Service Processor (CSP) (CCIN 25B9) The #2463 was withdrawn from marketing as of 01 October 2005.
		#7400	**Value Edition** Provides 25 CPW for 5250 OLTP (CCIN 7400)
	#0864		**300 CPW Uni-Processor in Client/Server Environment** ► SStar 540 MHz Uni (CCIN 25B9) ► Includes eight DIMM memory positions (plug directly into the backplane, direct attach) ► Includes embedded Base PCI IOP (CCIN 286C) ► Includes Common Service Processor (CCIN 25B9) The #2463 was withdrawn from marketing as of 01 October 2005.
		#7400	**Standard Edition** Provides 25 CPW for 5250 OLTP (CCIN 7400) The #2463 was withdrawn from marketing as of 01 October 2005.
#2464	#0865		**950 CPW Uni-Processor in Client/Server Environment** ► SStar 540 MHz Uni (CCIN 25B9) ► Includes eight DIMM memory positions (plug directly into the backplane, direct attach) ► Includes a 2 MB L2 cache ► Includes embedded Base PCI IOP (CCIN 286C) ► Includes Common Service Processor (CCIN 25BA) The #2464 was withdrawn from marketing as of 01 June 2006.
		#7408	**Advanced Edition** Provides 50 CPW for 5250 OLTP (CCIN 7408)

15.16 iSeries Model 810 processors

The iSeries Model 810 initial installation is CSU. Processor upgrades within models are performed by IBM Service Representatives.

Processor feature	Server feature	Edition feature	Model 810 processor
#2465	#0868		**750 CPW Uni-Processor in Client/Server Environment** ► SStar 540 MHz Uni (CCIN 25BA) ► Includes 2 MB L2 cache ► Includes eight DIMM memory positions (plug directly into the backplane, direct attach) ► Includes embedded Base IOP (CCIN 286D) ► Includes Common Service Processor (CCIN 25BA) The #2465 was withdrawn from marketing as of 1 October 2005.
		#7404	**Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7404)
		#7406	**Enterprise Edition** Provides up to 750 CPW for 5250 OLTP (CCIN 7406)
		#7445	**High Availability Edition** Provides up to 750 CPW for 5250 OLTP (CCIN 7406)
#2466	#0866		**1020 CPW Uni-Processor in Client/Server Environment** ► SStar 540 MHz Uni (CCIN 25BA) ► Includes 2 MB L2 cache ► Includes eight DIMM memory positions (plug directly into the backplane, direct attach) ► Includes embedded Base IOP (CCIN 286D) ► Includes Common Service Processor (CCIN 25BA) The #2466 was withdrawn from marketing as of 1 June 2006.
		#7407	**Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7407)
		#7409	**Enterprise Edition** Provides up to 1070 CPW for 5250 OLTP (CCIN 7409)
		#7446	**High Availability Edition** Provides up to 1070 CPW for 5250 OLTP (CCIN 7409)
	#0769	#7407	**Domino Edition** Provides limited 5250 OLTP CPW (CCIN 7407)
#2467	#0867		**1470 CPW Uni-Processor in Client/Server Environment** ► SStar 750 MHz Uni (CCIN 25F0) ► Includes 4 MB L2 cache ► Includes 16 DIMM memory positions (plug directly into the backplane, direct attach) ► Includes embedded Base IOP (CCIN 286E) ► Includes Common Service Processor (CCIN 25F0) The #2467 was withdrawn from marketing as of 1 June 2006.
		#7410	**Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7410)
		#7412	**Enterprise Edition** Provides up to 1470 CPW for 5250 OLTP (CCIN 7412)
		#7447	**High Availability Edition** Provides up to 1470 CPW for 5250 OLTP (CCIN 7412)
	#0770	#7410	**Domino Edition** Provides limited 5250 OLTP CPW (CCIN 7410)

Processor feature	Server feature	Edition feature	Model 810 processor
#2469	#0869		**2700 CPW 2-way Processor in Client/Server Environment** ► SStar 750 MHz 2-way (CCIN 25EB) ► Includes 4 MB L2 cache ► Includes sixteen DIMM memory positions via the memory riser card (CCIN 2884) ► Includes base I/O backplane (CCIN 282F) ► Includes embedded Base IOP (CCIN 284E) ► Includes Common Service Processor (CCIN 2249) The #2469 was withdrawn from marketing as of 1 June 2006.
		#7428	**Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7428)
		#7430	**Enterprise Edition** Provides 2700 CPW for 5250 OLTP (CCIN 7430)
		#7448	**High Availability Edition** Provides up to 2700 CPW for 5250 OLTP (CCIN 7430)
	#0771	#7428	**Domino Edition** Provides limited 5250 OLTP CPW (CCIN 7428)

15.17 iSeries Model 825 processors

The iSeries Model 825 initial installation and model upgrades are performed by an IBM Service Representative.

Processor feature	Server feature	Edition feature	Model 825 processor
#2473	#0873		**3600/6600 CPW 3/6-way Processor in Client/Server Environment** ► Includes three POWER4 processor cards (CCIN 25DC) ► Includes 96 MB L3 cache (16 MB L3/GP processor) ► Includes Smart Chip Processor VPD card (CCIN 2484) ► Includes base I/O backplane (CCIN 25CA) ► Includes Connector Card (CCIN 289D) ► Includes Expansion Card (CCIN 28B3), provides two RIO-G ports ► #1609 processor activation feature, maximum of three ► #1682 On/Off Capacity on Demand Prepaid feature for Standard Edition* ► #1683 On/Off Capacity on Demand Prepaid feature for Enterprise and High Availability Edition* ► #1773 On/Off Capacity on Demand enablement feature. * The On/Off Capacity on Demand features require PTFs that are identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 The #2473 was withdrawn from marketing as of 1 June 2006.
		#7416	**Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7416)
		#7418	**Enterprise Edition** Provides up to 6600 CPW for 5250 OLTP (CCIN 7418)
		#7434	**High Availability Edition** Provides up to 6600 CPW for 5250 OLTP (CCIN 7418)
	#0772	#7416	**Domino Edition** Provides limited 5250 OLTP CPW (CCIN 7416)
	#0773	#7416	**Domino Edition** Provides limited 5250 OLTP CPW (CCIN 7416)

Processor feature	Server feature	Edition feature	Model 825 processor
#2495	#0890		**1250/6600 CPW 1/6-way Processor in Client/Server Environment** ► Includes three POWER4 processor cards (CCIN 25DC) ► Includes 96 MB L3 cache (16 MB L3/GP processor) ► Includes Smart Chip Processor VPD card (CCIN 2484) ► Includes base I/O backplane (CCIN 25CA) ► Includes Connector Card (CCIN 289D) ► Includes Expansion Card (CCIN 28B3), provides two RIO-G ports ► #1779 On/Off Capacity on Demand enablement feature* * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027
		#7439	**Capacity BackUp Edition** Provides up to 6600 CPW for 5250 OLTP (CCIN 7439) for Capacity BackUp Edition ► #1697 On/Off Capacity on Demand Prepaid feature * ► #1797 TCoD Billing feature * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027

15.18 iSeries Model 870 processors

The iSeries Model 870 initial installation and model upgrades are performed by an IBM Service Representative.

Processor feature	Server feature	Edition feature	Model 870 processor
#2486	#0886		**115000 - 20000 CPW 8/16-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 7419 or CCIN 7421) ► Processor 0 (CCIN 25D3) ► Processor 1 (CCIN 25D3) ► #1611 Capacity Upgrade on Demand activation code (up to eight on the #2486) ► #1685 On/Off Capacity on Demand Prepaid feature for Standard Edition* ► #1686 On/Off Capacity on Demand Prepaid feature for Enterprise and High Availability Editions* ► #1776 On/Off Capacity on Demand enablement feature * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 The #2486 was withdrawn from marketing as of 1 June 2006.
		#7419	**Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7419)
		#7421	**Enterprise Edition** Provides up to 20000 CPW for 5250 OLTP (CCIN 7421)
		#7436	**High Availability Edition** Provides up to 20000 CPW for 5250 OLTP (CCIN 7421)

Processor feature	Server feature	Edition feature	Model 870 processor
#2489	#0889		**7700 - 11500 CPW 5/8-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 7431 or CCIN 7433) ► Processor 0 (CCIN 25D3) ► #1614 Capacity Upgrade on Demand activation code (up to three on the #2489) ► #1684 On/Off Capacity on Demand Prepaid feature for Standard Edition* ► #1695 On/Off Capacity on Demand Prepaid feature for Enterprise and High Availability Editions* ► #1774 On/Off Capacity on Demand enablement feature* * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 The #2489 was withdrawn from marketing as of 1 June 2006.
		#7431	**Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7431)
		#7433	**Enterprise Edition** Provides up to 11500 CPW for 5250 OLTP (CCIN 7433)
		#7435	**High Availability Edition** Provides up to 11500 CPW for 5250 OLTP (CCIN 7433)
#2496	#0891		**3200 - 20000 CPW 2/16-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 7440) ► Processor 0 (CCIN 25D3) ► Processor 1 (CCIN 25D3) ► #166x On/Off Capacity on Demand Prepaid feature ► #1780 On/Off Capacity on Demand enablement feature* * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027
		#7440	**Capacity BackUp Edition** Provides up to 11800 CPW for 5250 OLTP (CCIN 7440) for the Capacity BackUp Edition ► #1698 On/Off Capacity on Demand Prepaid feature* ► #1798 TCoD Billing feature * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027

15.19 iSeries Model 890 processors

The iSeries Model 890 initial installation and model upgrades are performed by an IBM Service Representative.

Processor	Server feature	Model 890 processor
#0197	5250 Interactive features	**29300 CPW 24-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 0197) ► Processor 0 (CCIN 25D3) ► Processor 1 (CCIN 25D3) ► Processor 2 (CCIN 25D3) The #0197 is represented by Processor Feature Code 0197.
#0198	5250 Interactive features	**37400 CPW 32-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 0198) ► Processor 0 (CCIN 25D5) ► Processor 1 (CCIN 25D5) ► Processor 2 (CCIN 25D5) ► Processor 3 (CCIN 25D5) The #0198 is represented by Processor Feature Code 0198.

Processor	Server feature	Model 890 processor
#2487		**20000 - 29300 CPW 16/24-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 2487) ► Processor 0 (CCIN 25D5) ► Processor 1 (CCIN 25D5) ► Processor 2 (CCIN 25D5) ► #1610 CUoD activation code* (up to eight on the #2487) ► #166x On/Off Capacity on Demand Prepaid feature * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027
	#1576	**Optional 120 CPW in 5250 Interactive Environment** The #2487-#1576 is represented by Processor Feature Code 2AF0.
	#1577	**Optional 240 CPW in 5250 Interactive Environment** The #2487-#1577 is represented by Processor Feature Code 2AF1.
	#1578	**Optional 560 CPW in 5250 Interactive Environment** The #2487-#1578 is represented by Processor Feature Code 2AF2.
	#1579	**Optional 1050 CPW in 5250 Interactive Environment** The #1579-#1579 is represented by Processor Feature Code 2AF3.
	#1581	**Optional 2000 CPW in 5250 Interactive Environment** The #2487-#1581 is represented by Processor Feature Code 2AF5.
	#1583	**Optional 4550 CPW in 5250 Interactive Environment** The #2487-#1583 is represented by Processor Feature Code 2AF7.
	#1585	**Optional 10000 CPW in 5250 Interactive Environment** The #2487-#1585 is represented by Processor Feature Code 2AF9.
	#1587	**Optional 16500 CPW in 5250 Interactive Environment** The #2487-#1587 is represented by Processor Feature Code 2AFB.
	#1588	**Optional 20200 CPW in 5250 Interactive Environment** The #2487-#1588 is represented by Processor Feature Code 2AFC.
#2488		**29300 - 37400 CPW 24/32-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 2488) ► Processor 0 (CCIN 25D3) ► Processor 1 (CCIN 25D3) ► Processor 2 (CCIN 25D3) ► Processor 3 (CCIN 25D3) ► #1610 CUoD activation code* (up to eight on the #2488) ► #166x On/Off Capacity on Demand Prepaid feature * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027
	#1576	**Optional 120 CPW in 5250 Interactive Environment** The #2488-#1576 is represented by Processor Feature Code 2AD0.
	#1577	**Optional 240 CPW in 5250 Interactive Environment** The #2488-#1577 is represented by Processor Feature Code 2AD1.
	#1578	**Optional 560 CPW in 5250 Interactive Environment** The #2488-#1578 is represented by Processor Feature Code 2AD2.
	#1579	**Optional 1050 CPW in 5250 Interactive Environment** The #2488-#1579 is represented by Processor Feature Code 2AD3.
	#1581	**Optional 2000 CPW in 5250 Interactive Environment** The #2488-#1581 is represented by Processor Feature Code 2AD5.
	#1583	**Optional 4550 CPW in 5250 Interactive Environment** The #2488-#1583 is represented by Processor Feature Code 2AD7.
	#1585	**Optional 10000 CPW in 5250 Interactive Environment** The #2488-#1585 is represented by Processor Feature Code 2AD9.
	#1587	**Optional 16500 CPW in 5250 Interactive Environment** The #2488-#1587 is represented by Processor Feature Code 2ADB.
	#1588	**Optional 20200 CPW in 5250 Interactive Environment** The #2488-#1588 is represented by Processor Feature Code 2ADC.
	#1591	**Optional 37400 CPW in 5250 Interactive Environment** The #2488-#1591 is represented by Processor Feature Code 2ADF.

Processor feature	Server feature	Edition feature	Model 890 processor
#2497	#0897		**20000 - 29300 CPW 16/24-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 7422 or 7424) ► Processor 0 (CCIN 25D3) ► Processor 1 (CCIN 25D3) ► Processor 2 (CCIN 25D3) ► #1612 Capacity Upgrade on Demand Activation code (up to eight on the #2497) ► #1688 On/Off Capacity on Demand Prepaid feature for Standard Edition* ► #1689 On/Off Capacity on Demand Prepaid feature for Enterprise and High Availability Edition* ► #1777 On/Off Capacity on Demand enablement feature* * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 The #2497 was withdrawn from marketing as of 1 June 2006.
		#7422	**Standard Edition** Provides limited 5250 OLTP CPW (CCIN 7422).
		#7424	**Enterprise Edition** Provides up to 29300 CPW for 5250 OLTP (CCIN 7424).
		#7437	**High Availability Edition** Provides up to 29300 CPW for 5250 OLTP (CCIN 7424).
#2498	#0898		**29300 - 37400 CPW 24/32-way Processor in Client/Server Environment** ► Processor Capacity Card (CCIN 2425 or 7427) ► Processor 0 (CCIN 25D3) ► Processor 1 (CCIN 25D3) ► Processor 2 (CCIN 25D3) ► Processor 3 (CCIN 25D3) ► #1613 Capacity Upgrade on Demand Activation code (up to eight on the #2498) ► #1691 On/Off Capacity on Demand Prepaid feature for Standard Edition* ► #1692 On/Off Capacity on Demand Prepaid feature for Enterprise and High Availability Edition* ► #1778 On/Off Capacity on Demand enablement feature * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027 The #2498 was withdrawn from marketing as of 1 June 2006.
		#7425	**Standard Edition** Provides limited 5250 OLTP CPW for Standard Edition (CCIN 7425).
		#7427	**Enterprise Edition** Provides up to 37400 CPW for 5250 OLTP (CCIN 7427).
		#7438	**High Availability Edition** ► Processor Capacity Card (CCIN 7427) ► #1699 On/Off Capacity on Demand Prepaid feature* ► #1799 TCoD Billing feature
#2499	#0892		**5600 - 37400 CPW 4/32-way Processor in Client/Server Environment** ► #1781 On/Off Capacity on Demand enablement feature * ► #166x On/Off Capacity on Demand Prepaid feature * On/Off Capacity on Demand features require PTFs identified in Information APAR II13551 at: http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027
		#7441	**Capacity BackUp Edition** Provides up to 37400 CPW for 5250 OLTP (CCIN 2488)

15.20 iSeries Models 800, 810, 825, 870, and 890 features

You can find feature descriptions, including details about power and packaging and main memory in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135.

15.21 Supported upgrades for Models 800, 810, 825, 870, and 890

Refer to Chapter 16, “System i family upgrades” on page 599, for an overview of the upgrades supported for iSeries models.

16

System i family upgrades

IBM System i Models 520, 550, 570, POWER6 570, and 595, as well as iSeries Models 800, 810, 825, 870, and 890, support a large number of common I/O towers and I/O features. None of these models support System Products Division (SPD) towers or expansion units. Such towers and expansion units were used extensively with older models, such as the iSeries Models 720, 730, and 740 or earlier, or with the iSeries Models 820, 830, and 840 with the SPD migration tower.

Note: The #5065 Storage/PCI Expansion Tower is an SPD I/O tower.

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16.1 Supported model-to-model upgrades

The following table shows an overview of the supported upgrades for System i models as of October 2007.

From model	To model																
	515	520	520+	525	550	550+	570	570+	POWER6 570	595	595 1.9 GHz	595 2.3 GHZ	800	810	825	870	890
Model 515	✓																
Model 520		✓	✓	✓													
Model 520+			✓	✓													
Model 525																	
Model 550						✓			✓								
Model 550+									✓								
Model 570							✓	✓	✓	✓	✓	✓					
Model 570+								✓	✓	✓	✓	✓					
Model POWER6 570									✓								
Model 595										✓	✓	✓					
Model 595+												✓					
Model 800													✓[a]				
Model 810		✓	✓	✓	✓	✓	✓	✓						✓[a]			
Model 825					✓	✓	✓	✓	✓	✓					✓[a]	✓[a]	
Model 870							✓	✓	✓	✓	✓	✓				✓[a]	✓[a]
Model 890							✓	✓	✓	✓	✓	✓					✓[a]

a. Effective 1 June 2006, upgrades from Models 800, 810, 825, 870, and 890 to Models 800, 810, 825, 870, and 890 are no longer available. Effective 1 December 2007, upgrades from Models 810 and 825 to Models 5xx are no longer available. Effective 1 April 2008 upgrades from Models 870 and 890 to models 5xx are no longer available.

When upgrading from an IBM System i model that supports an unlimited number of i5/OS users to the Model 525 with its i5/OS user-based license entitlement, for example, you must consider the possible expense of needing a large number of user license entitlements. For a workload environment with a large number of i5/OS users, the Model 520 might be the appropriate choice. In this paper, see 11.2, “i5/OS licensing by user” on page 441.

The relationship between commercial processing workloads (CPWs) of the “from and to” systems varies depending on the ratio of batch to interactive workload. Simple use of CPW ratings might not be sufficient to appropriately size your configuration.

You must always understand your possible workload and application, and use a sizing or capacity planning tool, such as those listed here:

- IBM Systems Workload Estimator

  http://www.ibm.com/servers/eserver/iseries/perfmgmt/sizing.html

- Performance Navigator by Midrange Performance Group

  http://www.mpginc.com

- BMC Patrol for iSeries - Predict

  http://www.bmc.com/

To assist you in using these tools, refer to *Sizing IBM i5/OS Work on IBM System i5 Partitions*, SG24-6656, which contains examples of using these tools.

Refer to the Upgrade topic in the Find and Compare Tool (FACT) at the following Web page to determine the supported upgrade paths for a given processor:

http://www-919.ibm.com/servers/eserver/fact/

For software considerations, refer to “Software migration and upgrade paths” in *IBM System i5 Handbook,* SG24-7486. Use the IBM Prerequisite tool, which you can find at the following Web address, for compatibility information about hardware and software features for supported System i processors:

http://www-912.ibm.com/e_dir/eServerPrereq.nsf

16.2 Upgrades for System i processors

IBM eServer iSeries Migration: A Guide to Upgrades and Migrations to POWER Technology, SG24-7200, provides guidance for upgrading to eServer i5 Models 520, 550, 570, and 595. Plans call for this publication to be updated to provide guidance for upgrading to the latest System i models.

Processor upgrades within and to IBM System i models are performed by IBM Service Representatives. A key upgrade to a System i POWER6 570 configuration requires consideration of the following points:

- Until a later announcement, you must use Hardware Management Console (HMC) with Version 7 Release 3 or later installed.
- You must consider the processor enclosure (system unit) PCI card.

  Each POWER6 570 processor enclosure has few PCI-X slots and no IOP support. Consider moving PCI cards to I/O towers before you begin an upgrade process. This might require an additional I/O tower. Consider changing to use new PCIe cards.

- You must consider disk support for the processor enclosure (system unit).

  The processor enclosure supports only Serially Attached SCSI (SAS) disk technology drives. SCSI disks are not supported. Currently the embedded disk controller supports either no protection or mirroring. RAID protection is not an option. Also note that the embedded SAS technology controller has no write cache.

  Therefore, you must perform upgrade planning with the following points in mind:

  – Only SAS disk technology can be placed within the processor enclosure.
  – The processor enclosure disk controller has no RAID protection.
  – Workload environments that perform a significant number of write operations per second to disks might experience a performance bottleneck when writing to SAS disks.

Note: Optionally, you can order a System i POWER6 570 with a specify code (#0719) to not have any disk drives within the system unit (processor enclosure). You also can specify, on a new system order, a load source disk location in an I/O tower, I/O enclosure, or on a storage area network (SAN) device. See the feature #07*nn* and #0837 (SAN load source) descriptions in Chapter 4, “POWER5, POWER6, and System i Models 800, 810, 825, 870, 890: Features and placement” on page 135, for additional feature information.

- There are stronger disk and disk-controller protection rules for POWER6 570, in contrast to POWER5 technology-based models. If using RAID-5 or RAID 6 capable controllers, you must protect the controller's cache with auxiliary write cache IOA. For example, a #5775 must be replaced with a disk controller for which an auxiliary write cache IOA can be used (requires one more PCI slot). Alternatively, you can choose to mirror the disk controller and its disk drives, which might require the purchase of more disk.
- Each POWER6 570 processor enclosure comes with an embedded Integrated Virtual Ethernet (IVE) adapter. This adapter is also commonly called a Host Ethernet Adapter (HEA). You choose from either a 2 Ethernet port or 4 Ethernet port adapter. These new Ethernet adapters offer enhanced virtualization capabilities compared to the POWER5 embedded 2 port Ethernet adapter. Up to a supported maximum, each port of the new IVE adapter can be optionally shared by multiple partitions.

  Refer to Chapter 6, “Integrated Virtual Ethernet” on page 329, for more information about IVE and HEA.

You must thoroughly review the planning (and upgrade) information that is available on the the System i Support Upgrade planning Web page at:

`http://www.ibm.com/systems/support/i/planning/upgrade/index.html`

IBM eServer iSeries Migration: System Migration and Upgrades at V5R1 and V5R2, SG24-6055, provides guidance for upgrading to Models 800, 810, 820, 830, 840, 825, 870, and 890.

16.2.1 Side-by-side upgrades

For some upgrades, a new serial numbered machine replaces another serial numbered machine, which provides for the transfer of licensed program products. See 16.4, “Temporary Software License” on page 603, for information about managing the software licensing for this kind of upgrade.

Side-by-side upgrades are miscellaneous equipment specification (MES) upgrades where a customer keeps the same serial number and returns the replaced machine to IBM. The side-by-side offering relates to the temporary use of hardware. It can be ordered in two-week increments, for a maximum of eight weeks (56 days). See RPQ 847208 (for Model 520), 847188 (for Model 550), 847212 (for Model 570) or 847213 (for Model 595) for more information.

16.2.2 5733-ITL license option

The 5733-ITL license option has replaced licensing option 5799-TLM as of July 2007.

If the replacement machine is ordered as a new machine from IBM and you specify transfer of software from the original machine to the replacement machine (5733-NKY ordered), then the customer is authorized for 15 days of concurrent use. If use of the licensed program products

(LPPs) are required on both the original and the replacement machine for more than 15 days, a temporary license offering is available from IBM for up to 12 months.

Order 5733-ITL for the number of months required. This way you can have temporary entitlement to use the software during the migration and eliminate the need to purchase permanent OTC licenses. If more than 12 months of concurrent use is expected, purchase permanent OTC licenses.

16.3 RISC-to-RISC Data Migration

The #0205 RISC-to-RISC Data Migration specify code is used when a client orders a new (RISC) System i5 server to replace an existing iSeries or AS/400e RISC-based system. The #0205 is ordered on the initial order of a Model 515, 520, 550, 570, or 595.

Manufacturing loads only the system licensed internal code up through QSYS of i5/OS when the #0205 is ordered. Because of this limited loading of i5/OS by manufacturing, #5000 Software Preload Required is not allowed with the #0205. The #0205 RISC-to-RISC Data Migration and #5000 Software Preload Required are mutually exclusive.

Note: The #0205 RISC-to-RISC Data Migration specify code was withdrawn *from marketing* as of 1 April 2005 for machine type 9405.

16.4 Temporary Software License

System i Temporary Software License offers you the option to purchase a software license for temporary use of a System i, eServer i5, iSeries, or AS/400 machine. The license is a lower-cost option for clients who have a temporary requirement to license programs and options when operating a machine. You might require temporary licensing for the following reasons:

- You acquire a replacement machine and must run both the original and replacement machine concurrently for more than 15 days to facilitate the migration of your applications and test the replacement machine.
- You have a temporary need to operate a machine for 12 months or less and require licensing for licensed programs or options.

If the replacement machine was ordered as a new machine from IBM and you specified a transfer of software from the original machine to the replacement machine (5733-NKY ordered), then the customer is authorized for 15 days of concurrent use. If use of the LPPs are required on both the original and the replacement machine for more than 15 days, a temporary license offering is available from IBM for up to 12 months. Simply order the 5733-ITL for the number of months that are required. This provides temporary entitlement to use the software during the migration and eliminates the need to purchase permanent OTC licenses. If more than 12 months of concurrent use is expected, purchase permanent OTC licenses.

Temporary software keys are created for the products that require a key that is designated in the order for 5733-ITL. These keys must be installed on the machine, even if a permanent key for the program currently exists. You can obtain the keys by logging on the Entitled software support Web page at:

https://www.ibm.com/servers/eserver/ess

The questions and answers in this document apply to situations where a machine with a new serial number is replacing another machine with a serial number and provides for the transfer of LPPs. As mentioned earlier, side-by-side upgrades are MES upgrades where a customer keeps the same serial number and the replaced machine is being returned to IBM. The side-by-side offering relates to the temporary use of hardware. It can be ordered in two-week increments, for a maximum of eight weeks (56 days). See RPQ 847208 (for Model 520), 847188 (for Model 550), 847212 (for Model 570), or 847213 (for Model 595) for more information.

For addition information, refer to the following Web pages:

- IBM System i Systems Sales (internal)

  http://w3-1.ibm.com/sales/systems/portal/_s.155/253

  From this Web site you can access the document *System i Express i5/OS Licensing by User Frequently Asked Questions.* On the general System Sales Web page, follow these steps:

  a. Select **System i** in the Product field. Click **GO**.

  b. On the next Web page, under Featured content, click the **System i master sales kit** link.

  c. On System i master sales kit page, scroll down to the Frequently Asked Question (FAQ) List section. Under that heading, click the link for **i5/OS Licensing by User Frequently Asked Questions**.

- IBM Business Partners (external)

  http://www.ibm.com/partnerworld/sales/systems/

  From this Web page, you can also access the document *System i Express i5/OS Licensing by User Frequently Asked Questions*. After you log in with a registered ID, **select System i Announcement Sales Kit - October 24**. Then click the **Frequently Asked Questions** link.

You can also contact your support representative for further information about Temporary Software License offerings.

16.5 I/O considerations for upgrading to a 570 (POWER6) configuration

Many, but not all of the POWER5 and POWER4 technology I/O devices, IOPs, IOAs (controllers), and I/O enclosures (towers or drawers) are also supported on POWER6 technology systems. Some of the earlier I/O configuration products that are already installed can be included in the upgrade, but some cannot be ordered new for a POWER6 technology system.

As with some earlier technology upgrades, upgrading to a POWER6 570 involves several technology changes for which you must plan, including:

- Only SAS disk drives in POWER6 570 CEC
- Four PCIe slots and two PCI-X DDR slots in POWER6 570 CEC, no IOPs
- Choice of 12X and/or HSL-2 loops
- Buffered DDR2 memory DIMMs

Ensure that you plan to run using i5/OS V5R4 if your non-POWER6 system is not running V5R4.

Consider the following example of a recommended way to perform a weekend conversion:

1. Before the move bring the existing system to i5/OS V5R4 and machine code V5R4M5 (or V6R1 in the future).
2. Bring HMC to firmware level V7R3 (new browser-based interface).
3. Move any SCSI disk drives out of the existing 570 processor enclosure into a I/O tower or drawer supported by POWER6.
4. On your current system, implement more stringent disk protection configuration rules of POWER6 (RAID or mirroring required).
5. Move any excess PCI-X adapters from the existing processor enclosure into an I/O tower or drawer.
6. Upgrade any 0588 enclosure to HSL-2 using RPQ #847204 and feature #6417.
7. Replace older hardware that is not supported on POWER6.
8. Back up your system software and microcode.
9. Perform the upgrade.

Consider RPQ #847212 side-by-side for a multi-weekend move. Take note of the temporary use software licensing announced in July 2007 and documented in 16.4, “Temporary Software License” on page 603.

The following summary of I/O considerations is based upon what can be included in an upgrade and can be ordered new for the 570 (POWER6) processor enclosure:

- Use SAS-technology disk drives only. Currently there is no RAID protection capability and essentially no write cache.
- Choose an HSL-2 loop adapter, 12X loop adapter, or a combination, for up to two maximum. You cannot mix 12X and HSL-2 drawers on the same loop.
- Select one of two available IVE (HEA) adapters. These adapters have significantly expanded virtualization capabilities. They must be configured through the HMC interface before they can be seen by and configured by the operating system that will use them. The operating system recognizes the logical host Ethernet adapter (on i5/OS CMNnn). The hardware adapter itself is not owned by a partition as previously available LAN adapters are.
- Review the I/O tower and drawer migration rules for POWER5 570 to POWER6 570 as shown in the following table.

From POWER5 570	POWER5 description or notes	To POWER6 570	POWER5 description or notes
5074/5079	► HSL-1, 14 PCI slots ► 15-90 10k rpm disks	Not supported	
5094/5294	► HSL-2, 14 PCI slots ► 15-90 10k, 15k rpm disks	5094/5294	► HSL-2, 14 PCI slots ► 15-90 15k rpm disk ► 10k disk supported, not recommended ► Not sold as new
5096/5296	► HSL-2, 14 PCI slots ► For large disks on Fibre Channel	5096/5296	► HSL-2, 14 PCI slots ► For large disks on Fibre Channel
0588/5088	► HSL-1, 14 PCI slots ► Not sold as new ► HSL-2 RPQ available	0588/5088	► HSL-2, 14 PCI slots ► Not sold as new

From POWER5 570	POWER5 description or notes	To POWER6 570	POWER5 description or notes
0595	► PCI-X Expansion Unit in Rack: HSL-2, 7 PCI slots ► 12 10k, 15k rpm disks	0595	► HSL-2, 7 PCI slots ► 12 10k, 15k rpm disks
5790	► HSL-2, 6 PCI-X slots	5790	► HSL-2, 6 PCI-X slots
5095	► PCI-X Expansion Tower: ► HSL-2, 7 PCI slots ► 12 10k, 15k rpm disks	Not supported	
5796	► Not supported	5796	► 12X, 6 PCI-X DDR slots
5096	► PCI-X Expansion Tower (no disk)	Not supported	

Always refer to the following Web pages for the latest information about hardware features and on what processor models the feature is supported:

- IBM Prerequisite Web page

  http://www-912.ibm.com/e_dir/eServerPrereq.nsf

- IBM System i upgrade planning Web page

  http://www-304.ibm.com/jct01004c/systems/support/i/planning/upgrade/

A

Product previews, Statements of Direction, and planning statements for 2007

Statements of directions (long term) and product previews (targeted within 18 months) identify plans and functions that IBM has committed to incorporate into future System i hardware or software releases. Understanding them can provide insight into IBM plans and directions for future System i hardware or software releases. The information released represents the current intent of IBM.

Important: All statements regarding the plans, directions, and intent of IBM are subject to change or withdrawal without notice. Any reliance on these product previews, statements of direction and future planning is at the relying party's sole risk and will not create liability or obligation for IBM.

Some of the product previews made early in 2007 became formal product announcements during 2007. This is noted in the following sections.

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Product previews

iSeries Access for Windows with Windows Installer technology

iSeries Access for Windows adds support for the Windows Installer technology. The first implementation of this is a Technology Preview, which is available for download at:

http://www14.software.ibm.com/webapp/download/preconfig.jsp?id=2003-10-30+10%3A05%3A32.527405R&cat=&fam=&s=z&S_TACT=TrialsAndBetas&S_CMP=

This download package is iSeries Access for Windows V5R4 with the latest service pack included. It is available only in English. The iSeries Navigator components are not included with this install image.

In V6R1, IBM intends to make the iSeries Access for Windows, with the Windows Installer technology, generally available. All components of iSeries Access for Windows, including iSeries Navigator, will be supported and translated.

DB2 Query and Report Writer for the Web

IBM plans to deliver DB2 Web Query for System i, which is a Web-based query and report writing product that replaces the IBM Query for iSeries product. Customers can continue to use the IBM Query for iSeries product but should not expect to see any future enhancements to that product. The new product includes the Query for iSeries technology to assist customers in their transition to the new product, while offering a more modernized, pure Java-based solution for a more robust and flexible reporting solution. This product provides reporting and graphing assistants and a WYSIWYG report “painter”. Customers can modernize existing Query for iSeries reports while providing a foundation for building more complex business intelligence applications such as online analytical processing (OLAP), data mining, dashboarding, or data warehouse implementations.

This capability was announced in July 2007. For more information, refer to 11.12.1, “DB2 Web Query for System i, 5733-QU2” on page 490. In addition, refer to the System i database Web page at:

http://www.ibm.com/systems/i/db2

System i POWER6 model 570 12-way processor

IBM plans to offer additional flexibility in configuring the POWER6 570 system unit. It plans to support upgrades from an installed single (4-way) or dual (8-way) processor enclosure to a triple (12-way) enclosure Model 570. IBM also plans to support upgrades from an installed triple enclosure to a quad (16-way) enclosure using the #5801 1/4-way processor enclosure.

This capability was announced in October 2007. For more information, refer to 2.1, “System i POWER6 model 570 overview” on page 12.

System i POWER6 model 570 redundant service processor

IBM plans to add redundant service processors to existing POWER6 processor-based systems with two or more processor enclosures. This capability is planned through a firmware upgrade, at no additional charge, by first quarter 2008. After the upgrade is applied, the appropriate HMC connections are made, and the system is rebooted. Service processor functions can maintain operational status if one of the service processors fails.

Major i5/OS V6R1 release

IBM plans to introduce i5/OS V6R1 during 2008. As stated earlier in this appendix, the information released represents the current intent of IBM. All statements regarding the plans, directions, and intent of IBM are subject to change or withdrawal without notice. Any reliance on these product previews, Statements of Direction, and future planning is at the relying party's sole risk and will not create liability or obligation for IBM.

The following key enhancement areas are planned:

- With this new release, IBM will extend the implementation of the Java Virtual Machine (JVM), which is being deployed across all IBM platforms. The new 64-bit JVM is expected to help ISVs with application portability, configuration, and service tool compatibility when they deploy new Java-based applications on i5/OS that were written on another platform.

  It should also deliver significant performance improvements for Java-based applications.

- IBM plans to include a new integrated Web application server with i5/OS to simplify the deployment of Java applications. The integrated application Web server will support applications written to use JavaServer™ Faces (JSF), JavaServer Pages (JSP™), and servlets and will require minimal system resources and administration.

  This new integrated Web application server was formally announced for i5/OS V5R4 during October 2007. For an overview of V5R4 capabilities, see 11.7.1, "i5/OS integrated Web services server for ILE" on page 465.

  i5/OS V6R1 is planned to have additional enhancements.

- Also planned is an integrated Web services environment with i5/OS for Integrated Language Environment (ILE) programs. Utilities will generate high-level APIs for ILE programs to invoke Web services. A Web services run time will also be included. This run time can easily be used by an administrator with many existing RPG and COBOL programs to expose these programs as Web services.

  The support for making it easier to deploy and RPG or COBOL program as a Web service and as a client requester (consumer) of a Web service was formally announced for i5/OS V5R4 in October 2007. For an overview of V5R4 capabilities, see "Integrated Web services server" on page 466 and "Integrated Web services client" on page 468.

  i5/OS V6R1 is planned to have additional enhancements.

- A new Web-based, multiplatform system management console will support i5/OS. It will extend many of the management capabilities that are currently available in System i Navigator for Windows and IBM Systems Director.

- i5/OS workload management and virtualization support will be enhanced with new features. For example, an i5/OS partition will be able to host storage of another i5/OS partition, which can simplify testing and deployment of applications. Also, i5/OS will be supported as a client of the Virtual I/O Server (VIOS), giving access to virtualized and network storage.

- A new graphical, Web-based performance data viewer will offer enhanced viewing and analysis of i5/OS performance data.

- Continued investments in i5/OS business resiliency include enhancements to cross-site mirroring and further simplification of system object replication through the administrative system domain.

- i5/OS security enhancements will include encrypted backups to any tape or virtual tape device, encryption of data stored on disk, and intrusion protection.

- IBM continues to pursue the integration of RPG with new technologies and languages. With this new release, IBM will deliver the RPG compiler with extensions for multithreading and addition of local file support.
- With the shift of responsibility for the System i compilers and application development products to the Rational line of business, IBM will work to enhance the integration and synergy of the System i development products, such as WebSphere Development Studio Client, with other Rational offerings. The Rational Suite® of products provides key function to enhance a developer's environment in areas such as the rapid development of modern application architectures for System i (Rational Business Developer, formerly Enterprise Generation Language), modelling of application solutions, quality management, and change and configuration management. The tighter integration of these products to the System i development community will further enhance the comprehensive function included in WebSphere Development Studio Client today.
- i5/OS and System i hardware have enhanced integration and performance with IBM System Storage over a storage area network.
- Running on i5/OS V6R1 will require conversion of all programs and some other objects created under previous releases that use the i5/OS machine interface. Program conversion automatically upgrades and refreshes programs to take advantage of the latest system technology enhancements, including enhanced system integrity, improved performance, and a range of new operating system and processor capabilities.

  In order for a program to be converted, its creation data (sometimes referred to as *observability*) must be available. For all programs created for V5R1 or later, their creation data is automatically saved during program creation. Clients and ISVs with programs created for OS/400 V4R5, and earlier, need to ensure that the creation data is available for the conversion process. IBM is providing an analyze object conversion (ANZOBJCVN) tool for i5/OS V5R3 and V5R4 to help you plan for the program conversion. The tool will help identify potential conversion difficulties, if any, and estimate the time required for program conversion.

  The tool is offered as an aid and does not do the program conversion itself. This tool is currently available. For more information, see "Analyze Object Conversion tool" on page 497.
- i5/OS V6R1 is planned to run on the following processor technology models:
  - All POWER6 models
  - All POWER5 models
  - Models 800, 810, 825, 870, 890

    V6R1 is not planned to run on models such as the 250, 270, 820, 830, and 840.

  Some V6R1 enhancements will run only with hardware features that are available on POWER6-based systems. Details will be available at time of formal announcement.

  To learn more about the i5/OS V6R1 release, see the i5/OS V6R1 preview page on the Web at:

  http://www.ibm.com/systems/i/os/i5os/v6r1preview/

Statements of Direction

Statements of Direction identify the commitment of IBM to direct System i servers toward a given design or technology. Understanding them can provide insight into the design and technology plans of IBM. All statements regarding IBM plans, directions, and intent are subject to change or withdrawal without notice.

iSeries Access for Windows supports ADO.NET 2.0

In i5/OS V5R4, the .NET data provider (IBM.Data>DB2.iSeries) in iSeries Access for Windows supports ADO.NET 1.0 and 1.1 interfaces. In the next release, IBM intends to support ADO.NET 2.0 base classes and factories in the .NET data provider.

System i and MySQL AB joint Open Source database support

In April 2007, MySQL AB and IBM announced a joint technology and reseller agreement to provide MySQL open source database access to the IBM System i DB2 for i5/OS data. MySQL AB develops and supports a family of database products. The company's flagship offering is MySQL Enterprise, which is a comprehensive set of production-tested software, proactive monitoring tools, and premium support services.

MySQL produces a popular set of open source database software, with over 11 million active installations. MySQL has headquarters in the United States and Sweden. IBM System i clients have already had the ability to run MySQL applications within Linux. What is new is that the two companies have announced that they will work together to offer the MySQL Server for i5/OS, planning to deliver DB2 for i5/OS as a certified MySQL storage engine on the System i platform. This will allow System i customers to implement online and transactional MySQL applications while storing all data in a single i5/OS DB2 database.

In addition, MySQL Enterprise subscriptions, a comprehensive offering of MySQL database software, services and support, will be made available to IBM clients worldwide through the IBM reseller network and the System i sales team.

When these capabilities become available, many open source MySQL and PHP applications become available to System i clients who access DB2 for i5/OS, with the support of both IBM and MySQL.

With the planned DB2 storage engine for MySQL, System i customers will be able to run MySQL applications while continuing to manage their DB2 for i5/OS databases. This storage engine will plug into the MySQL Server and be managed as any other storage engine within the database server. The DB2 storage engine will provide storage management, transaction support, and database management for MySQL developers and database administrators. This ability enables the sharing of data between MySQL and DB2 for i5/OS applications.

When System i clients deploy new Web applications, they will be able to consider MySQL-based applications that can take advantage of DB2 for i5/OS.

The MySQL on i5/OS capabilities were announced during July 2007. For more information refer to 11.12, "MySQL Enterprise for i5/OS, 5639-MYS" on page 488, as well as the following locations on the Web:

- The IBM System i Web sites:
  - IBM System i

    http://www.ibm.com/systemi
  - DB2 of i5/OS

    http://www.ibm.com/servers/eserver/iseries/db2/
- The MySQL Web site

  http://www.mysql.com

Planning statements

i5/OS V5R4 is the final release that will support VisualAge® Generator Server for AS/400. You can migrate your VisualAge Generator source into the Enterprise Generation Language (EGL) technology. EGL technology is a component that is shipped within WebSphere Developer Studio Client V6.0 (Java Generation only) and WebSphere Developer Studio Client - Advanced Edition V6.0 (Java generation and COBOL generation) or within Rational Business Developer Extension V7.0.

The POWER5 Models 520, 525, 550, 570, and 595 are the last technology models to support the following features:

- #5074/#5079 I/O towers
- Optical HSL
- 8 GB 10k rpm and 17GB 10k rpm disk drives
- Thirteen older PCI cards including:
  - #2763, #2782, #4748, and #4778 Disk Controllers
  - #2765 and #2766 Fibre Channel Controllers
- #2780/#2757 running RAID-5 without an auxiliary write cache input/output adapter (IOA)
- Several older tape drives and media including:
  - 9348 Tape Drive (½-inch reels)
  - 3570 and 3575 Tape Drives
  - 3490 Tape Drives when attached via #2749 HVD SCSI Tape Controller
  - 358x LTO-1 Tape Drives when attached via #2749
  - 4 GB, 16 GB, and 25 GB QIC tape drives
  - All VXA tape drives

For POWER6 570 models, you must understand the following integrated xSeries (System x) support and disk controllers with large write cache considerations:

- Windows and Linux integration options:
  - The five oldest Integrated xSeries Server (IXS) features are not supported.
  - Integrated xSeries Adapter (IXA)-attached System x servers and the newest IXS features are supported. However, as of July 2007, IBM is no longer marketing new IXS and IXA features on the POWER6 570.
  - iSCSI hardware features can be ordered new for POWER6 570 models.
- No disk controllers with large write caches and unprotected write cache will be supported.

  Smaller cache controllers do not have auxiliary write cache IOA capability and need to be replaced with disk controllers that have the auxiliary write cache.

For additional planning information about upgrading to a System i POWER6 model 570, see 16.5, “I/O considerations for upgrading to a 570 (POWER6) configuration” on page 604. For the latest information, see the System i planning Web page at:

http://www.ibm.com/systems/support/i/planning/upgrade

There are several categories of information from which you can select including:

- Planning (General)
- Upgrade planning:
  - V6R1, V5R4, V5R3, V5R3

    Preliminary V6R1 information is available in November 2007.
  - Future Hardware and Software
  - Release life cycle

We recommend that you review the V6R1 and Future Release links to Software information periodically for the most complete summary of information that you should know before you plan to upgrade to new system technologies and software release levels.

Abbreviations and acronyms

ACF	Automatic Cartridge Facility
ACS	Automated Cartridge System
AJAX	Asynchronous JavaScript and XML
ALDC	Adaptive Lossless Data Compression
AME	Advanced Metal Evaporated
APV	Advanced Power Virtualization
ASP	auxiliary storage pool
ATA	Advanced Technology Attachment
ATAPI	Advanced Technology Attachment Packet Interface
ATM	Asynchronous Transfer Mode
B2B	business-to-business
BI	business intelligence
BRMS	Backup Recovery and Media Services
CBE	Common Base Event
CCIN	Customer Card Identification Number
CCW	Continuous Composite WORM
CEC	Central Electronic Complex
CEI	Common Event Infrastructure
CL	Control Language
CPW	commercial processing workload
CRC	cyclic redundancy checking
CRM	customer relationship management
CRU	customer-replaceable unit
CSP	Common Service Processor
CSS	cascading stylesheet
CSU	customer setup
CUoD	Capacity Upgrade on Demand
CoD	Capacity on Demand
DAA	Dual Active Accessor
DASD	direct access storage device
DCM	dual-chip module
DDR	double data rate
DDS	data description specification
DSP	Digital Signal Processor
DSU	Data Service Unit
DoD	Department of Defense
ECS	Electronic Customer Support
EE	Enterprise Extenders
EGL	Enterprise Generation Language
EJB	Enterprise JavaBean
EKM	Encryption Key Manager
EMV	Europay, Master Card, Visa
ERP	enterprise resource planning
ESS	Enterprise Storage Server
FACT	Find and Compare Tool
FAQ	Frequently Asked Questions
FCV	Function Control Vector
FIPS	Federal Information Processing Standard
FTP	File Transfer Protocol
HATS	Host Access Transformation Services
HBA	host bus adapter
HDX	Half Duplex
HEA	Host Ethernet Adapter
HIPPI	High Performance Parallel Interface
HMC	Hardware Management Console
HMT	hardware multithreading
HP	Hewlett Packard
HSL	high-speed link
HSM	hardware security module
HVD	high voltage differential
i520	System i 520
IAP	IBM Agreement for Programs
IASP	independent auxiliary storage pool
IBTA	InfiniBand Trade Association®
ICA	International Customer Agreement
IDE	Integrated Development Environment
IDRC	IBM Improved Data Recording Capability
IETF	Internet Engineering Task Force
ILE	Integrated Language Environment
IOA	input/output adapter
IOP	input/output processor
IPL	initial program load
IPLA	International Program License Agreement

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iSCSI Internet Small Computer System Interface

ISP Internet service providers

ISV independent software vendor

ITSO International Technical Support Organization

IVE Integrated Virtual Ethernet

IXA Integrated xSeries Adapter

IXS Integrated xSeries Server

J2EE Java 2 Platform, Enterprise Edition

JMS Java Messaging Services

JSF JavaServer Faces

JSP JavaServer Pages

JVM Java virtual machine

JWL JSF Widget Library

LAN local area network

LHEA Logical Host Ethernet Adapter

LIC Licensed Internal Code

LID License Information Document

LIFO last-in-first-out

LLC Logical Link Control

LME Library Managed Encryption

LPAR logical partition

LPP licensed program product

LR long run

LTO Linear Tape Option

LUN logical unit number

LVD low voltage differential

LVT LPAR Verification Tool

MAC Media Access Control

MCM multichip module

MCU Mail and Calendar Users

MDC Manufacturing Default Configuration

MES Miscellaneous Equipment Specification

MI machine interface

MMF Multi-Mode Fiber

MO magneto-optical

MPG Midrange Performance Group

MPIO Multipath I/O

OITool Offering Information

OLTP online transaction processing

OSGi Open Services Gateway Initiative

PA Passport Advantage

PAL Product Activty Log

PATA Parallel Advanced Technology Attachment

PBX private-branch-exchange

PCI Peripheral Component Interconnect

PCIe Peripheral Component Interconnect Express

PCML Program Control Markup Language

PDF Portable Document Format

PDU power distribution unit

PID product identifier

POE Proof of Entitlement

PS PostScript

PSTN public switched telephone network

PTF program temporary fix

RAN Remote Async Node

RAS reliability, availability, and serviceability

RCP Rich Client Platform

RISC reduced instruction set computing

RPM Revolutions Per Minute

RPO Record Purposes Only

RPQ request for price quotation

RSE Remote System Explorer

SAN storage area network

SAS Serially Attached SCSI

SATA Serial Advanced Technology Attachment

SCA Service Component Architecture

SCM Source Configuration Management

SCM single-chip module

SCSI Small Computer System Interface

SDO Service Data Object

SE Standard Edition

SEU System Expansion Unit

SEU Source Entry Utility

SIMPLE SIP Instant Messaging and Presence Leveraged Extensions

SIP Session Initiation Protocol

SLIC System Licensed Internal Code

SLM Software License Manager

SLR Scalable Linear Recording

SMB small and medium business

SMF Single-Mode Fiber

SMO Service Message Object

SMP	symmetric multiprocessor
SMT	simultaneous multithreading
SNA	Systems Network Architecture
SNMP	Simple Network Management Protocol
SOA	service-oriented architecture
SP	Service Processor
SPCN	System Power Connection Network
SPCN	System Power Control Network
SPD	System Products Division
SPT	System Planning Tool
SR	short run
SSL	Secure Sockets Layer
SST	System Service Tools
STRSST	Start System Service Tools
SWMA	Software Maintenance
TB	terabyte
TGTRLS	Target Release
TLS	Transport Layer Security
TOE	TCP/IP Offload Engine
UDDI	Universal Description, Discovery, and Integration
UDO2	Ultra Density Optical level 2
UI	user interface
VIOS	Virtual I/O Server
VLAN	Virtual LAN
VPD	vital product data
VTS	Virtual Tape Server
VoIP	Voice over IP
WAN	wide area network
WLE	Workload Estimator
WORM	Write Once/Read Many
WSDL	Web Services Description Language
WSIL	Web Services Inspection Language
WSU	Warranty Service Upgrade

Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this paper.

IBM Redbooks and Redpapers

For information about ordering the following publications, see “How to get IBM Redbooks” on page 623. Note that some of the documents referenced here might be available in softcopy only and some may be available only in draft format, until a later date.

- *IBM eServer i5 and iSeries System Handbook i5/OS Version 5 Release 3 October 2005 -- Draft*, GA19-5486
- *IBM eServer iSeries Migration: System Migration and Upgrades at V5R1 and V5R2*, SG24-6055
- *iSeries in Storage Area Networks A Guide to Implementing FC Disk and Tape with iSeries*, SG24-6220
- *IBM TotalStorage Enterprise Storage Server Model 800*, SG24-6424
- *Sizing IBM i5/OS Work on IBM System i5 Partitions*, SG24-6656
- *Deploying IBM Workplace Services Express on the IBM eServer iSeries Server*, SG24-6664
- *IBM TotalStorage Tape Selection and Differentiation Guide*, SG24-6946
- *A Systems Management Guide to Performance Management for System i and System p servers*, SG24-7122
- *IBM eServer iSeries Migration: A Guide to Upgrades and Migrations to System i5*, SG24-7200
- *Implementing Integrated Windows Server through iSCSI to System i5*, SG24-7230
- *LPAR Simplification Tools Handbook*, SG24-7231
- *PHP: Zend for i5/OS*, SG24-7327
- *Implementing IBM Tape in i5/OS*, SG24-7440
- *IBM System i5 Handbook IBM i5/OS Version 5 Release 4 January 2006*, SG24-7486
- *IBM System i and IBM System p System Planning and Deployment: Simplifying Logical Partitioning,* SG24-7487
- *Hardware Management Console V7 Handbook*, SG24-7491
- *The IBM Virtualization Engine TS7510: Getting Started with i5/OS and Backup Recovery and Media Services*, SG24-7510
- *IBM TS7520 Virtualization Engine: Planning, Implementation, and Usage Guide*, SG24-7520
- *Advanced POWER Virtualization on IBM System p5: Introduction and Configuration*, SG24-7940
- *IBM eServer iSeries Pocket Handbook: Version 5 Release 2 January 2003*, SG24-9406
- *AS/400 CISC System Builder*, REDP-0042

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- *IBM eServer AS/400e RISC System Builder Version 3 Release 6 - Version 5 Release 2*, REDP-0342
- *IBM eServer iSeries and AS/400e System Builder: IBM OS/400 Version 4 Release 3 - Version 5 Release 2*, REDP-0542
- *PCI Card Placement Rules for the IBM eServer iSeries Server OS/400 Version 5 Release 2: September 2003*, REDP-3638
- *High-speed Link Loop Architecture for the IBM eServer iSeries Server: OS/400 Version 5 Release 2*, REDP-3652
- *Planning for IBM eServer i5 Data Protection with Auxiliary Write Cache Solutions*, REDP-4003
- *PCI and PCI-X Placement Rules for IBM System i models: i5/OS V5R3 and V5R4 (Fourth edition)*, REDP-4011
- *WebSphere Message Broker V6, Best Practices Guide: Bullet Proofing Message Flows*, REDP-4043
- *IBM eServer iSeries Systems Management Handbook*, REDP-4070
- *IBM System p Advanced POWER Virtualization Best Practices*, REDP-4194
- *Advanced POWER Virtualization on IBM System p Virtual I/O Server Deployment Examples*, REDP-4224
- *i5/OS Program Conversion: Getting ready for i5/OS V6R1*, REDP-4293
- *iSeries Model 825 High-speed Link Loop*, TIPS-0297
- *Twinaxial Attached Device Throughput for Twinaxial Devices*, TIPS-0358
- *Content Manager Server Log Utilities for Performance-Related Troubleshooting and Analysis*, TIPS0635
- *Where to Find Today and Yesterday's System i Technical Marketing Deliverables*, TIPS0637
- *Switching between JVMs in WebSphere Application Server 6.1 for i5/OS*, TIPS0666

Other publications

The following publications are also relevant as further information sources:

- *AS/400 Physical Planning Reference*, SA41-5109
- *AS/400 RoadMap for Changing to PowerPC Technology*, SA41-5150
- *System Upgrade RoadMap (RISC to RISC)*, SA41-5155
- *System i and System p Logical Partitioning Guide,* SA76-0098

  https://www-01.ibm.com/servers/resourcelink/lib03030.nsf/pagesByDocid/0E6125F89F8B8EF6852572E6007E884D?OpenDocument&pathID=36
- *System i Operations Guide for i5/OS Consoles,* SA76-0128

  https://www-01.ibm.com/servers/resourcelink/lib03030.nsf/pagesByDocid/55719E40DD8536A7852573500046E6EF?OpenDocument&pathID=36
- *iSeries Performance Capabilities Reference*, SC41-0607

  http://www-1.ibm.com/servers/eserver/iseries/perfmgmt/resource.htm
- *Software Installation*, SC41-5120
- *Backup and Recovery*, SC41-5304

Online resources

The following Web sites are also relevant as further information sources:

- iSeries Online Library

  http://publib.boulder.ibm.com/pubs/html/as400/onlinelib.htm

- iSeries Information Center

  http://www.ibm.com/eserver/iseries/infocenter

- IBM announcement letters

  http://www.ibm.com/common/ssi/index.wss

- The IP/MPLS Forum (formerly ATM Forum)

  http://www.ipmplsforum.org/index.shtml

- IBM System i

  http://www-1.ibm.com/systems/i

- i5/OS—Efficient, resilient business processing

  This Web page includes i5/OS information about how to download the estimating number of users tool that can help you to determine the number of active unique i5/OS users have. This output can help you select which i5/OS user licensing feature you should order for a Model 515 or 525.

  http://www.ibm.com/systems/i/os/i5os

  To find the estimating active users tool, click the Licensing tab and look for the “System i 515 and 525” heading

- System i (iSeries) Upgrade planning

  http://www.ibm.com/systems/support/i/planning/upgrade

- IBM Prerequisite

  This site provides compatibility information for hardware features. This tool helps you to plan a successful system upgrade by providing you with the prerequisite information for features you currently have or plan to add to your system.

  http://www-912.ibm.com/e_dir/eServerPrereq.nsf/

- Capacity Upgrade on Demand

  http://www-1.ibm.com/servers/eserver/iseries/hardware/ondemand/

- Capacity BackUp Editions

  http://www.ibm.com/systems/i/hardware/cbu

- Logical partitioning

  http://www.ibm.com/eserver/iseries/lpar/

- Windows Integration (with iSeries)

  http://www.ibm.com/eserver/iseries/integratedxseries/

- Country- or region-specific keyboard or mouse and display support

  http://www-1.ibm.com/servers/eserver/iseries/

- System i software

  http://www.ibm.com/eserver/iseries/software

- Offering Information (OITool)

  http://w3-3.ibm.com/sales/ssi/OIN.wss

- Software Subscription for iSeries

  http://www-1.ibm.com/servers/eserver/iseries/sftsol/subscript.htm

- Software Inventory Assistant

  http://www-1.ibm.com/servers/eserver/iseries/sftsol/siu.htm

- Electronic Support Access

  http://www.iseries.ibm.com/tstudio/planning/esa/esa.htm

- IBM Systems Support for System i

  This support Web site offers a wide range of tools and resources, including hardware and software maintenance (for example, Fix Central capabilities) and technical documentation. For accessing POWER6 hardware information, this site provides the most effective links to available documents such the System i Overview (POWER6), and HMC documentation specific to Version 7 Release 3.1.0. We recommend going to this Web site first to find the appropriate categorization of hardware information.

  http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/brandmain?brandind=5000027

  Under the Select your product area, select the pull-down under Hardware. This produces a hardware model specific list. Select the IBM System i 570 (POWER6) to link to the appropriate hardware level documentation.

  From any of the hardware links you can access documentation that applies to only POWER5 models, only to POWER6 models, and both POWER5 and POWER6 models.

  You may also use the Technical library link under Sources of information to link to POWER6 information.

  http://www.ibm.com/systems/support/i/library/index.html

- HMC and supported system firmware levels

  http://www14.software.ibm.com/webapp/set2/sas/f/power5cm/supportedcode.html

- System i Literature

  http://www.ibm.com/eserver/iseries/library

- iSeries and AS/400 publications: “What’s new” by release

  http://publib.boulder.ibm.com/pubs/html/as400/online/chgfrm.htm

- IBM System i Developer Road Atlas

  http://www-03.ibm.com/systems/i/resources/roadmap/index.html

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IBM System i Overview

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IBM POWER6, Secure Perspective for System i auditing, Web enablement, ...

IBM i5/OS licensing options for selected IBM System i5 models

This IBM Redpaper publication describes the IBM System i technology-based hardware and software capabilities that were announced between January 2007 and October 2007. From a System i family hardware coverage viewpoint, this paper also integrates the new hardware information that was announced in 2007 with previously existing System i hardware information.

This paper describes the following hardware and software capabilities:

- Hardware capabilities: System i 570 (POWER6), System i Models 515 and 525, faster processor (2.3 GHz) on System i Models 595, new support of entry-level tape devices and associated media in DDS/DAT formatted media, new higher performance capacity dual mode disk controllers, support of disks packaged within the SCSI-attached EXP24 Disk Enclosures, and an overview of System i and 3Com IP Telephony capabilities

- Software capabilities: Simplified IBM i5/OS V5R4 edition licensing for the Model 570 (POWER6), concurrent user-based licensing on Models 515 and 525, application server i5/OS pricing on IBM System i5 Models 550, 570, and 595, Secure Perspective for System i, a set of Web-enablement enhancements targeted to get you up and running in an IBM WebSphere Application Server-based environment as quickly as possible, a new version (V7.0) of WebSphere Development Studio Client for System i, and an overview of the 2007 enhancements that are available for the IBM Systems Workload Estimator for System i model sizings

System i Models 515, 520, 525, 550, 570, 9406-MMA and 595 are summarized in this paper as well as System i Models 800, 810, 825, 870, and 890 (all prior to IBM POWER5 technology).

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