

# IBM Power 720 Express server offers IBM POWER7+ technology and large enterprise computing in small form factor

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## At a glance



The Power® 720 Express® server is designed to bring the performance and reliability of POWER7+™ to your small and distributed business needs. The new Power 720 Express model (8202-E4D) offers:

- Powerful 64-bit POWER7+ processors that offer 4-, 6-, and 8-core configuration options
- Memory capacity increased up to 512 GB of memory with optional memory riser card, optionally augmented with POWER7+ hardware accelerated Active Memory™ Expansion
- Up to two optional PCIe I/O drawers adding up to 20 PCIe slots
- Rich I/O options in the system unit:
  - Five PCIe x8 Gen2 slots in the system unit
  - An additional four PCIe x8 Gen2 Low-Profile slots available as an option
  - Four-port 1 Gb Ethernet adapter (#5899) in a special PCIe x4 slot
  - Eight hard disk drive (HDD)/solid-state drive (SSD) SAS SFF (small form-factor) bays; up to 7.2 TB (HDD) or 4.8 TB (SSD)
  - Optional slimline DVD-RAM
  - Half-high bay for tape or removable drive
  - Integrated SAS/SATA controller for HDD/SSD/tape/DVD
  - Four-port 1 Gb Ethernet adapter (#5899)
- Four- and 6-pack SSD features that can be ordered with a new server
- EnergyScale™ technology
- Tower or rack-mount configuration

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## Overview

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The performance, availability, and flexibility of the Power 720 Express server can enable companies to spend more time running their business, using proven solutions from thousands of ISVs that support the AIX®, IBM® i, and Linux™ operating systems. The new Power 720 model (8202-E4D) includes enhancements that can be particularly beneficial to clients running applications driving very high I/O or memory requirements.

As a distributed application server, the Power 720 Express is designed to deliver leading-edge application availability and enable more work to be processed with less operational disruption for branch office and in-store applications. As consolidation servers, PowerVM® Editions deliver the flexibility to use leading-edge AIX, IBM i, and Linux applications. PowerVM Editions offer comprehensive virtualization technologies designed to aggregate and manage resources while helping to simplify and optimize your IT infrastructure and deliver one of the most cost-efficient solutions for UNIX™, IBM i, and Linux deployments.

The Power 720 Express server with IBM i offers a technology foundation with proven reliability and security for the small or midsized company seeking a complete, integrated business system. This business system enables you to avoid increased spending and staffing requirements while becoming more responsive to your customers, improving your productivity, and keeping your data secure. IBM i integrates features to simplify your IT environment and delivers a complete, cost-effective business system that can grow with a business. The Power 720 delivers the performance and capacity to run new and existing core business applications on a single server, to greatly integrate and simplify your IT environment.

The Power 720 Express offers a choice of a 4-, 6-, or 8-core configuration in either a 4U rack-mount or a tower form factor. The Power 720 POWER7+ 3.6 GHz chip offers industry-leading 64-bit, SMT4 threading, and up to 80 MB on-chip embedded DRAM L3 cache, among other advantages.

The Power 720 Express server supports a maximum of 16 DDR3 DIMM slots, with eight DIMM slots included in the base configuration and eight DIMM slots available with an optional memory riser card. Memory features (two memory DIMMs per feature) supported are 8 GB, 16 GB, 32 GB, and 64 GB that run at speeds of 1066 MHz. A 6- or 8-core system with the optional memory riser card installed has a maximum memory of 512 GB.

The POWER7+ hardware accelerator for Active Memory Expansion provides 25% higher levels of memory expansion than available with POWER7® chips. While POWER7 Systems™ offer up to 100% memory expansion that can effectively double the server's maximum memory, POWER7+ servers offer up to 125% memory expansion for AIX partitions. Thus, a system memory maximum of 512 GB could effectively become greater than 1 TB effective memory capacity. This can enhance virtualization and server consolidation by enabling a partition to do significantly more work with the same physical amount of memory or a server to run more partitions and do more work with the same physical amount of memory.

The 6- and 8-core Power 720 Express servers deliver great I/O expandability. For example, with 12X-attached I/O drawers, you can have up to 20 PCIe slots in addition to the PCI slots in the system unit. Using disk bays in the system unit, 12X feature 5802 I/O drawers, and feature 5887 EXP24S Disk Drawers, up to 380 disk drives can be attached. Plus extensive quantities of externally attached storage and tape drives and libraries can be attached. Note that the 4-core Power 720 Express server does not support the attachment of 12X I/O drawers or feature 5887 EXP24S Disk Drawers, and uses just the expansion capabilities in the system unit to offer adequate expandability for many clients.

Two new SSD packages offer ordering convenience and price savings for a new server order. Each 6-pack SSD feature #ESR2/#ESR4 for the EXP30 Ultra SSD I/O Drawer can provide up to 140,000 I/O operations per second (IOPS) in just 1/5th

of a 1U drawer. The 4-pack SSD feature #ESRA/ESRB/ESRC/ESRD can provide up to 90,000 IOPS. A 4- or 6-pack SSD must be ordered with the server, not as a later MES order.

The Power 720 Express system offers two storage backplanes. The first supports up to six SFF SAS HDDs/SSDs, an SATA DVD, and a half-high tape drive. The second is a higher-function backplane that supports up to eight SFF SAS HDDs/SSDs, an SATA DVD, a half-high tape drive, Dual 175 MB Write Cache RAID, and an external SAS port. HDDs and SSDs are hot-swap and front accessible.

Other integrated features include:

- Up to nine PCIe Gen2 x8 expansion slots:
  - Five PCIe Gen2 x8 expansion slots
  - Four additional PCIe Gen2 x8 low-profile slots (optional)
- One GX++ slot used to attach:
  - PCIe riser card for the four additional PCIe Gen2 x8 slots
  - 12X I/O loop (6-core and 8-core only)
  - EXP30 Ultra SSD I/O Drawer (#EDR1) (6-core and 8-core only)
- One PCIe x4 expansion slot for 4-port 1 Gb Ethernet adapter (#5899)
- Service Processor
- Integrated SAS or SATA controller for HDD, SSD, tape, or DVD with RAID 10 support in system unit; RAID 5 and 6 available
- EnergyScale technology
- Two system ports and three USB ports
- Two Hardware Management Console (HMC) ports and two System Power Control Network (SPCN) ports
- Redundant and hot-swap power available
- Redundant and hot-swap cooling

The new Power 720 Express model (8202-E4D) is particularly recommended when your solution has high communications or other I/O requirements, or requires the maximum amount of memory available. PCIe Gen2 slots can transfer data at double the speed of many earlier servers that only offered PCIe Gen1 slots. The high data transfer rates offered by the PCIe Gen2 slots can enable higher I/O performance or consolidation of the I/O demands onto fewer adapters running at higher rates. This can result in better system performance at a lower cost when I/O demands are high.

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## Key prerequisites

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One of the following operating systems:

- IBM i
- LINUX
- IBM AIX
- VIOS

For more information refer to the [Hardware requirements](#) and [Software requirements](#) sections.

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## Planned availability date

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- February 20, 2013, for model E4D and all features except:
- March 15, 2013, for features #EN0H, #EN0J, #EN0A, and #EN0B

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## Description

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Summary of standard features for Power 720:

- 4-, 6-, and 8-core configurations with one processor module
- 8, 16, 32, or 64 GB of 1066 MHz DDR3 ECC memory (error checking and correcting) memory, expandable to 512 GB
- 6 x 2.5-inch HDD or SSD/Media backplane or 8 x 2.5-inch HDD or SSD/Media backplane with Dual 175 MB Write Cache RAID, and an external SAS port: One to eight SFF HDDs or SSDs (mixing allowed)
- Two media bays:
  - One slim bay for an optional DVD-RAM
  - One half-high bay for an optional tape drive or removable disk
- Maximum of five PCIe Gen2 x8 slots in base configuration, plus the following:
  - Sixth PCIe Gen2 x4 slot for an Ethernet adapter
  - Optional PCIe riser card that provides an additional four PCIe x8 Low Profile slots
  - One GX++ slot for I/O loop available unless the PCIe riser card is installed in the system (6-core and 8-core systems only)
- Tower or rack-mount (4U) configuration
- Integrated:
  - Service Processor
  - EnergyScale technology
  - Hot-swap and redundant cooling
  - Three USB ports; two system ports
  - Two HMC ports; two SPCN ports
- One power supply, 1925 watt ac: additional power supply available for redundant power and hot-swap

Two new SSD packages offer ordering convenience and price savings for a new server. One 6-pack SSD feature #ESR2/ESR4 orders the equivalent of six #ES02/ES04 387 GB SSDs for the #EDR1 EXP30 Ultra SSD I/O Drawer, but has a lower price. Multiple 6-pack features can be ordered with a new server. You can order 6-pack features and single SSD features in the same Ultra SSD Drawer.

One 4-pack SSD features orders the equivalent of four 387 GB SSDs for SAS bays in a system unit or in an I/O drawer, but has a lower price compared to ordering four #ES0A/ES0B/ES0C/ES0D features. A maximum of one 4-pack feature (#ESRA/ESRB/ESRC/ESRD) can be ordered with a new server. The 4-pack features and

single SSD features can be combined in the same system. Refer to Hardware Announcement [A13-0023](#), dated February 5, 2013

The minimum Power 720 initial order must include a processor, processor activations, 8 GB of memory, a PCIe2 4-port 1 GbE Adapter, a power supply, a power cord, one HDD/SSD, a storage backplane, an operating system indicator, a cover set indicator, and a Language Group Specify.

If IBM i is the primary operating system (#2145), the initial order must also include one additional HDD/SSD, a Mirrored System Disk Level Specify Code, and a System Console on HMC Indicator. A DVD is defaulted on every order but may be deselected.

The minimum defined initial order configuration, if no choice is made, when AIX or Linux is the primary operating system is:

Feature number	Description
EPCK	0/4 core 3.6 GHz POWER7+ Processor Module
4 x EPDK	4 Processor Activations
EM08	8 GB (2 x 4096 MB) Memory
1886	146.8 GB 15k rpm, SFF HDD
5618	Storage Backplane for 2.5-inch HDD or SSD/SATA DVD/Tape
5899	PCIe2 4-port 1 GbE Adapter
5532	Power supply, 1925 watt ac
7134	IBM Rack-mount Drawer Bezel and Hardware
9300/97xx	Language Group Specify
2146 or 2147	Primary Operating System Indicator - IBM AIX (#2146) or Linux (#2147)
6xxx	One Power Cord

**Note:** No internal HDD or SSD is required if feature 0837 (Boot from SAN) is selected. A Fibre Channel or Fibre Channel over Ethernet (FCoE) adapter must be ordered if feature 0837 is selected.

The minimum defined initial order configuration, if no choice is made, when IBM i is the primary operating system is:

Feature number	Description
EPCK	0/4 core 3.6 GHz POWER7+ Processor Module
4 x EPDK	4 Processor Activations
EM08	8 GB (2 x 4096 MB) Memory
2 x 1888	139.5 GB, 15k rpm, SAS SFF HDD
EJ01	Storage Backplane for 2.5-inch HDD or SSD/SATA DVD/Tape/RAID/External SAS Port
5899	PCIe2 4-port 1 GbE Adapter
5532	Power supply, 1925 watt ac
7134	IBM Rack-mount Drawer Bezel and Hardware
9300/97xx	Language Group Specify
2145	Primary Operating System Indicator - IBM i
0040	Mirrored System Disk Level Specify Code
0566 or 0567	IBM i 6.1.1 or IBM i 7.1 indicator or
EB34	IBM i 6.1.1 with IBM i 6.1.1 native I/O indicator
5550 or 5557	System Console on HMC Indicator or System Console-Ethernet No IOP
6xxx	One Power Cord

**Notes:**

- Planned availability of IBM i 6.1.1 is March 8, 2013.
- No internal HDD/SSD is required if feature 0837 (Boot from SAN) is selected. A Fibre Channel adapter must be ordered if feature 0837 is selected.
- When IBM i is the primary operating system (#2145), a DVD-ROM or DVD-RAM must be accessible by the Power 720.
- Alternative configuration options are available on a special bid basis from your IBM representative or Business Partner.

## IBM Editions

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IBM Editions are available only as initial order.

If you order a Power 720 Express server IBM Edition as defined below, you can qualify for half the initial configuration's processor core activations at no additional charge.

The total memory (based on the number of cores) and the quantity/size of disk, SSD, Fibre Channel adapters, or Fibre Channel over Ethernet (FCoE) adapters shipped with the server are the only features that determine if you are entitled to a processor activation at no additional charge.

Specifically, with an IBM Edition, processor activations for the processor card options are:

- 3.6 GHz 4-core processor module (#EPCK): 2 x #EPDK (chargeable) and 2 x #EPEK (no-charge) with 4-core (1 x #EPCK) configuration
- 3.6 GHz 6-core processor module (#EPCL): 3 x #EPDL (chargeable) and 3 x #EPEL (no-charge) with 6-core (1 x #EPCL) configuration
- 3.6 GHz 8-core processor module (#EPCM): 4 x #EPDM (chargeable) and 4 x #EPEM (no-charge) with 8-core (1 x #EPCM) configuration

When you purchase an IBM Edition, you must purchase an AIX or IBM i operating system license, or you may choose to purchase the system with or without a Linux operating system. The AIX , IBM i, or Linux operating system is processed via a feature number on AIX 6.1 or 7.1; IBM i 6.1.1 or IBM i 7.1; and SUSE Linux Enterprise Server or Red Hat Enterprise Linux . If you choose AIX 6.1 or 7.1 for your primary operating system, you can also order IBM i 6.1.1 or IBM i 7.1 and SUSE Linux Enterprise Server or Red Hat Enterprise Linux . The converse is true if you choose an IBM i or Linux subscription as your primary operating system.

These sample configurations can be changed as needed and still qualify for processor entitlements at no additional charge. However, selection of total memory or HDD or SSD/Fibre Channel/FCoE adapter quantities smaller than the totals defined as the minimums disqualifies the order as an IBM Edition, and the no-charge processor activations are then removed.

Processor modules and processor activations are only available to Solution Delivery Integration (SDIs) as MES orders.

A minimum of 2 GB memory per core is needed to qualify for the IBM Edition. Different valid memory configurations can meet the minimum requirement.

A minimum of two HDD, or two SSD, or two Fibre Channel adapters, or two FCoE adapters. You only need to meet one of these disk/SSD/FC/FCoE criteria. Partial criteria cannot be combined.

- Two SAS HDDs; any capacity drives located in the system unit, features 5802, 5886, or 5887 expansion drawers qualify.
- Two SAS SSDs; any capacity drives located in the system unit, features EDR1, 5802, 5886, 5887, EDR1 expansion drawers qualify.
- Two SSD Modules with eMLC (#1995/#1996); modules located in the system unit with feature 2053 or 2054, or in feature 5802 or 5887 DASD drawer with feature 2055 qualify.
- Two Fibre Channel adapters; either PCI-X or PCI-e adapters located in the system unit or 12X-attached I/O drawer.
- Two Fibre Channel over Ethernet adapters, located in the system unit or PCIe 12X-attached I/O drawer.

Multiple sample POWER7+ IBM Edition configurations are provided in the IBM internal configurator tool, including:

- 3.6 GHz 4-core processor module

- 3.6 GHz 6-core processor module
- 3.6 GHz 8-core processor module

### **Express Editions and Solution Editions with the IBM i operating system**

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Express Editions enable initial ease of ordering and feature a lower price than if you ordered them "a la carte" or build-to-order. Taking advantage of the edition is the only way you can use no-charge features for processor activations and IBM i user license entitlements. The Express Editions are available only during the initial system order and cannot be ordered after your system is shipped.

The IBM configurator offers these easy-to-order Express Editions that include no-charge activations or no-charge IBM i user entitlements. You can modify the Express Edition configurations to match your exact requirements for your initial shipment -- increasing or decreasing the configuration. If you create a configuration that falls below any of the defined minimums, the IBM configurator replaces the no-charge features with equivalent function regular charge features.

#### **Express Editions for the Power 720**

4-core Power 720 Express Editions (#0777):

To use the no-charge features on your initial order, you must order:

- 3.6 GHz 4-core processor module (#EPCK).
- IBM i Primary Operating System Indicator (#2145).
- 8 GB minimum memory: 1 x 8 GB (2 x 4 GB DIMMs)(#EM08). Memory features EM4C and EM4D are not supported with the 4-core processor module (#EPCK).
- Minimum of two HDD, or two SSD, or two Fibre Channel adapters, or two FCoE adapters. You only need to meet one of these disk/SSD/FC/FCoE criteria. Partial criteria cannot be combined.
  - Two SAS disk drives; any capacity drives located in the system unit.
  - Two SAS SSDs; drives located in the system unit.
  - Two SSD Modules with eMLC (#1995/#1996); modules located in the system unit with feature 2053 or feature 2054.
  - Two Fibre Channel adapters; PCIe adapters located in the system unit.
  - Two Fibre Channel over Ethernet adapters located in the system unit.

If the above requirements are met, the following are included:

- Two no-charge activations (2 x #EPEK)
- Five IBM i user entitlements (no-charge)
- One IBM i Access Family license with unlimited users (5770-XW1 or 5761-XW1)
- Reduced price on 5733-SOA and 5770-WDS or 5761-WDS

4-core Entry Edition (#0777) suggested starting configuration:

- One 4-core 3.6 GHz processor module (#EPCK)
- One 8 GB memory feature (#EM08)
- Two 139.5 GB SAS SFF 15,000 rpm disk drives (#1888)
- One PCIe2 4-port 1 GbE Adapter (#5899)
- One storage backplane with external SAS port (#EJ01)
- One SATA DVD-RAM (#5771)
- One 1.5 TB/3.0 TB LTO-5 SAS tape drive (#5638)
- Two 1925 watt ac power supplies (2 x #5532)
- Two power cords (2 x 6xxx)
- Two processor activations (2 x #EPDK)

- Two processor activations (2 x #EPEK) (no additional charge)
- IBM Tower cover set (#7567) or IBM Rack-mount Bezel and Hardware (#7134)
- IBM i Primary Operating System Indicator (#2145)
- PowerVM Express Edition (#5225), or later
- Five IBM i user entitlements (no additional charge) (57xx--SSC)
- One IBM i Access Family license with unlimited users (57xx-XW1)
- Reduced price on 57xx-WDS and 5733-SOA

### **6-core and 8-core Power 720 Express Editions (#0779):**

To use the no-charge features on your initial order of 6-core and 8-core Power 720 Express Editions (#0779), you must order:

- 3.6 GHz 6-core processor module (#EPCL) or 3.6 GHz 8-core processor module (#EPCM)
- IBM i Primary Operating System Indicator (#2145)
- 16 GB minimum memory -- 2 x 8 GB (2 x 4 GB DIMMs)(#EM08), or 1 x 16 GB (2 x 8 GB DIMMs)(#EM4B), or 1 x 32 GB (2 x 16 GB DIMMs)(#EM4C), or 1 x 64 GB (2 x 32 GB DIMMs)(#EM4D)
- Minimum of two HDD, or two SSD, or two Fibre Channel adapters, or two FCoE adapters. You only need to meet one of these disk/SSD/FC/FCoE criteria. Partial criteria cannot be combined.
  - Two SAS disk drives -- any capacity drives located in the system unit, feature 5802 I/O drawer, feature 5886 DASD drawer, or feature 5887 DASD drawer qualify.
  - Two SAS SSDs -- any capacity drives located in the system unit, feature 5802 I/O drawer, feature 5886 expansion drawer, feature 5887 expansion drawer, or feature EDR1 SSD drawer qualify.
  - Two SSD Modules with eMLC (#1995/#1996) -- modules located in the system unit with feature 2053 or 2054, or in the feature 5802/5877 I/O drawer with feature 2055 qualify.
  - Two Fibre Channel adapters -- Either PCI-X or PCI-e adapters located in the system unit or 12X-attached I/O drawer.
  - Two Fibre Channel over Ethernet adapters -- Either PCI-X or PCI-e adapters located in the system unit or 12X-attached I/O drawer.

If the above requirements are met, the following are included:

- Three no-charge activations (3 x #EPEL) with feature EPCL or four no-charge activations (4 x #EPEM) with feature EPCM
- Thirty IBM i user entitlements (charged)
- One IBM i Access Family license with unlimited users (57xx-XW1)
- Reduced price on 57xx-WDS and 5733-SOA

The suggested starting configuration for the 6-core or 8-core Entry Edition (#0779) is:

- One 6-core 3.6 GHz processor card (#EPCL) or one 8-core 3.6 GHz processor card (#EPCM)
- Two 8 GB memory features (2 x #EM08)
- Two 139.5 GB SAS SFF 15,000 rpm disk drives (#1888)
- One PCIe2 4-port 1 GbE Adapter (#5899)
- One storage backplane with external SAS port (#EJ01)
- One SATA DVD-RAM (#5771)
- One 1.5 TB/3.0 TB LTO-5 SAS tape drive (#5638)
- Two 1925 watt ac power supplies (2 x #5532)
- Two power cords (2 x 6xxx)



- Three processor activations (3 x #EPDL) with feature EPCL or four processor activations (4 x #EPDM) with feature EPCM
- Three no-charge processor activations (3 x #EPEL) with feature EPCL or four no-charge processor activations (4 x #EPEM) with feature EPCM
- IBM Tower cover set (#7567) or IBM Rack-mount Bezel and Hardware (#7134)
- IBM i Primary Operating System Indicator (#2145)
- PowerVM Express Edition (#5225), or later
- Thirty IBM i user entitlements (charged) (57xx-SSC)
- One IBM i Access Family license with unlimited users (57xx-XW1)
- Reduced price on 57xx-WDS and 5733-SOA

## **IBM i Solution Edition for Power 720**

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The IBM i Solution Editions are designed to help you take advantage of the combined experience and expertise of IBM and ISVs in building business value with your IT investments. A qualifying purchase of software, maintenance, services, or training for a participating ISV solution is required when purchasing an IBM i Solution Edition.

The Power 720 Solution Edition feature 4928 supports the 4-core configuration and feature 4927 supports both 6-core and 8-core configurations. For a list of participating ISVs, registration form, and additional details, visit the Solution Edition website at

<http://www-03.ibm.com/systems/power/hardware/editions/solutions.html>

The Power 720 Solution Edition includes no-charge features, resulting in a lower initial list price for qualifying clients. Also included is an IBM Service voucher to help speed implementation of the ISV solution.

The requirements to be eligible to purchase a 720 Solution Edition order are:

- The offering must include new or upgrade software licenses or software maintenance from the ISV for the qualifying IBM server. Services or training for the qualifying server can also be provided.
- Proof of purchase of the solution with a participating ISV must be provided to IBM on request. The proof must be dated within 90 days before or after the date of order of the qualifying server.

## **IBM i for Business Intelligence**

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Business Intelligence remains a top priority of midmarket companies, but budgets and staff with skills to support enterprise BI solutions are very small in comparison to enterprise accounts. IBM i clients have 90% or more of their data already in DB2® for i, yet a large majority (thousands) are still using Query/400 for reporting purposes. A significant number of clients have invested in tools that have a limited future or are not keeping up with DB2 for IBM i query technology. Other offerings force clients to move data to other systems.

The momentum around "analytics" is creating interest and opportunities to deliver an alternative to Business Intelligence that makes sense by laying the groundwork for data warehousing while showing immediate results with new levels of operational reporting results.

Solution benefits

- Enables low-cost, value-built solution ( IBM i with Power Systems™ )
- Builds on popular DB2 Web Query
- Offers two-stage implementation: Starts with operational reporting and optionally grows into data warehousing

Stage 1: Building a reporting foundation

- Get new reports/information in days
- Replicate production database to a second system
- Isolate query workloads (tune, optimize)
- Offer limited data transformation
- Enable low-entry price point that you can build on
- Leverage the system for additional purposes

#### Stage 2: Growing into a data warehouse

- Requires the additional purchase of ETL software and associated services
- Transforms and cleanses data using the ETL process
- Improves analytics by restructuring of the data (for example, create a client profiling database)
- Isolates query workloads (tune, optimize)
- Needs longer implementations; more services required

#### **Solution features**

Three orderable hardware features that generate a configuration of defaults or minimums for the Power 720 (8202-E4D):

Feature	Feature description
4934	IBM i for BI - Small configuration
4935	IBM i for BI - Medium configuration
4936	IBM i for BI - Large configuration

#### **Solution configurations:**

##### Business Intelligence Solution 1

- Feature 4934: IBM i for BI: Small configuration
- Power 720 Express (four cores active): One core licensed for use
- DB2 WebQuery
- Other BI software:
  - IBM i Processor License
  - IBM i User Entitlements (15)
  - One year of SWMA
  - iAccess Family
  - OmniFind® Text Sch DB2
  - DB2 Symmetric Multi-processor
  - RDPower Source Code
  - WebSphere® Development Studio
  - Rational® Developer

Change Data Capture (5724-U70): This software, a key component of the solution, is separately purchased through the IBM Passport Advantage® order fulfillment system using preapproved Special Bid pricing.

##### Business Intelligence Solution 2

- Feature 4935: IBM i for BI: Medium configuration
- Power 720 Express (six cores active): Two cores licensed for use
- DB2 WebQuery
- Other BI software:
  - IBM i Processor License

- IBM i User Entitlements (30)
- One year of SWMA
- iAccess Family
- OmniFind Text Sch DB2
- DB2 Symmetric Multi-processor
- RDPower Source Code
- WebSphere Development Studio
- Rational Developer

Change Data Capture (5724-U70): This software, a key component of the solution, is separately purchased through the Passport Advantage order fulfillment system using preapproved Special Bid pricing.

### Business Intelligence Solution 3

- Feature 4936: IBM i for BI: Large configuration
- Power 720 Express (six cores active): Four cores licensed for use
- DB2 WebQuery
- Other BI software:
  - IBM i Processor License
  - IBM i User Entitlements (50)
  - One year of SWMA
  - iAccess Family
  - OmniFind Text Sch DB2
  - DB2 Symmetric Multi-processor
  - RDPower Source Code
  - WebSphere Development Studio
  - Rational Developer

Change Data Capture (5724-U70): This software, a key component of the solution, is separately purchased through the Passport Advantage order fulfillment system using preapproved Special Bid pricing.

## **Model upgrades**

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### **Power 520 (8203-E4A) to the Power 720 (8202-E4D)**

You can upgrade the 2-core or 4-core 8203-E4A with IBM POWER6® or POWER6+™ processors to the 6-core or 8-core IBM Power 720 (8202-E4D) with POWER7+ processors. For upgrades from POWER6 or POWER6+ processor-based systems, IBM will install new CEC enclosures to replace the enclosures the client currently has. The client's current CEC enclosures will be returned to IBM. Note the client is upgrading from a system (8203-E4A) with one-year warranty into a system (8202-E4D) with three-year warranty.

However, like the "B" or "C" model 720 same-serial-number upgrades existing POWER6 feature numbers or model numbers converted to POWER7 feature numbers retain the one-year warranty. Likewise, new or additional features ordered with the POWER6 to POWER7 upgrade have a one-year warranty. However, new or additional features ordered after the POWER6 520 has been upgraded to a POWER7 or POWER7+ 720 have a three-year warranty.

Clients taking advantage of the model upgrade offer from a POWER6 or POWER6+ processor-based system are required to return all components of the serialized machine type/model that were not ordered via feature numbers. Any feature for which a feature conversion is used to obtain a new part must be returned to IBM

also. Clients may keep and reuse any features from the CEC enclosures that were not involved in a feature conversion transaction.

## Upgrade considerations

Feature conversions have been set up for the following:

- POWER6 and POWER6+ processors to POWER7+ processors

The following processor conversions are supported:

8203-E4A Feature	8202-E4D Feature
#5634 2-core 4.2 GHZ	#EPCL 6-core 3.6 GHZ
#5577 2-core 4.7 GHZ	#EPCL 6-core 3.6 GHZ
#5635 4-core 4.2 GHZ	#EPCL 6-core 3.6 GHZ
#5587 4-core 4.7 GHZ	#EPCL 6-core 3.6 GHZ
#5634 2-core 4.2 GHZ	#EPCM 8-core 3.6 GHZ
#5577 2-core 4.7 GHZ	#EPCM 8-core 3.6 GHZ
#5635 4-core 4.2 GHZ	#EPCM 8-core 3.6 GHZ
#5587 4-core 4.7 GHZ	#EPCM 8-core 3.6 GHZ

The following features present on the current system can be moved to the new system:

- PCIe adapters with cables
- Line cords, keyboards, and displays
- PowerVM (#5225, #5227, and #5228)
- I/O drawers (#5796, #5802, #5877, #5886, and #5887)
- Racks (#0551, #0553, and #0555)
- Rack doors (#6068, #6069, #6248, and #6249)
- Rack trim kits (#6246 and #6247)
- SATA DVD-ROM (#5743)
- SATA DVD-RAM (#5762)

The Power 720 can support the following 12X drawers and disk-only drawers:

- Feature 5802 and 5877 PCIe 12X I/O drawers
- Feature 5796 and 7413-G30 PCI-X (12X) I/O Drawer
- Feature 5886 EXP12S SAS DASD Drawer
- Feature 5997 EXP24S DASD Drawer

In the Power 720 system unit SAS bays, only the SAS SFF hard disks or SFF solid-state drives are supported internally. The 3.5-inch HDD or SSD can be attached to the Power 720 but must be located in a I/O drawer such as feature 5886.

## Dynamic logical partitioning

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The dynamic logical partitioning (LPAR) function provides enhanced resource management for the Power 720 Express server. Dynamic LPAR allows available system resources to be quickly and easily configured across multiple logical partitions to meet the rapidly changing needs of your business.

Dynamic LPAR also enables you to add new system resources such as new HDDs or SSDs into your system's configuration without requiring a reboot. Without the optional PowerVM Standard Edition (#5227) or PowerVM Enterprise Edition (#5228) feature, as many as eight LPARs are supported in an 8-core Power 720. If the PowerVM Standard or Enterprise Edition feature is installed in the system, a maximum of 20 dynamic LPARs for each physical processor core can be defined, with a system maximum of 160 dynamic LPARs.

An HMC or Integrated Virtualization Manager (IVM) is required to manage the Power 720 (8202-E4D) implementing partitioning. Multiple Power 720 servers can be supported by a single HMC.

If an HMC is used to manage any Power 720 server, the HMC must be a rack-mount HMC model CR3, or later, or deskside HMC model C05, or later.

When IBM Systems Director is used to manage an HMC or if the HMC manages more than 254 partitions, the HMC should have 3 GB of RAM minimum and be the rack-mount model CR3, or later, or deskside model C06, or later.

### **PowerVM Editions (optional)**

Three optional PowerVM Edition features are now available on the Power 720: PowerVM Express Edition, PowerVM Standard Edition, and PowerVM Enterprise Edition. These are managed using built-in IVM software or optionally through use of an HMC.

PowerVM Standard Edition (#5227) and PowerVM Enterprise Edition (#5228) enable clients to create partitions in units of less than one CPU (sub-CPU LPARs) and enable the same system I/O to be virtually added to these partitions. The optional features, available for a fee, also include a software component that provides cross-partition workload management.

PowerVM Standard and Enterprise Editions offer:

- Micro-Partitioning® (up to 20 partitions per processor core, 160 per system)
- Virtualized disk and optical devices (VIOS)
- Automated CPU reconfiguration
- Real-time partition configuration and load statistics
- Support for dedicated and shared processor LPAR groups
- Support for manual provisioning of resources

At initial order entry, selecting feature number 5227 or 5228 will result in Micro-Partitioning to be enabled during manufacture and the enabling software media and publications to be shipped to the client. When ordering feature number 5227 or 5228 as an MES, an activation key will be posted on an IBM website, and the client must retrieve it and install it on the system.

Visit the IBM website at

<http://www-912.ibm.com/pod/pod>

Other features of PowerVM Editions:

- If any processors in a system have the Virtualization feature, all active processors must have it.
- Once the Virtualization feature is installed in a system, it cannot be removed.
- Virtual Ethernet and Virtual Storage are part of PowerVM Editions.

PowerVM Enterprise Edition also includes Live Partition Mobility, which allows for the movement of a logical partition from one POWER6 or POWER7 server to another with no application downtime, and Active Memory Sharing, which dynamically reallocates memory between running logical partitions on a server. Also available is PowerVM Express (#5225), designed for users looking for an introduction to more advanced virtualization features at a highly affordable price. With PowerVM Express and IVM, users can create up to three partitions on the server, leverage VIOS, utilize Shared Dedicated Capacity to help optimize use of processor cycles, and even try out the Shared Processor Pool. With its intuitive browser-based interface, IVM is easy to use and helps reduce the time and effort required to manage virtual devices, processors, and partitions. An HMC is not required.

Clients can upgrade from PowerVM Express to either PowerVM Standard or PowerVM Enterprise, or they can upgrade from PowerVM Standard to PowerVM Enterprise.

By upgrading to PowerVM Standard or PowerVM Enterprise, users can create up to 160 logical partitions on the Power 720. They can also manage their PowerVM enabled machine with either an HMC or the IVM.

By upgrading to PowerVM Enterprise, users can leverage Live Partition Mobility and Active Memory Sharing.

### **Power 720 Capacity BackUp (CBU) capability**

(Applies to IBM i only)

The Power 720 system's CBU designation can help meet your requirements for a second system to use for backup, high availability, and disaster recovery. It enables you to temporarily transfer IBM i processor license entitlements and IBM i user license entitlements purchased for a primary machine to a secondary CBU-designated system. Temporarily transferring these resources instead of purchasing them for your secondary system may result in significant savings. Processor activations cannot be transferred.

The CBU specify feature 0444 is available only as part of a new server purchase or during a model upgrade from a Power 520 into the Power 720. Certain system prerequisites must be met and system registration and approval are required before the CBU specify feature can be applied on a new server. Standard IBM i terms and conditions do not allow either IBM i processor license entitlements or IBM i user license entitlements to be transferred permanently or temporarily. These entitlements remain with the machine they were ordered for. When you register the association between your primary and on-order CBU system, you must agree to certain terms and conditions regarding the temporary transfer.

After a CBU system designation is approved and the system is installed, you can temporarily move your optional IBM i processor license entitlement and IBM i user license entitlements from the primary system to the CBU system when the primary system is down or while the primary system processors are inactive. The CBU system can then better support failover and role swapping for a full range of test, disaster recovery, and high availability scenarios. Temporary entitlement transfer means that the entitlement is a property transferred from the primary system to the CBU system and may remain in use on the CBU system as long as the registered primary and CBU system are in deployment for the high availability or disaster recovery operation.

The primary system for a 4-core Power 720 (8202-E4D) server with its IBM i P05 software tier can be a POWER6 , POWER7 , or POWER7+ server with a P05, P10, or P20 software tier listed below:

- Power 750 (8408-E8D)
- Power 750 (8233-E8B)
- Power 740 (8205-E6B)
- Power 740 (8205-E6C)
- Power 740 (8205-E6D)
- Power 720 (8202-E4B) #8350, 8351, 8352
- Power 720 (8202-E4C) #EPC5, EPC6, EPC7
- Power 720 (8202-E4D) #EPCK, EPCL, EPCM
- Power 560 (8234-EMA)
- Power 550 (8204-E8A)
- Power 520 (8203-E4A) #5633,5577,5587,5634, 5635
- P460 7895-42X
- P260 7895-22X
- PS704 7891-74X
- PS703 7891-73X
- PS701/702 8406-71Y

PS700 8406-70Y  
JS23/43 7778-23X

The primary system for a 4-core, 6-core, or 8-core Power 720 (8202-E6D) server with its IBM i P10 software tier can be a POWER6 , POWER7 , or POWER7+ server with a P10, P20, or P30 software tier listed below:

Power 770 (9117-MMB)  
Power 770 (9117-MMC)  
Power 770 (9117-MMD)  
Power 570 (9117-MMA)  
Power 760 (9109-RMD)  
Power 750 (8408-E8D)  
Power 750 (8233-E8B)  
Power 560 (8234-EMA)  
Power 550 (8204-E8A)  
Power 740 (8205-E6B)  
Power 740 (8205-E6C)  
Power 740 (8205-E6D)  
Power 720 (8202-E4B) #8351, 8352  
Power 720 (8202-E4C) #EPC6, EPC7  
Power 720 (8202-E4D) #EPCL, EPCM  
Power 520 (8203-E4A) #5577, 5587, 5634, 5635  
P460 7895-42X  
P260 7895-22X  
PS704 7891-74X  
PS703 7891-73X  
PS701/702 8406-71Y  
JS23/43 7778-23X

The primary machine must be in the same enterprise and country as the CBU system.

Before you can temporarily transfer IBM i processor license entitlements from the registered primary system, you must have more than one IBM i processor license on the primary machine and at least one IBM i processor license on the CBU server. An activated processor must be available on the CBU server to use the transferred entitlement. You can then transfer any IBM i processor entitlements above the minimum one, assuming the total IBM i workload on the primary system does not require the IBM i entitlement you would like to transfer during the time of the transfer. During this temporary transfer, the CBU system's internal records of its total number of IBM i processor license entitlements are not updated, and you may see IBM i license noncompliance warning messages from the CBU system. These warning messages in this situation do not mean you are not in compliance.

Before you can temporarily transfer IBM i user entitlements, you must have more than the minimum number of IBM i user entitlements on a 9408, 8203, or 8202 primary server. You can then transfer any IBM i user entitlements above the minimum, assuming the total IBM i users on the primary system do not require the IBM i entitlement you want to transfer during the time of the transfer. The Power 550, 560, 740, and 750 do not have user entitlements that can be transferred and only processor license entitlements can be transferred. The minimum number of IBM i users on the POWER6 and POWER7 with i user entitlements are:

- Power 520 1-core (9407-M15, 8203-E4A): 5 users
- Power 520 2-core (9408-M25, 8203-E4A): 30 users
- Power 520 4-core (8203-E4A): 50 users
- Power 720 4-core (8202-E4B), 8202-E4C, 8202-E4D: 5 users
- Power 720 6-core or 8-core (8202-E4B), 8202-E4C, 8202-E4D: 30 users

For example, if you have a 2-core Power 520 (8203-E4A or 9408-M25) as your primary system with two IBM i processor license entitlements (one above the minimum) and 50 IBM i user entitlements (20 above the minimum), you can temporarily transfer up to one IBM i entitlement and up to 20 user entitlements. During this temporary transfer, the CBU system's internal records of its total number of IBM i processor and user license entitlements is not updated, and you may see IBM i license noncompliance warning messages from the CBU system.

Note that if the Power 720 CBU server has just one partition and if it is using the default parameters set by IBM Manufacturing, the IBM i licensing manager will ignore the temporary transfer and will not use additional processor cores. To work around this restriction for valid CBU situations, you can add a partition with no resource on your server or implement a shared processor pool.

If your primary or CBU machine is sold or discontinued from use, any temporary entitlement transfers must be returned to the machine on which they were originally acquired. For CBU registration and further information, visit

<http://www.ibm.com/systems/power/hardware/cbu>

### **I/O drawer availability**

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Four 12X attached I/O drawers are supported on the Power 720, enabling you to increase overall server expandability and connectivity.

- Feature 5802 enables 10 PCIe slots and 18 SFF SAS DASD slots.
- Feature 5877 enables 10 PCIe slots.
- Feature 5796 enables six PCI-X slots (supported but not orderable).
- The 7314-G30 enables six PCI-X slots (supported but not orderable).

Three disk-only I/O drawers are also supported, providing large storage capacity and multiple partition support:

- Feature 5887 EXP24S holds twenty-four 2.5-inch (SFF) SAS HDDs or SSDs.
- Feature EDR1 EXP30 holds 30 SSDs and two integrated SAS adapters.
- Feature 5886 EXP12S holds twelve 3.5-inch SAS HDDs or SSDs (supported but not orderable).

### **Feature number I/O drawers available for order on the Power 720**

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#### **PCI-X DDR 12X Expansion Drawer (#5796) (supported only -- not orderable)**

The PCI-X DDR 12X Expansion Drawer (#5796) is a 4 EIA unit tall drawer and mounts in a 19-inch rack. Feature 5796 is 22.4 cm (8.8 in) wide and takes up half the width of the 4 EIA rack space. Feature 5796 requires the use of a feature 7314 drawer-mounting enclosure. The 4 EIA tall enclosure can hold up to two feature 5796 drawers mounted side by side in the enclosure. The PCI-DDR 12X Expansion Drawer has six 64-bit, 3.3 V, PCI-X DDR slots running at 266 MHz that use blind-swap cassettes and support hot plugging of adapter cards. The drawer includes redundant hot-plug power and cooling. You must select one of the two available interface adapters for use in the feature 5796 drawer, either the Dual-Port 12X Channel Attach Adapter -- Long Run (#6457) or the Dual-Port 12X Channel Attach Adapter Short Run (#6446). The adapter selection is based on how close the host system or the next I/O drawer in the loop is physically located.

A maximum of four feature 5796 drawers can be placed on the same 12X loop. Mixing features 5802 or 5877 and 5796 on the same loop is not supported. Mixing feature 5796 and the 7314-G30 on the same loop is supported with a maximum of four drawers total per loop. A minimum configuration of two 12X cables (either SDR or DDR) and two ac power cables and two SPCN cables is required to ensure proper redundancy. The drawer attaches to the host CEC enclosure with a 12X adapter in a GX slot via 12X SDR or DDR cables.



The Power 720 uses the GX++ Dual-port 12x Channel Attach (#EJ04) adapter to attach a feature 5796 12X I/O Drawer using SDR speed.

### **PCI-X DDR 12X Expansion Drawer (7314-G30) (supported -- not orderable)**

The 7314-G30 is equivalent to the feature 5796 described above with one key difference: IBM i does not support this I/O drawer. Otherwise, it provides the same six PCI-X DDR slots per unit and has the same configuration rules/considerations as feature 5796.

### **12X I/O Drawer PCIe, SFF disk (#5802)**

This feature includes a 4U high, 19-inch I/O drawer containing 10 PCIe 8x I/O adapter slots and 18 SAS hot-swap SFF SAS disk bays, which can be used for either disk drives or SSDs. Using 300 GB disk drives, the feature 5802 offers up to 5.4 TB of storage. Using larger disk drives delivers even more capacity.

The 18 disk bays can be organized either into one group of 18 bays ( AIX or Linux ), two groups of nine slots ( AIX , IBM i, or Linux ), or four groups of four or five bays ( AIX or Linux ). Selecting either one, two, or four groups of drive bays is done with a mode switch on the drawer.

A maximum of two feature 5802 drawers can be placed on the same 12X loop. Mixing feature 5802 and feature 5796 and the 7314-G30 on the same loop is not supported. Mixing feature 5802 and feature 5877 on the same loop is supported with a maximum of two drawers total per loop. The PCIe adapter slots use Gen3 blind-swap cassettes and support hot plugging of adapter cards. A minimum configuration of two 12X DDR cables and two ac power cables and two SPCN cables is required to ensure proper redundancy. 12X SDR cables are not supported. The drawer attaches to the host CEC enclosure with a 12X adapter in a GX slot via 12X DDR cables (#1861/#1862/#1864/#1865).

The Power 720 uses the GX++ Dual-port 12x Channel Attach (#EJ04) adapter to attach a feature 5802 12X I/O Drawer. The feature EJ04 provides double data rate (DDR) capacity bandwidth.

### **12X I/O Drawer PCIe, No disk (#5877)**

This feature provides a 4U high 19-inch I/O drawer containing 10 PCIe 8x I/O adapter slots.

A maximum of two feature 5877 drawers can be placed on the same 12X loop. Mixing features 5877 and 5796/7314-G30 on the same loop is not supported. Mixing features 5802 and 5877 on the same loop is supported with a maximum of two drawers total per loop. The PCIe adapter slots use Gen3 blind-swap cassettes and support hot plugging of adapter cards. A minimum configuration of two 12X DDR cables and two ac power cables and two SPCN cables is required to ensure proper redundancy; 12X SDR cables are not supported. The drawer attaches to the host CEC enclosure with a 12X adapter in a GX slot via 12X DDR cables (#1861/#1862/#1864/#1865).

The Power 720 uses the GX++ Dual-port 12x Channel Attach (#EJ04) adapter to attach a feature 5877 12X I/O Drawer. Feature EJ04 offers DDR capacity bandwidth.

Note that conversions between a diskless feature 5877 and a feature 5802 with disk bays are not available.

### **EXP 12S SAS Drawer (#5886) (supported only -- not orderable)**

The EXP 12S SAS drawer (#5886) is a 2 EIA drawer and mounts in a 19-inch rack. The drawer can hold either SAS disk drives or SSDs. The EXP 12S SAS drawer has twelve 3.5-inch SAS disk bays with redundant data paths to each bay. The drawer supports redundant hot-plug power and cooling and redundant hot-swap SAS expanders (Enclosure Services Manager-ESM). Each ESM has an independent SCSI Enclosure Services (SES) diagnostic processor.

The SAS disk drives or SSDs contained in the EXP12S are controlled by one or two PCIe or PCI-X SAS adapters connected to the EXP12S via SAS cables. The SAS cable will vary, depending upon the adapter being used, the operating system being used, and the protection you need.

- The large cache PCI-X feature 5908 uses a SAS Y cable when a single port is running the EXP12S. A SAS X cable is used when a pair of adapters is used for controller redundancy.
- The medium cache PCI-X feature 5902 and PCIe feature 5805 adapters are always paired and use a SAS X cable to attach the feature 5886 I/O drawer.
- The zero cache PCI-X feature 5912 and PCIe feature 5901 use a SAS Y cable when a single port is running the EXP12S. A SAS X cable is used for AIX/Linux environments when a pair of adapters is used for controller redundancy.

In all of the above configurations, all 12 SAS bays are controlled by a single controller or a single pair of controllers.

A second EXP12S drawer can be attached to another drawer using two SAS EE cables, providing 24 SAS bays instead of 12 bays for the same SAS controller port. This is called *cascading*. In this configuration, all 24 SAS bays are controlled by a single controller or a single pair of controllers.

The feature 5886 can also be directly attached to the SAS port on the rear of the Power 720, providing a low-cost disk storage solution. When used this way, the imbedded SAS controllers in the system unit drive the disk drives in EXP12S. A second unit cannot be cascaded to a feature 5886 attached in this way.

### **EXP24S SFF Gen2-Bay Drawer (#5887)**

The EXP24S SFF Gen2-Bay Drawer is an expansion drawer with twenty-four 2.5-inch small form-factor (SFF) SAS bays. It supports up to 24 hot-swap SFF SAS HDDs on POWER6 or POWER7 servers in 2U of 19-inch rack space. The EXP24S bays are controlled by SAS adapters/controllers attached to the I/O drawer by SAS X or Y cables.

The SFF bays of the EXP24S are different from the SFF bays of the POWER7 system units or 12X PCIe I/O Drawer (#5802). The EXP24S uses Gen2 or SFF-2 SAS drives that physically do not fit in the Gen1 or SFF-1 bays of the POWER7 system unit or 12X PCIe I/O Drawers or vice versa.

The following SFF-2/Gen2 SAS drives can be used in the EXP24S:

- HDD
  - 10,000 rpm 283 GB/300 GB (#1956, #1925, #1844, and #1869)
  - 10,000 rpm 571 GB/600 GB (#1962, #1964, #1817, and #1818)
  - 10,000 rpm 856 GB (#1738 and #EQ38)
  - 10,000 rpm 900 GB (#1752 and #EQ52)
  - 15,000 rpm 139 GB/146 GB (#1947, #1917, #1868, and #1866)
  - 15,000 rpm 283 GB (#1948 and #1927)
  - 10,000 rpm 283 GB (#1953 and #1929)
- SSD
  - 177 GB (#1793, #1794, #1887, and #1958)
  - 387 GB (#ESRC, #ESRD, #ES0C, #ES0D, #EQ0C, and #EQ0D)

The SAS adapters/controllers that support the EXP24S are:

- PCI-X 1.5 GB Cache SAS RAID Adapter 3 Gb (#5908)
- PCIe2 1.8 GB Cache RAID SAS Adapter Tri-port 6 Gb (#5913)
- PCIe Dual-x4 SAS Adapter 3 Gb (#5901, #5278)

The integrated SAS controllers that support the EXP24S off the imbedded SAS port on the rear of the server are in:

- The Power 710, 720, 730, 740, 750, 755, 770, and 780
- The Power 520 (8203-E4A) and Power 550 (8204-E8A)

AIX , Linux , and VIOS support all of the above SAS adapters/controllers with the EXP24S. IBM i supports all but the feature 5901 and 5278 adapters with the EXP24S.

Up to 24 HDDs can be supported with any of the supported SAS adapters/controllers.

The EXP24S has an adjustable set of rails that allows it to fit in standard Power Systems 19-inch racks such as the 7014-T42 or -T00 or the feature 0551 or 0553.

### **EXP30 Ultra SSD I/O Drawer (#EDR1)**

Feature EDR1 is a 1U high I/O drawer that includes 30 hot-swap SSD bays and a pair of integrated large write cache, high-performance SAS controllers. Ultra high levels of performance are provided without using any PCIe slots on the POWER7+ server in an ultra-dense packaging design.

The two high-performance, integrated SAS controllers each physically provide 3.1 GB write cache. Working as a pair, they deliver mirrored write cache data and controller redundancy. The cache contents are designed to be protected by built-in flash memory in case of power failure. If the pairing is broken, write cache is not used after existing cache content is written out to the drive and performance will probably be slowed until the controller pairing is re-established.

Each controller is connected to a GX++ PCIe adapter in a server (for example, #EJ03) over a PCIe x8 cable (for example, #EN05 or #EN07). Usually both controllers are attached to one server, but each controller can be assigned to a different server or partition or VIOS. Active/Active capability is supported assuming at least two RAID arrays. The controllers provide RAID 0, RAID 5, RAID 6, and RAID 10 for AIX , Linux , and VIOS. The controllers enable RAID 5 and RAID 6 for IBM i. AIX , IBM i, Linux , and VIOS also include OS mirroring (LVM). The adapter's CCIN is 57C3.

eMLC SSDs designed to fit in the Ultra drawer bays such as the 387 GB #ES02 SSD are used. A minimum of six SSDs are required in each Ultra drawer. Each controller can access all 30 SSD bays. The bays can be configured as one set of bays run by a pair of controllers working together. Or the bays can be divided into two logical sets where each of the two controllers "owns" one of the logical sets. With proper software, if one of the controllers fails, the other controller can run both sets of bays.

### **19-inch racks**

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The Model 8202-E4D and its I/O drawers are designed to mount in the 25U 7014-S25 (#0555), 36U 7014-T00 (#0551), or the 42U 7014-T42 (#0553) rack. These racks are built to the 19-inch EIA standard. When you order a new 8202 system, you can also order the appropriate 7014 rack model with the system hardware on the same initial order. IBM is making the racks available as features of the 8202-E4D when you order additional I/O drawer hardware for an existing system (MES order). The rack feature number should be used if you want IBM to integrate the newly ordered I/O drawer in a 19-inch rack before shipping the MES order.

#### **1.3-meter rack (#0555 -- supported only)**

This 25 EIA unit rack is the same rack delivered when you order the 7014-S25 rack.

## **1.8-meter rack (#0551)**

This 36 EIA unit rack is the same rack delivered when you order the 7014-T00 rack; the included features may be different. Some features that are delivered as part of the 7014-T00 must be ordered separately with the feature 0551. Order the feature 0551 only when required to support rack integration of MES orders prior to shipment from IBM .

## **2.0-meter rack (#0553)**

This 42 EIA unit tall rack delivered as feature 0553 is the same rack delivered when you order the 7014-T42 rack; the included features may be different. Some features that are delivered as part of the 7014-T42 must be ordered separately with the feature 0553. Order the feature 0553 only when required to support rack integration of MES orders prior to shipment from IBM .

## **IBM Power Systems Deployment-ready Services**

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IBM offers a portfolio of integration, configuration, and customization services for IBM Power Systems . These Deployment-ready Services are designed to accelerate client solution deployment and reduce related resources and cost. Offerings include:

- Integration
  - Component integration
  - Rack integration
  - Operating system preinstallation
  - Unit personalization
  - Third-party hardware/software installation
  - Client-specified placement
- Asset tagging: Standard tagging: Radio Frequency Identifier (RFID)
- Special packaging: Box consolidation
- System customization: Remote access partitioning customized operating system/firmware

For more information on Deployment-ready Services, refer to

<http://www.ibm.com/power/deploymentreadyservices/>

## **Reliability, availability, and serviceability (RAS) features**

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### ***Reliability, fault tolerance, and data correction***

The reliability of systems starts with components, devices, and subsystems that are designed to be highly reliable. The POWER7+ processor SCM uses lower-voltage technology, improving reliability with stacked latches to reduce soft error (SER) susceptibility. During the design and development process, subsystems go through rigorous verification and integration testing processes. During system manufacturing, systems go through a thorough testing process to help ensure the highest level of product quality.

The system cache and memory offer ECC (error checking and correcting) fault-tolerant features. ECC is designed to correct environmentally induced, single-bit, intermittent memory failures and single-bit hard failures. With ECC, the likelihood of memory failures will be reduced. ECC also offers double-bit memory error detection that helps protect data in the event of a double-bit memory failure.

The AIX and IBM i operating systems provide disk drive mirroring and disk drive controller duplexing. The Linux operating system supports disk drive mirroring (RAID 1) through software, while other RAID protection schemes are delivered via hardware RAID adapters.

### ***Memory error correction extensions***

The memory has single-bit-error correction and double-bit-error detection ECC circuitry. The ECC code is also designed such that the failure of any one specific memory module within an ECC word by itself can be corrected absent any other fault.

Memory protection features include scrubbing to detect errors, a means to call for the deallocation of memory pages for a pattern of correctable errors detected, and signaling deallocation of a logical memory block when an error occurs that cannot be corrected by the ECC code.

### ***Fault monitoring functions***

Disk drive fault tracking is designed to alert the system administrator of an impending disk drive failure before it affects client operation.

### ***Mutual surveillance***

The Service Processor monitors the operation of the firmware during the boot process, and also monitors the hypervisor for termination. The hypervisor monitors the Service Processor and will perform a reset/reload if it detects the loss of the Service Processor. If the reset/reload does not correct the problem with the Service Processor, the hypervisor will notify the operating system and the operating system can take appropriate action, including calling for service.

### ***Environmental monitoring functions***

POWER7+ technology-based servers include a range of environmental monitoring functions:

- Temperature monitoring warns the system administrator of potential environmental-related problems by monitoring the air inlet temperature. When the inlet temperature rises above a warning threshold, the system initiates an orderly shutdown. When the temperature exceeds the critical level or if the temperature remains above the warning level for too long, the system will shut down immediately.
- Fan speed is controlled by monitoring actual temperatures on critical components and adjusting accordingly. If internal component temperatures reach critical levels, the system will shut down immediately, regardless of fan speed. When a redundant fan fails, the system calls out the failing fan and continues running. When a nonredundant fan fails, the system shuts down immediately.

### ***Availability enhancement functions***

The POWER7 family of systems continues to offer and introduce significant enhancements designed to increase system availability.

### **POWER7+ processor functions**

As in POWER6 and POWER7, the POWER7+ processor can perform processor instruction retry and alternate processor recovery for a number of core-related faults. This is designed to significantly reduce exposure to both hard (logic) and soft (transient) errors in the processor core. Soft failures in the processor core are transient (intermittent) errors, often due to cosmic rays or other sources of radiation, and generally are not repeatable. When an error is encountered in the core, the POWER7+ processor is designed to first automatically retry the instruction. If the source of the error was truly transient, the instruction will succeed and the system will continue as before. On IBM systems before POWER6, this error would have caused a checkstop.

Hard failures are more difficult, being true logical errors that will be replicated each time the instruction is repeated. Retrying the instruction will not help in this situation. As in POWER6 and POWER7, POWER7+ processors can extract the failing instruction from the faulty core and retry it elsewhere in the system for a number

of faults, after which the failing core is dynamically deconfigured and called out for replacement. These systems are designed to avoid a full system outage.

### **POWER7+ single processor checkstopping**

As in POWER6 , POWER7+ includes single processor checkstopping for certain faults that cannot be handled by the availability enhancements described in the preceding section. This significantly reduces the probability of any one processor affecting total system availability.

### **Partition availability priority**

Also available is the ability to assign availability priorities to partitions. If an alternate processor recovery event requires spare processor resources in order to protect a workload, when no other means of obtaining the spare resources is available, the system will determine which partition has the lowest priority and attempt to claim the needed resource. On a properly configured POWER7+ processor-based server, this allows that capacity to be first obtained from, for example, a test partition instead of a financial accounting system.

### **POWER7+ cache availability**

The L2 and L3 caches in the POWER7+ processor are protected with double-bit detect, single-bit correct error detection code (ECC). In addition, the caches maintain a cache line delete capability. A threshold of correctable errors detected on a cache line can result in the data in the cache line being purged and the cache line removed from further operation without requiring a reboot. An ECC uncorrectable error detected in the cache can also trigger a purge and delete of the cache line. This results in no loss of operation if the cache line contained data unmodified from what was stored in system memory. Modified data would be handled through Special Uncorrectable Error handling. L1 data and instruction caches also have a retry capability for intermittent error and a cache set delete mechanism for handling solid failures. In addition, the POWER7+ processors also have the ability to dynamically substitute a faulty bit-line in an L3 cache dedicated to a processor with a spare bit-line.

### **Special uncorrectable error handling**

Special uncorrectable error (SUE) handling prevents an uncorrectable error in memory or cache from immediately causing the system to terminate. Rather, the system tags the data and determines whether it will ever be used again. If the error is irrelevant, it will not force a check stop. If the data is used, termination may be limited to the program/kernel or hypervisor owning the data; or the I/O adapters controlled by an I/O hub controller would freeze if data were transferred to an I/O device.

### **PCI extended error handling**

PCI extended error handling (EEH)-enabled adapters respond to a special data packet generated from the affected PCI slot hardware by calling system firmware, which will examine the affected bus, allow the device driver to reset it, and continue without a system reboot. For Linux , EEH support extends to the majority of frequently used devices, although some third-party PCI devices may not provide native EEH support.

### **Predictive failure and dynamic component deallocation**

Servers with Power processors have long been able to perform predictive failure analysis on certain critical components such as processors and memory. When these components exhibit certain symptoms that may indicate a failure is imminent, the system can dynamically deallocate and call home, when enabled, about the failing part before the error is propagated system-wide. In many cases, the system will first attempt to reallocate resources in such a way that will avoid unplanned outages. In the event that insufficient resources exist to maintain full system availability, these servers will attempt to maintain partition availability by user-defined priority.

## **Uncorrectable error recovery**

When the auto-restart option is enabled, the system can automatically restart following an unrecoverable software error, hardware failure, or environmentally induced (ac power) failure.

## **Serviceability**

The purpose of serviceability is to repair the system while attempting to minimize or eliminate service cost (within budget objectives), while maintaining high client satisfaction. Serviceability includes system installation, MES (system upgrades/downgrades), and system maintenance/repair. Depending upon the system and warranty contract, service may be performed by the client, an IBM representative, or an authorized warranty service provider.

The serviceability features delivered in this system provide a highly efficient service environment by incorporating the following attributes:

- Design for client setup (CSU), client installed features (CIF), and customer replaceable units (CRU)
- Error detection and fault isolation (ED/FI)
- First failure data capture (FFDC)
- Converged service approach across multiple IBM server platforms

## **Service environments**

The HMC is a dedicated server that provides functions for configuring and managing servers for either partitioned or full-system partition using a GUI or command-line interface (CLI). An HMC attached to the system enables support personnel (with client authorization) to remotely log in to review error logs and perform remote maintenance if required.

The POWER7 processor-based platforms support two main service environments:

- Attachment to one or more HMCs is a supported option by the system. This is the default configuration for servers supporting logical partitions with dedicated or virtual I/O. In this case, all servers have at least one logical partition.
- No HMC. There are two service strategies for non-HMC systems:
  - Full system partition: A single partition owns all the server resources and only one operating system may be installed.
  - Partitioned system: In this configuration, the system can have more than one partition and can be running more than one operating system. In this environment, partitions are managed by the Integrated Virtualization Manager (IVM), which includes some of the functions offered by the HMC.

## **Service Interface**

The Service Interface enables support personnel to communicate with the service support applications in a server using a console, interface, or terminal. Delivering a clear, concise view of available service applications, the Service Interface enables the support team to manage system resources and service information in an efficient and effective way. Applications available via the Service Interface are carefully configured and placed to give service providers access to important service functions.

Different service interfaces are used, depending on the state of the system and its operating environment. The primary service interfaces are:

- LEDs
- Operator Panel
- Service Processor menu
- Operating system service menu

- Service Focal Point™ on the HMC
- Service Focal Point Lite on IVM

In the light path LED implementation, the system can clearly identify components for replacement by using specific component-level LEDs, and can also guide the servicer directly to the component by signaling (turning on solid) the amber system fault LED, enclosure fault LED, and the component FRU fault LED. The servicer can also use the identify function to blink the FRU-level LED. When this function is activated, a roll-up to the blue enclosure locate and system locate LEDs will occur. These LEDs will turn on solid and can be used to follow the light path from the system to the enclosure and down to the specific FRU.

### **First-failure data capture (FFDC) and error data analysis**

FFDC is a technique that helps ensure that when a fault is detected in a system, the root cause of the fault will be captured without the need to re-create the problem or run any sort of extended tracing or diagnostics program. For the vast majority of faults, a good FFDC design means that the root cause can also be detected automatically without servicer intervention.

FFDC information, error data analysis, and fault isolation are necessary to implement the advanced serviceability techniques that enable efficient service of the systems and to help determine the failing items.

In the rare absence of FFDC and error data analysis, diagnostics are required to re-create the failure and determine the failing items.

### **Diagnostics**

General diagnostic objectives are to detect and identify problems such that they can be resolved quickly. Elements of IBM's diagnostics strategy include:

- Common error code format equivalent to a system reference code, system reference number, checkpoint, or firmware error code.
- Fault detection and problem isolation procedures.
- Support for remote connection to be used by the IBM Remote Support Center or IBM Designated Service.
- Interactive intelligence within the diagnostics with detailed online failure information while connected to IBM's back-end system.

### **Automatic diagnostics**

Because of the FFDC technology designed into IBM servers, it is not necessary to perform re-create diagnostics for failures or require user intervention. Solid and intermittent errors are designed to be correctly detected and isolated at the time the failure occurs. Runtime and boottime diagnostics fall into this category.

### **Stand-alone diagnostics**

As the name implies, stand-alone or user-initiated diagnostics require user intervention. The user must perform manual steps, including:

- Using disk-based diagnostics
- Keying in commands
- Interactively selecting steps from a list of choices

### **Concurrent maintenance**

The system will continue to support concurrent maintenance of power, cooling, HDD or SSD, DVD, and firmware updates (when possible). The determination of whether a firmware release can be updated concurrently is identified in the readme information file released with the firmware.



## **Service labels**

Service providers use these labels to assist them in performing maintenance actions. Service labels are found in various formats and positions and are intended to transmit readily available information to the servicer during the repair process. Following are some of these service labels and their purpose:

- **Location diagrams:** Location diagrams are strategically located on the system hardware, relating information regarding the placement of hardware components. Location diagrams may include location codes, drawings of physical locations, concurrent maintenance status, or other data pertinent to a repair. Location diagrams are especially useful when multiple components are installed such as DIMMs, CPUs, processor books, fans, adapter cards, LEDs, and power supplies.
- **Remove/replace procedures:** Service labels that contain remove/replace procedures are often found on a cover of the system or in other spots accessible to the servicer. These labels provide systematic procedures, including diagrams, detailing how to remove or replace certain serviceable hardware components.
- **Arrows:** Numbered arrows are used to indicate the order of operation and serviceability direction of components. Some serviceable parts such as latches, levers, and touch points need to be pulled or pushed in a certain direction and certain order for the mechanical mechanisms to engage or disengage. Arrows generally improve the ease of serviceability.

## **Packaging for service**

The following service enhancements are included in the physical packaging of the systems to facilitate service:

- **Color coding (touch points):** Terracotta-colored touch points indicate that a component (FRU/CRU) can be concurrently maintained. Blue-colored touch points delineate components that are not concurrently maintained -- those that require the system to be turned off for removal or repair.
- **Tool-less design:** Selected IBM systems support tool-less or simple tool designs. These designs require no tools or simple tools such as flathead screw drivers to service the hardware components.
- **Positive retention:** Positive retention mechanisms help to assure proper connections between hardware components such as cables to connectors, and between two cards that attach to each other. Without positive retention, hardware components run the risk of becoming loose during shipping or installation, preventing a good electrical connection. Positive retention mechanisms like latches, levers, thumbscrews, pop Nylatches (U-clips), and cables are included to help prevent loose connections and aid in installing (seating) parts correctly. These positive retention items do not require tools.

## **Error handling and reporting**

In the event of system hardware or environmentally induced failure, the system runtime error capture capability systematically analyzes the hardware error signature to determine the cause of failure. The analysis result will be stored in system NVRAM. When the system can be successfully restarted either manually or automatically, the error will be reported to the operating system. Error Log Analysis (ELA) can be used to display the failure cause and the physical location of the failing hardware.

With the integrated Service Processor, the system has the ability to automatically send out an alert via phone line to a pager or call for service in the event of a critical system failure. A hardware fault will also turn on the amber system fault LED located on the system unit to alert the user of an internal hardware problem. The indicator may also be set to blink by the operator as a tool to allow system identification. For identification, the blue locate LED on the enclosure and at the system level will turn on solid. The amber system fault LED will be on solid when an error condition occurs.

On POWER7+ processor-based servers, hardware and software failures are recorded in the system log. When an HMC is attached, an ELA routine analyzes the error, forwards the event to the Service Focal Point (SFP) application running on the HMC, and notifies the system administrator that it has isolated a likely cause of the system problem. The Service Processor event log also records unrecoverable checkstop conditions, forwards them to the SFP application, and notifies the system administrator. Once the information is logged in the SFP application, if the system is properly configured, a call home service request will be initiated and the pertinent failure data with service parts information and part locations will be sent to an IBM service organization. Client contact information and specific system-related data such as the machine type, model, and serial number, along with error log data related to the failure are sent to IBM Service.

### **Live partition mobility**

With Live Partition Mobility, you can migrate an AIX or Linux partition running on one POWER7 or POWER7+ partition system to another POWER6 , POWER7 , or POWER7+ system without disrupting services. Also, IBM i and Linux partitions are enabled to migrate to another system without disrupting services. The migration transfers the entire system environment, including processor state, memory, attached virtual devices, and connected users. It provides continuous operating system and application availability during planned partition outages for repair of hardware and firmware faults, or continuous availability during a concurrent repair that requires freeing up CEC resources.

### **Service Processor**

The Service Processor enables you to diagnose, check the status of, and sense the operational conditions of a system. It runs on its own power boundary and does not require resources from a system processor to be operational to perform its tasks.

The Service Processor supports surveillance of the connection to the HMC and to the system firmware (hypervisor). It also provides several remote power control options, environmental monitoring, reset, restart, remote maintenance, and diagnostic functions, including console mirroring. The Service Processors menus (ASMI) can be accessed concurrently with system operation, allowing nondisruptive abilities to change system default parameters.

### **Call Home**

Call Home refers to an automatic or manual call from a client location to IBM support structure with error log data, server status, or other service-related information. Call Home invokes the service organization in order for the appropriate service action to begin. Call Home can be done through HMC or most non-HMC managed systems. While configuring Call Home is optional, clients are encouraged to implement this feature in order to obtain service enhancements such as reduced problem determination and faster and potentially more accurate transmittal of error information. In general, using the Call Home feature can result in increased system availability. The Electronic Service Agent™ application can be configured for automated call home. Refer to the next section for specific details on this application.

### **IBM Electronics Services**

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The IBM Electronic Services solution comprises Electronic Service Agent and the IBM Electronic Services web portal -- dedicated to providing fast, exceptional support to IBM clients. IBM Electronic Service Agent is a no-charge tool that proactively monitors and reports hardware events such as system errors, performance issues, and inventory. Electronic Service Agent can help focus on the client's company strategic business initiatives, save time, and spend less effort managing day-to-day IT maintenance issues.

Integrated in the operating system in addition to the HMC, Electronic Service Agent is designed to automatically and electronically report system failures and client-perceived issues to IBM , which can result in faster problem resolution and increased

availability. System configuration and inventory information collected by Electronic Service Agent also can be viewed on the secure Electronic Services web portal and used to improve problem determination and resolution between the client and the IBM support team. As part of an increased focus to provide even better service to IBM clients, Electronic Service Agent tool configuration and activation comes standard with the system. In support of this effort, a new HMC External Connectivity security white paper has been published, which describes data exchanges between the HMC and the IBM Service Delivery Center (SDC) and the methods and protocols for this exchange. To read the whitepaper and prepare for Electronic Service Agent installation, go to the "Reference Guide" section at

<http://www.ibm.com/support/electronic>

Select your country.

Click on " IBM Electronic Service Agent Connectivity Guide."

### **Benefits**

#### **Increased uptime:**

Electronic Service Agent is designed to enhance the warranty and maintenance service by providing faster hardware error reporting and uploading system information to IBM Support. This can optimize the time monitoring the symptoms, diagnosing the error, and manually calling IBM Support to open a problem record. And 24x7 monitoring and reporting means no more dependency on human intervention or off-hours client personnel when errors are encountered in the middle of the night.

#### **Security:**

Electronic Service Agent is secure in monitoring, reporting, and storing the data at IBM . Electronic Service Agent securely transmits via the Internet (HTTPS or VPN) and can be configured to communicate securely through gateways to provide clients a single point of exit from their site. Communication between the client and IBM only flows one way; activating Service Agent does not enable IBM to call into a client's system. System inventory information is stored in a secure database, which is protected behind IBM firewalls. The client's business applications or business data is never transmitted to IBM .

#### **More accurate reporting:**

Because system information and error logs are automatically uploaded to the IBM Support Center in conjunction with the service request, clients are not required to find and send system information, decreasing the risk of misreported or misdiagnosed errors. Once inside IBM , problem error data is run through a data knowledge management system and knowledge articles are appended to the problem record.

#### **Customized support:**

Using the IBM ID entered during activation, you can view system and support information in the "My Systems" and "Premium Search" sections of the Electronic Services website.

The Electronic Services web portal is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. This web portal enables you to gain easier access to IBM resources for assistance in resolving technical problems. The newly improved My Systems and Premium Search functions make it even easier for Electronic Service Agent-enabled clients to track system inventory and find pertinent fixes.

My Systems provides valuable reports of installed hardware and software using information collected from the systems by IBM Electronic Service Agent . Reports are available for any system associated with the client's IBM ID. Premium Search combines the function of search and the value of Electronic Service Agent

information, providing advanced search of the technical support knowledgebase. Using Premium Search and the Service Agent information that has been collected from the system, you can see search results that apply specifically to your systems.

For more information on how to utilize the power of IBM Electronic Services, visit the following website or contact an IBM Systems Services Representative

<http://www.ibm.com/support/electronic>

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### **Accessibility by people with disabilities**

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

[http://www.ibm.com/able/product\\_accessibility/index.html](http://www.ibm.com/able/product_accessibility/index.html)

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## **Statement of general direction**

### **AIX 5.3 and 7.1 support for Power 710, 720, 730, 740, 750, and 760**

IBM intends to provide to those clients with AIX 7.1 Technology Level 0 and/or Technology Level 1 and AIX 5.3 Technology Level 12 (and the associated service extension offering) the ability to run that environment on the new Power 710 (8231-E1D), Power 720 (8202-E4D), Power 730 (8231-E2D), Power 740 (8205-E6D), Power 750 (8408-E8D), and Power 760 (9109-RMD).

### **VIOS 2.2.1 support for Power 710, 720, 730, 740, 750, 760, and PowerLinux™ 7R1, 7R2**

IBM intends to provide to those clients with VIOS 2.2.1 the ability to run that environment on the new Power 710 (8231-E1D), PowerLinux 7R1 (8246-L1D, 8246-L1T), Power 720 (8202-E4D), Power 730 (8231-E2D), PowerLinux 7R2 (8246-L2D, 8246-L2T), Power 740 (8205-E6D), Power 750 (8408-E8D), and Power 760 (9109-RMD).

### **Standard Disclaimer**

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

### **RHEL 6.4 support for Power 710, 7R1, 720, 730, 7R2, 740, 750, 760, and PowerLinux 7R1, 7R2**

Red Hat intends to continue to work with Red Hat to provide support for the new Power 710 (8231-E1D), PowerLinux 7R1 (8246-L1D, 8246-L1T), Power 720 (8202-E4D), Power 730 (8231-E2D), PowerLinux 7R2 (8246-L2D, 8246-L2T), Power 740 (8205-E6D), Power 750 (8408-E8D), and Power 760 (9109-RMD) with an upcoming Red Hat Enterprise Linux 6 release. For additional questions about the availability of this release and supported hardware servers, consult the Red Hat Hardware Catalog at

<https://hardware.redhat.com>

### **RHEL 6 Preinstall feature for Power 710, 720, 730, 740, 750, 760, and PowerLinux 7R1, 7R2**

IBM intends to provide support for preinstall of an upcoming Red Hat Enterprise Linux 6 release on the new Power 710 (8231-E1D), PowerLinux 7R1 (8246-L1D,

8246-L1T), Power 720 (8202-E4D), Power 730 (8231-E2D), PowerLinux 7R2 (8246-L2D, 8246-L2T), Power 740 (8205-E6D), Power 750 (8408-E8D) and Power 760 (9109-RMD) systems.

### Standard Red Hat Disclaimer

Information concerning Red Hat Enterprise Linux was obtained from Red Hat. Questions concerning Red Hat Enterprise Linux should be directed to Red Hat, as Red Hat Enterprise Linux is not an IBM product. Red Hat Enterprise Linux is sold or licensed, as the case may be, to users under Red Hat's terms and conditions. Availability and support is the responsibility of Red Hat. IBM IS NOT LIABLE AND MAKES NO WARRANTIES, EXPRESS OR IMPLIED, REGARDING RED HAT ENTERPRISE LINUX, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR CONDITION OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Moreover, all statements regarding IBM's or Red Hat's future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only. Information regarding potential future third-party products that may work with an IBM product should not be relied on in making a purchase decision. The information mentioned regarding potential future third-party products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future third-party products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for IBM or Red Hat products remains at IBM's or Red Hat's sole discretion, as applicable.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

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## Product number

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The following are newly announced features on the specific models of the IBM Power Systems 8202 machine type:

Description	MT	Model	Feature
IBM Power 720	8202	E4D	
#ES04 Load Source Specify	8202	E4D	0882
SAS EX Cable 3m - Drawer to Drawer	8202	E4D	3675
SAS EX Cable 6m - Drawer to Drawer	8202	E4D	3680
System AC Power Supply, 1925 W	8202	E4D	5532
SAS EX Cable 1.5m - Drawer to Drawer	8202	E4D	5926
Specify Mode-1 & EXP30 for 1 EXP24S #5887	8202	E4D	9388
IBM i 6.1.1 Native I/O Enablement	8202	E4D	EB34
EXP30 Ultra SSD I/O Drawer	8202	E4D	EDR1
SPSS on Power Solution Indicator	8202	E4D	EHSS
16GB (2x8GB) Memory DIMMs, 1066 MHz, 4Gb DDR3 DRAM	8202	E4D	EM4B
32GB (2x16GB) Memory DIMMs, 1066 MHz, 4Gb DDR3 DRAM	8202	E4D	EM4C
64GB (2x32GB) Memory DIMMs, 1066 MHz, 4Gb DDR3 DRAM	8202	E4D	EM4D
PCIe2 16Gb 2-port Fibre Channel Adapter	8202	E4D	EN0A
PCIe2 LP 16Gb 2-port Fibre Channel Adapter	8202	E4D	EN0B
PCIe2 4-port (10Gb FCoE & 1GbE) SR&RJ45	8202	E4D	EN0H
PCIe2 LP 4-port (10Gb FCoE & 1GbE) SR&RJ45	8202	E4D	EN0J
4-core 3.6 GHZ POWER7+ Processor Module	8202	E4D	EPCK
6-core 3.6 GHZ POWER7+ Processor Module	8202	E4D	EPCL
8-core 3.6 GHZ POWER7+ Processor Module	8202	E4D	EPCM
One Processor Activation for Processor Feature			

#EPCK	8202	E4D	EPDK
One Processor Activation for Processor Feature			
#EPCL	8202	E4D	EPDL
One Processor Activation for Processor Feature			
#EPCM	8202	E4D	EPDM
Zero-priced Processor Activation for #EPCK	8202	E4D	EPEK
Zero-priced Processor Activation for #EPCL	8202	E4D	EPEL
Zero-priced Processor Activation for #EPCM	8202	E4D	EPDM
387GB 1.8" SAS SSD for IBM i with eMLC	8202	E4D	ES04
Six ES02 387GB 1.8" SAS SSD for AIX/Linux with eMLC	8202	E4D	ESR2
Six ES04 387GB 1.8" SAS SSD for IBM i with eMLC	8202	E4D	ESR4
Four ES0A 387GB SFF-1 SSD for AIX/Linux with eMLC	8202	E4D	ESRA
Four ES0B 387GB SFF-1 SSD for IBM i with eMLC	8202	E4D	ESRB
Four ES0C 387GB SFF-2 SSD for AIX/Linux with eMLC	8202	E4D	ESRC
Four ES0D 387GB SFF-2 SSD for IBM i with eMLC	8202	E4D	ESRD
2.5/6.25TB LTO-6 SAS Tape Drive, Half-high	8202	E4D	EU11
1.5TB Removable Disk Drive Cartridge	8202	E4D	EU15
2.5 TB LTO-6 Tape Cartridge	8202	E4D	EU17
5-Pack of #EU17	8202	E4D	EU18

The following are features already announced for the IBM Power Systems 8202 machine type:

Description	MT	Model	Feature
One CSC Billing Unit	8202	E4D	0010
Ten CSC Billing Units	8202	E4D	0011
Mirrored System Disk Level, Specify Code	8202	E4D	0040
Device Parity Protection-All, Specify Code	8202	E4D	0041
Mirrored System Bus Level, Specify Code	8202	E4D	0043
Device Parity RAID-6 All, Specify Code	8202	E4D	0047
RISC-to-RISC Data Migration	8202	E4D	0205
AIX Partition Specify	8202	E4D	0265
Linux Partition Specify	8202	E4D	0266
IBM i Operating System Partition Specify	8202	E4D	0267
Specify Custom Data Protection	8202	E4D	0296
Mirrored Level System Specify Code	8202	E4D	0308
RAID Hot Spare Specify	8202	E4D	0347
V.24/EIA232 6.1m (20-Ft) PCI Cable	8202	E4D	0348
V.24/EIA232 15.2m (50-Ft) PCI Cable	8202	E4D	0349
V.35 6.1m (20-Ft) PCI Cable	8202	E4D	0353
V.35 15.2m (50-Ft) PCI Cable	8202	E4D	0354
V.36 6.1m (20-Ft) PCI Cable	8202	E4D	0356
X.21 6.1m (20-Ft) PCI Cable	8202	E4D	0359
X.21 15.2m (50-Ft) PCI Cable	8202	E4D	0360
V.24/EIA232 (80-Ft) PCI Cable	8202	E4D	0365
CBU Specify	8202	E4D	0444
Customer Specified Placement	8202	E4D	0456
SSD Placement Indicator - CEC	8202	E4D	0462
SSD Placement Indicator (5802/5803)	8202	E4D	0463
SSD Placement Indicator - 5886	8202	E4D	0464
SSD Placement Indicator - 5887	8202	E4D	0465
19 inch, 1.8 meter high rack	8202	E4D	0551
19 inch, 2.0 meter high rack	8202	E4D	0553
19 inch, 1.3 meter high rack	8202	E4D	0555
IBM i 6.1 with 6.1.1 Machine Code Specify Code	8202	E4D	0566
IBM i 7.1 Specify Code	8202	E4D	0567
Rack Filler Panel Kit	8202	E4D	0599
Load Source Not in CEC	8202	E4D	0719
#1787 Load Source Specify	8202	E4D	0722
#1996 Load Source Specify	8202	E4D	0724
Specify Load Source in #5802/#5803/#5877	8202	E4D	0726
Specify #5886 Load Source placement	8202	E4D	0727

Specify #5887 Load Source placement	8202	E4D	0728
Specify EXP30 Load Source placement	8202	E4D	0729
Power 720 4-core Express Edition for IBM i	8202	E4D	0777
Power 720 6-, 8-core Express Edition for IBM i	8202	E4D	0779
SAN Load Source Specify	8202	E4D	0837
#3676 Load Source Specify	8202	E4D	0838
#3677 Load Source Specify	8202	E4D	0839
#3678 Load Source Specify	8202	E4D	0840
#3658 Load Source Specify	8202	E4D	0844
#1884 Load Source Specify	8202	E4D	0851
#1888 Load Source Specify	8202	E4D	0853
#3587 Load Source Specify	8202	E4D	0855
#1911 Load Source Specify	8202	E4D	0856
#1916 Load Source Specify	8202	E4D	0857
#1879 Load Source Specify	8202	E4D	0870
#1947 Load Source Specify	8202	E4D	0871
#1948 Load Source Specify	8202	E4D	0872
#1956 Load Source Specify	8202	E4D	0874
#1962 Load Source Specify	8202	E4D	0875
#1794 Load Source Specify	8202	E4D	0876
#1737 Load Source Specify (856GB SFF-1 disk)	8202	E4D	0879
#1738 Load Source Specify (856GB SFF-2 disk)	8202	E4D	0880
#ES0B Load Source Specify	8202	E4D	0893
#ES0D Load Source Specify	8202	E4D	0894
Modem Cable - US/Canada and General Use	8202	E4D	1025
USB Internal Docking Station for Removable Disk Drive	8202	E4D	1103
USB External Docking Station for Removable Disk Drive	8202	E4D	1104
USB 160 GB Removable Disk Drive	8202	E4D	1106
USB 500 GB Removable Disk Drive	8202	E4D	1107
3m, Blue Cat5e Cable	8202	E4D	1111
10m, Blue Cat5e Cable	8202	E4D	1112
25m, Blue Cat5e Cable	8202	E4D	1113
Custom Service Specify, Rochester Minn, USA	8202	E4D	1140
200V 16A 4.3m (14-Ft) TL Line Cord	8202	E4D	1406
125V 4.3m (14-Ft) Line Cord	8202	E4D	1413
200V 1.8m (6-Ft) Locking Line Cord	8202	E4D	1414
4.3m 200V/16A Power Cord EU/Asia	8202	E4D	1420
4.3m 200V/16A Power Cord CH/DK	8202	E4D	1421
200V 4.3m (14-Ft) Locking Line Cord	8202	E4D	1426
200V 4.3m (14-Ft) Watertight Line Cord	8202	E4D	1427
4.3m 200V/10A Power Cord EU/Asia	8202	E4D	1439
4.3m 200V/10A Power Cord Denmark	8202	E4D	1440
4.3m 200V/10A Power Cord S. Africa	8202	E4D	1441
4.3m 200V/10A Power Cord Swiss	8202	E4D	1442
4.3m 200V/10A Power Cord UK	8202	E4D	1443
4.3m 200V/10A Power Cord Israel	8202	E4D	1445
4.3m 200V/32A Power Cord EU 1-PH	8202	E4D	1449
4.3m 200V/16A Power Cord EU 2-PH	8202	E4D	1450
Power Cord (4.3 M), To wall (250V/15A)	8202	E4D	1452

200V 12A (14-Ft) 4.3m TL Line Cord	8202	E4D	1454
200V (14-Ft) 4.3m Watertight Line Cord	8202	E4D	1456
4.3m 200V/12A Pwr Cd UK	8202	E4D	1476
4.3m 200V/16A Pwr Cd	8202	E4D	1477
856GB 10k RPM SAS SFF Disk Drive (IBM i)	8202	E4D	1737
856GB 10k RPM SAS SFF-2 Disk Drive (IBM i)	8202	E4D	1738
900GB 10K RPM SAS SFF Disk Drive (AIX/Linux)	8202	E4D	1751
900GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8202	E4D	1752
177GB SFF-1 SSD w/ eMLC (AIX/Linux)	8202	E4D	1775
177GB SFF-1 SSD w/ eMLC (IBM i)	8202	E4D	1787
600GB 10K RPM SAS SFF Disk Drive (AIX/Linux)	8202	E4D	1790
177GB SFF-2 SSD w/ eMLC (AIX/Linux)	8202	E4D	1793
177GB SFF-2 SSD w/ eMLC (IBM i)	8202	E4D	1794
Quantity 150 of #1962	8202	E4D	1817
Quantity 150 of #1964	8202	E4D	1818
System port/UPS Conversion Cable	8202	E4D	1827
1.5 Meter 12X to 4X Channel Conversion Cable	8202	E4D	1828
0.6 Meter 12X Cable	8202	E4D	1829
1.5 Meter 12X cable	8202	E4D	1830
8.0 Meter 12X Cable	8202	E4D	1834
3.0 Meter 12X Cable	8202	E4D	1840
3 Meter 12X to 4X Channel Conversion Cable	8202	E4D	1841
Quantity 150 of #1956	8202	E4D	1844
10 Meter 12X to 4X Enhanced Channel Conversion Cable	8202	E4D	1854
0.6 Meter 12X DDR Cable	8202	E4D	1861
1.5 Meter 12X DDR Cable	8202	E4D	1862
8.0 Meter 12X DDR Cable	8202	E4D	1864
3.0 Meter 12X DDR Cable	8202	E4D	1865
Quantity 150 of #1917	8202	E4D	1866
Quantity 150 of #1947	8202	E4D	1868
Quantity 150 of #1925	8202	E4D	1869
283GB 15K RPM SAS SFF Disk Drive (IBM i)	8202	E4D	1879
300GB 15K RPM SAS SFF Disk Drive (AIX/Linux)	8202	E4D	1880
146.8GB 10K RPM SAS SFF Disk Drive	8202	E4D	1882
73.4 GB 15K RPM SAS SFF Disk Drive	8202	E4D	1883
69.7 GB 15K RPM SAS SFF Disk Drive	8202	E4D	1884
300GB 10K RPM SFF SAS Disk Drive	8202	E4D	1885
146GB 15K RPM SFF SAS Disk Drive (AIX/Linux)	8202	E4D	1886
Quantity 150 of #1793	8202	E4D	1887
139GB 15K RPM SFF SAS Disk Drive (IBM i)	8202	E4D	1888
4 GB Single-Port Fibre Channel PCI-X 2.0 DDR Adapter	8202	E4D	1905
4 GB Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter	8202	E4D	1910
283GB 10K RPM SFF SAS Disk Drive (IBM i)	8202	E4D	1911
PCI-X DDR Dual Channel Ultra320 SCSI Adapter	8202	E4D	1912
571GB 10k RPM SAS SFF Disk Drive (IBM i)	8202	E4D	1916
146GB 15k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8202	E4D	1917
300GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8202	E4D	1925
Quantity 150 of #1948	8202	E4D	1927
Quantity 150 of #1953	8202	E4D	1929
139GB 15k RPM SAS SFF-2 Disk Drive (IBM i)	8202	E4D	1947
283GB 15k RPM SAS SFF-2 Disk Drive (IBM i)	8202	E4D	1948
300GB 15k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8202	E4D	1953
4-Port 10/100/1000 Base-TX PCI-X Adapter	8202	E4D	1954
283GB 10k RPM SAS SFF-2 Disk Drive (IBM i)	8202	E4D	1956
Quantity 150 of #1794	8202	E4D	1958
571GB 10k RPM SAS SFF-2 Disk Drive (IBM i)	8202	E4D	1962
600GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8202	E4D	1964
2 Gigabit Fibre Channel PCI-X Adapter	8202	E4D	1977
IBM Gigabit Ethernet-SX PCI-X Adapter	8202	E4D	1978
IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	8202	E4D	1979
POWER GXT135P Graphics Accelerator with Digital Support	8202	E4D	1980
IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	8202	E4D	1983
1 Gigabit iSCSI TOE PCI-X on Copper Media Adapter	8202	E4D	1986
1 Gigabit iSCSI TOE PCI-X on Optical Media Adapter	8202	E4D	1987



177GB SSD Module with eMLC (AIX/Linux)	8202	E4D	1995
177GB SSD Module with eMLC (IBM i)	8202	E4D	1996
PCIe LP RAID & SSD SAS Adapter 3Gb	8202	E4D	2053
PCIe RAID & SSD SAS Adapter 3Gb	8202	E4D	2054
PCIe RAID & SSD SAS Adapter 3Gb w/ Blind Swap Cassette	8202	E4D	2055
Converter Cable, VHDCI to P, Mini-68 pin to 68 pin, 0.3M	8202	E4D	2118
Primary OS - IBM i	8202	E4D	2145
Primary OS - AIX	8202	E4D	2146
Primary OS - Linux	8202	E4D	2147
Factory Deconfiguration of 1-core	8202	E4D	2319
2M LC-SC 50 Micron Fiber Converter Cable	8202	E4D	2456
2M LC-SC 62.5 Micron Fiber Converter Cable	8202	E4D	2459
4 port USB PCIe Adapter	8202	E4D	2728
2-Port USB PCI Adapter	8202	E4D	2738
POWER GXT135P Graphics Accelerator with Digital Support	8202	E4D	2849
ARTIC960Hx 4-Port EIA-232 Cable	8202	E4D	2861
ARTIC960Hx 4-Port X.21 Cable	8202	E4D	2863
ARTIC960Hx 4-Port V.35 (DTE) Cable	8202	E4D	2864
PCIe 2-Line WAN w/Modem	8202	E4D	2893
3M Asynchronous Terminal/Printer Cable EIA-232	8202	E4D	2934
Asynchronous Cable EIA-232/V.24 3M	8202	E4D	2936
8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus	8202	E4D	2943
IBM ARTIC960Hx 4-Port Multiprotocol PCI Adapter	8202	E4D	2947
Cable, v.24 / EIA-232	8202	E4D	2951
Cable, v.35	8202	E4D	2952
Cable, v.36 / EIA-499	8202	E4D	2953
Cable, X.21	8202	E4D	2954
2-Port Multiprotocol PCI Adapter	8202	E4D	2962
Serial-to-Serial Port Cable for Drawer/Drawer-3.7M	8202	E4D	3124
Serial-to-Serial Port Cable for Rack/Rack- 8M	8202	E4D	3125
1m, (3.3-ft) IB 40G Copper Cable QSFP/QSFP	8202	E4D	3287
3m, (9.8-ft.) IB 40G Copper Cable QSFP/QSFP	8202	E4D	3288
5m QDR IB/E'Net Copper Cable QSFP/QSFP	8202	E4D	3289
10 meter Quad Data Rate InfiniBand Optical Cable, QSFP/QSFP	8202	E4D	3290
30 meter Quad Data Rate InfiniBand Optical Cable, QSFP/QSFP	8202	E4D	3293
SAS YO Cable 1.5m - HD 6Gb Adapter to Enclosure	8202	E4D	3450
SAS YO Cable 3m - HD 6Gb Adapter to Enclosure	8202	E4D	3451
SAS YO Cable 6m - HD 6Gb Adapter to Enclosure	8202	E4D	3452
SAS YO Cable 10m - HD 6Gb Adapter to Enclosure	8202	E4D	3453
SAS X Cable 3m - HD 6Gb 2-Adapter to Enclosure	8202	E4D	3454
SAS X Cable 6m - HD 6Gb 2-Adapter to Enclosure	8202	E4D	3455
SAS X Cable 10m - HD 6Gb 2-Adapter to Enclosure	8202	E4D	3456
SAS YO Cable 15m - HD 3Gb Adapter to Enclosure	8202	E4D	3457
SAS X Cable 15m - HD 3Gb 2-Adapter to Enclosure	8202	E4D	3458
69GB 3.5" SAS Solid State Drive	8202	E4D	3586
69GB 3.5" SAS Solid State Drive	8202	E4D	3587
Widescreen LCD Monitor	8202	E4D	3632
IBM T541H /L150p 15" TFT Color Monitor	8202	E4D	3637
IBM ThinkVision L170p Flat Panel Monitor	8202	E4D	3639
ThinkVision L171p Flat Panel Monitor	8202	E4D	3640
IBM T115 Flat Panel Monitor	8202	E4D	3641
ThinkVision L191p Flat Panel Monitor	8202	E4D	3642
IBM T120 Flat Panel Monitor	8202	E4D	3643
IBM T119 Flat Panel Monitor	8202	E4D	3644
IBM T117 Flat Panel Monitor	8202	E4D	3645
73GB 15K RPM SAS Disk Drive	8202	E4D	3646
146GB 15K RPM SAS Disk Drive (AIX/Linux)	8202	E4D	3647
300GB 15K RPM SAS Disk Drive (AIX/Linux)	8202	E4D	3648
450GB 15K RPM SAS Disk Drive (AIX/Linux)	8202	E4D	3649
SAS Cable (EE) Drawer to Drawer 1M	8202	E4D	3652
SAS Cable (EE) Drawer to Drawer 3M	8202	E4D	3653
SAS Cable (EE) Drawer to Drawer 6M	8202	E4D	3654
SAS SFF Cable	8202	E4D	3656
428GB 15K RPM SAS Disk Drive (IBM i)	8202	E4D	3658
SAS Cable (X) Adapter to SAS Enclosure, Dual Controller/Dual Path 3M:	8202	E4D	3661

SAS Cable (X) Adapter to SAS Enclosure, Dual Controller/Dual Path 6M:	8202	E4D	3662
SAS Cable (X) Adapter to SAS Enclosure, Dual Controller/Dual Path 15M:	8202	E4D	3663
69.7GB 15k rpm SAS Disk Drive	8202	E4D	3676
139.5GB 15k rpm SAS Disk Drive (IBM i)	8202	E4D	3677
283.7GB 15k rpm SAS Disk Drive (IBM i)	8202	E4D	3678
3M SAS CABLE, ADPTR TO ADPTR (AA)	8202	E4D	3681
6M SAS CABLE, ADPTR TO ADPTR (AA)	8202	E4D	3682
SAS Cable (AE) Adapter to Enclosure, single controller/single path 3M	8202	E4D	3684
SAS Cable (AE) Adapter to Enclosure, single controller/single path 6M	8202	E4D	3685
SAS Cable (YI) System to SAS Enclosure, Single Controller/Dual Path 1.5M	8202	E4D	3686
SAS Cable (YI) System to SAS Enclosure, Single Controller/Dual Path 3M	8202	E4D	3687
SAS Cable (AT) 0.6 Meter	8202	E4D	3688
SAS AT Cable 0.6m - HD 6Gb Adapter to 12X Enclosure (AT)	8202	E4D	3689
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 1.5 M	8202	E4D	3691
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 3 M	8202	E4D	3692
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 6 M	8202	E4D	3693
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 15 M	8202	E4D	3694
0.3M Serial Port Converter Cable, 9-Pin to 25-Pin Asynch Printer/Terminal Cable, 9-pin to 25-pin, 4M	8202	E4D	3926
Serial Port Null Modem Cable, 9-pin to 9-pin, 3.7M	8202	E4D	3927
Serial Port Null Modem Cable, 9-pin to 9-pin, 10M	8202	E4D	3928
System Serial Port Converter Cable 1.8 M (6-ft) Extender Cable for Displays (15-pin D-shell to 15-pin D-shell)	8202	E4D	4242
Extender Cable - USB Keyboards, 1.8M	8202	E4D	4256
VGA to DVI Connection Converter	8202	E4D	4276
Package 5X #2055 & 20X #1995 (AIX/Linux)	8202	E4D	4367
Package 5X #2055 & 20X #1996 (IBM i)	8202	E4D	4377
One and only one rack indicator feature is required on all orders (#4650 to #4666).			
Rack Indicator- Not Factory Integrated	8202	E4D	4650
Rack Indicator, Rack #1	8202	E4D	4651
Rack Indicator, Rack #2	8202	E4D	4652
Rack Indicator, Rack #3	8202	E4D	4653
Rack Indicator, Rack #4	8202	E4D	4654
Rack Indicator, Rack #5	8202	E4D	4655
Rack Indicator, Rack #6	8202	E4D	4656
Rack Indicator, Rack #7	8202	E4D	4657
Rack Indicator, Rack #8	8202	E4D	4658
Rack Indicator, Rack #9	8202	E4D	4659
Rack Indicator, Rack #10	8202	E4D	4660
Rack Indicator, Rack #11	8202	E4D	4661
Rack Indicator, Rack #12	8202	E4D	4662
Rack Indicator, Rack #13	8202	E4D	4663
Rack Indicator, Rack #14	8202	E4D	4664
Rack Indicator, Rack #15	8202	E4D	4665
Rack Indicator, Rack #16	8202	E4D	4666
PCI-X Cryptographic Coprocessor (FIPS 4)	8202	E4D	4764
Power Active Memory Expansion Enablement	8202	E4D	4793
PCIe Crypto Coprocessor No BSC 4765-001	8202	E4D	4807
PCIe Crypto Coprocessor Gen3 BSC 4765-001	8202	E4D	4808
Power 720 Solution Edition for IBM i (6-/8-core)	8202	E4D	4927
Power 720 Solution Edition for IBM i (4-core)	8202	E4D	4928
IBM i for Business Intelligence -- Small Config	8202	E4D	4934
IBM i for Business Intelligence -- Medium Config	8202	E4D	4935
IBM i for Business Intelligence -- Large Config	8202	E4D	4936
Software Preload Required	8202	E4D	5000
Power Dist Unit 1 Phase NEMA	8202	E4D	5160
Power Dist Unit 1 Phase IEC	8202	E4D	5161
Power Dist Unit 2 of 3 Phase	8202	E4D	5162
Power Dist Unit - 3 Phase	8202	E4D	5163

PowerVM Express Edition	8202	E4D	5225
PowerVM Standard Edition	8202	E4D	5227
PowerVM Enterprise Edition	8202	E4D	5228
PCIe2 LP 4-port 1GbE Adapter	8202	E4D	5260
PCIe LP POWER® GXT145 Graphics Accelerator	8202	E4D	5269
PCIe LP 10Gb FCoE 2-port Adapter	8202	E4D	5270
PCIe LP 4-Port 10/100/1000 Base-TX Ethernet Adapter	8202	E4D	5271
PCIe LP 10GbE CX4 1-port Adapter	8202	E4D	5272
PCIe LP 8Gb 2-Port Fibre Channel Adapter	8202	E4D	5273
PCIe LP 2-Port 1GbE SX Adapter	8202	E4D	5274
PCIe LP 10GbE SR 1-port Adapter	8202	E4D	5275
PCIe LP 4Gb 2-Port Fibre Channel Adapter	8202	E4D	5276
PCIe LP 4-Port Async EIA-232 Adapter	8202	E4D	5277
PCIe LP 2-x4-port SAS Adapter 3Gb	8202	E4D	5278
PCIe2 LP 4-Port 10GbE&1GbE SFP+ Copper&RJ45	8202	E4D	5279
PCIe2 LP 4-Port 10GbE&1GbE SR&RJ45 Adapter	8202	E4D	5280
PCIe LP 2-Port 1GbE TX Adapter	8202	E4D	5281
PCIe2 LP 2-Port 4X IB QDR Adapter 40Gb	8202	E4D	5283
PCIe2 LP 2-port 10GbE SR Adapter	8202	E4D	5284
PCIe2 2-Port 4X IB QDR Adapter 40Gb	8202	E4D	5285
PCIe2 LP 2-Port 10GbE SFP+ Copper Adapter	8202	E4D	5286
PCIe2 2-port 10GbE SR Adapter	8202	E4D	5287
PCIe2 2-Port 10GbE SFP+Copper Adapter	8202	E4D	5288
2 Port Async EIA-232 PCIe Adapter	8202	E4D	5289
PCIe LP 2-Port Async EIA-232 Adapter	8202	E4D	5290
Sys Console On HMC	8202	E4D	5550
System Console-Ethernet No IOP	8202	E4D	5557
Storage Backplane -- 6 SFF Bays/ SATA DVD/HH Tape	8202	E4D	5618
80/160GB DAT160 SAS Tape Drive	8202	E4D	5619
1.5TB/3.0TB LTO-5 SAS Tape Drive	8202	E4D	5638
DAT320 160/320 GB Tape Drive	8202	E4D	5661
DAT320 160 GB USB Tape Drive	8202	E4D	5673
PCIe Riser Card (Gen2)	8202	E4D	5685
DAT160 Data Cartridge	8202	E4D	5689
IBM Gigabit Ethernet-SX PCI-X Adapter	8202	E4D	5700
IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	8202	E4D	5701
IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	8202	E4D	5706
10Gb FCoE PCIe Dual Port Adapter	8202	E4D	5708
1 Gigabit iSCSI TOE PCI-X on Copper Media Adapter	8202	E4D	5713
1 Gigabit iSCSI TOE PCI-X on Optical Media Adapter	8202	E4D	5714
2 Gigabit Fibre Channel PCI-X Adapter	8202	E4D	5716
4-Port 10/100/1000 Base-TX PCI Express Adapter	8202	E4D	5717
10 Gb Ethernet-SR PCI-X 2.0 DDR Adapter	8202	E4D	5721
10 Gb Ethernet-LR PCI-X 2.0 DDR Adapter	8202	E4D	5722
2-Port Asynchronous EIA-232 PCI Adapter	8202	E4D	5723
PCIe2 8Gb 4-port Fibre Channel Adapter	8202	E4D	5729
10 Gigabit Ethernet-CX4 PCI Express Adapter	8202	E4D	5732
8 Gigabit PCI Express Dual Port Fibre Channel Adapter	8202	E4D	5735
PCI-X DDR Dual Channel Ultra320 SCSI Adapter	8202	E4D	5736
4-Port 10/100/1000 Base-TX PCI-X Adapter	8202	E4D	5740
SATA Slimline DVD-ROM Drive	8202	E4D	5743
PCIe2 4-Port 10GbE&1GbE SR&RJ45 Adapter	8202	E4D	5744
PCIe2 4-Port 10GbE&1GbE SFP+Copper&RJ45 Adapter	8202	E4D	5745
Half High 800GB/1.6TB LTO4 SAS Tape Drive	8202	E4D	5746
IBM LTO™ Ultrium™ 4 800 GB Data Cartridge	8202	E4D	5747
POWER GXT145 PCI Express Graphics Accelerator	8202	E4D	5748
4Gbps Fibre Channel (2-Port)	8202	E4D	5749
4 GB Single-Port Fibre Channel PCI-X 2.0 DDR Adapter	8202	E4D	5758
4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter	8202	E4D	5759
SATA Slimline DVD-RAM Drive	8202	E4D	5762
2-Port 10/100/1000 Base-TX Ethernet PCI Express Adapter	8202	E4D	5767
2-Port Gigabit Ethernet-SX PCI Express Adapter	8202	E4D	5768
10 Gigabit Ethernet-SR PCI Express Adapter	8202	E4D	5769
SATA Slimline DVD-RAM Drive	8202	E4D	5771
10 Gigabit Ethernet-LR PCI Express Adapter	8202	E4D	5772
4 Gigabit PCI Express Single Port Fibre Channel			

Adapter	8202	E4D	5773
4 Gigabit PCI Express Dual Port Fibre Channel Adapter	8202	E4D	5774
4 Port Async EIA-232 PCIe Adapter	8202	E4D	5785
PCI-DDR 12X Expansion Drawer	8202	E4D	5796
12X I/O Drawer PCIe, SFF disk	8202	E4D	5802
PCIe 380MB Cache Dual - x4 3Gb SAS RAID Adapter	8202	E4D	5805
12X I/O Drawer PCIe, No Disk	8202	E4D	5877
EXP 12S Expansion Drawer	8202	E4D	5886
EXP24S SFF Gen2-bay Drawer	8202	E4D	5887
PCIe2 4-port 1GbE Adapter	8202	E4D	5899
PCI-X DDR Dual -x4 SAS Adapter	8202	E4D	5900
PCIe Dual-x4 SAS Adapter	8202	E4D	5901
PCI-X DDR Dual - x4 3Gb SAS RAID Adapter	8202	E4D	5902
PCI-X DDR 1.5Gb Cache SAS RAID Adapter (BSC)	8202	E4D	5908
PCI-X DDR Dual - x4 SAS Adapter	8202	E4D	5912
PCIe2 1.8GB Cache RAID SAS Adapter Tri-port 6Gb	8202	E4D	5913
SAS AA Cable 3m - HD 6Gb Adapter to Adapter	8202	E4D	5915
SAS AA Cable 6m - HD 6Gb Adapter to Adapter	8202	E4D	5916
SAS AA Cable 1.5m - HD 6Gb Adapter to Adapter	8202	E4D	5917
SAS AA Cable 0.6m - HD 6Gb Adapter to Adapter	8202	E4D	5918
Non-paired SAS RAID indicator	8202	E4D	5922
Non-paired PCIe SAS RAID Indicator	8202	E4D	5923
Non-paired Indicator 5913 PCIe SAS RAID Adapter	8202	E4D	5924
Shared EXP30 Indicator	8202	E4D	5925
Remote EXP30 Indicator	8202	E4D	5927
Full width Keyboard -- USB, US English, #103P	8202	E4D	5951
Full width Keyboard -- USB, French, #189	8202	E4D	5952
Full width Keyboard -- USB, Italian, #142	8202	E4D	5953
Full width Keyboard -- USB, German/Austrian, #129	8202	E4D	5954
Full width Keyboard -- USB, UK English, #166P	8202	E4D	5955
Full width Keyboard -- USB, Spanish, #172	8202	E4D	5956
Full width Keyboard -- USB, Japanese, #194	8202	E4D	5957
Full width Keyboard -- USB, Brazilian Portuguese, #275	8202	E4D	5958
Full width Keyboard -- USB, Hungarian, #208	8202	E4D	5959
Full width Keyboard -- USB, Korean, #413	8202	E4D	5960
Full width Keyboard -- USB, Chinese, #467	8202	E4D	5961
Full width Keyboard -- USB, French Canadian, #445	8202	E4D	5962
Full width Keyboard -- USB, Belgian/UK, #120	8202	E4D	5964
Full width Keyboard -- USB, Swedish/Finnish, #153	8202	E4D	5965
Full width Keyboard -- USB, Danish, #159	8202	E4D	5966
Full width Keyboard -- USB, Bulgarian, #442	8202	E4D	5967
Full width Keyboard -- USB, Swiss/French/German, #150	8202	E4D	5968
Full width Keyboard -- USB, Norwegian, #155	8202	E4D	5969
Full width Keyboard -- USB, Dutch, #143	8202	E4D	5970
Full width Keyboard -- USB, Portuguese, #163	8202	E4D	5971
Full width Keyboard -- USB, Greek, #319	8202	E4D	5972
Full width Keyboard -- USB, Hebrew, #212	8202	E4D	5973
Full width Keyboard -- USB, Polish, #214	8202	E4D	5974
Full width Keyboard -- USB, Slovakian, #245	8202	E4D	5975
Full width Keyboard -- USB, Czech, #243	8202	E4D	5976
Full width Keyboard -- USB, Turkish, #179	8202	E4D	5977
Full width Keyboard -- USB, LA Spanish, #171	8202	E4D	5978
Full width Keyboard -- USB, Arabic, #253	8202	E4D	5979
Full width Keyboard -- USB, Thai, #191	8202	E4D	5980
Full width Keyboard -- USB, Russian, #443	8202	E4D	5981
Full width Keyboard -- USB, Slovenian, #234	8202	E4D	5982
Full width Keyboard -- USB, US English Euro, #103P	8202	E4D	5983
Power Control Cable (SPCN) - 2 meter	8202	E4D	6001
Power Control Cable (SPCN) - 3 meter	8202	E4D	6006
Power Control Cable (SPCN) - 15 meter	8202	E4D	6007
Power Control Cable (SPCN) - 6 meter	8202	E4D	6008
Power Control Cable (SPCN) - 30 meter	8202	E4D	6029
Opt Front Door for 1.8m Rack	8202	E4D	6068
Opt Front Door for 2.0m Rack	8202	E4D	6069
1.8m Rack Trim Kit	8202	E4D	6246
2.0m Rack Trim Kit	8202	E4D	6247
1.8m Rack Acoustic Doors	8202	E4D	6248
2.0m Rack Acoustic Doors	8202	E4D	6249
Redundant or Base Power Supply for 7031 Model D24/T24 I/O Enclosure	8202	E4D	6260

Power Supply for 7031 Model D24/T24 I/O Enclosure	8202	E4D	6261
1.8m Rack Trim Kit	8202	E4D	6263
2.0m Rack Trim Kit	8202	E4D	6272
Dual-port 12X Channel Interface Attach - Short Run	8202	E4D	6446
Dual-port 12X Channel Interface Attach- Long Run	8202	E4D	6457
Power Cord 4.3m (14-ft), Drawer to wall/IBM PDU (250V/10A)	8202	E4D	6458
Power Cord 4.3m (14-ft), Drawer To OEM PDU (125V, 15A)	8202	E4D	6460
Power Cord 4.3m (14-ft), Drawer to wall/OEM PDU (250V/15A) U. S.	8202	E4D	6469
Power Cord 1.8m (6-ft), Drawer to wall (125V/15A)	8202	E4D	6470
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU (125V/15A)	8202	E4D	6471
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU (250V/16A)	8202	E4D	6472
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU (250V/10A)	8202	E4D	6473
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU, (250V/13A)	8202	E4D	6474
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU, (250V/16A)	8202	E4D	6475
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU, (250V/10A)	8202	E4D	6476
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU, (250V/16A)	8202	E4D	6477
Power Cord 2.7 M(9-foot), To wall/OEM PDU, (250V, 16A)	8202	E4D	6478
Power Cord (9-foot) , To wall/OEM PDU, (250V, 10A)	8202	E4D	6479
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU, (125V/15A or 250V/10A )	8202	E4D	6488
4.3m (14-Ft) 3PH/24A 380-415V Power Cord	8202	E4D	6489
4.3m (14-Ft) 1PH/48A 200-240V Power Cord	8202	E4D	6491
4.3m (14-Ft) 1PH/48-60A 200-240V Power Cord	8202	E4D	6492
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU, (250V/10A)	8202	E4D	6493
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU, (250V/10A)	8202	E4D	6494
Power Cord (9-foot), To wall/OEM PDU, (250V, 10A)	8202	E4D	6495
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 10A)	8202	E4D	6496
Power Cord (6-foot), To wall/OEM PDU, (250V, 10A)	8202	E4D	6497
Power Cord (6-foot), To wall/OEM PDU, (250V, 15A)	8202	E4D	6498
Power Cable - Drawer to IBM PDU, 200-240V/10A	8202	E4D	6577
Optional Rack Security Kit	8202	E4D	6580
Modem Tray for 19-Inch Rack	8202	E4D	6586
Power Cord 2.7M (9-foot), To wall/OEM PDU, (125V, 15A)	8202	E4D	6651
4.3m (14-Ft) 1PH/24-30A Pwr Cord	8202	E4D	6654
4.3m (14-Ft) 1PH/24-30A WR Pwr Cord	8202	E4D	6655
4.3m (14-Ft)1PH/24A Power Cord	8202	E4D	6656
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 15A)	8202	E4D	6659
Power Cord 4.3m (14-ft), Drawer to wall/OEM PDU (125V/15A)	8202	E4D	6660
Power Cord 2.8m (9.2-ft), Drawer to wall/IBM PDU, (250V/10A)	8202	E4D	6665
Power Cord 4.3M (14-foot), Drawer to OEM PDU, (250V, 15A)	8202	E4D	6669
Power Cord (6-foot), To wall (125V, 15A), PT #59	8202	E4D	6670
Power Cord 2.7M (9-foot), Drawer to IBM PDU, 250V/10A	8202	E4D	6671
Power Cord 1.5M (5-foot), Drawer to IBM PDU, 250V/10A	8202	E4D	6672
Power Cord 2.7m (9-ft), Drawer to wall/OEM PDU, (250V/10A)	8202	E4D	6680

Power Cord (6-foot), To wall, (250V, 15A)	8202	E4D	6687
PCI 2-Line WAN IOA No IOP	8202	E4D	6805
PCI 4-Modem WAN IOA No IOP	8202	E4D	6808
PCI 2-Line WAN w/Modem NoIOP	8202	E4D	6833
Intelligent PDU+, 1 EIA Unit, Universal UTG0247 Connector	8202	E4D	7109
Environmental Monitoring Probe	8202	E4D	7118
IBM Rack-mount Drawer Bezel and Hardware	8202	E4D	7134
OEM Rack-mount Drawer Bezel and Hardware	8202	E4D	7135
IBM/OEM Rack-mount Drawer Rail Kit	8202	E4D	7145
Power Distribution Unit	8202	E4D	7188
Dual I/O Unit Enclosure	8202	E4D	7311
I/O Drawer Mounting Enclosure	8202	E4D	7314
Quantity 150 of #3676	8202	E4D	7517
Quantity 150 of #3677	8202	E4D	7518
Quantity 150 of #3678	8202	E4D	7519
Quantity 150 of #3586	8202	E4D	7535
Quantity 150 of #3587	8202	E4D	7536
Quantity 150 of #3658	8202	E4D	7538
Quantity 150 of #3647	8202	E4D	7549
Quantity 150 of #3648	8202	E4D	7564
Quantity 150 of #3649	8202	E4D	7565
IBM Tower Cover Set	8202	E4D	7567
OEM Tower Cover Set	8202	E4D	7568
2.0m Rack Side Attach Kit	8202	E4D	7780
Ethernet Cable, 6M, Hardware Management Console to System Unit	8202	E4D	7801
Ethernet Cable, 15m, Hardware Management Console to System Unit	8202	E4D	7802
Side-by-Side for 1.8m Racks	8202	E4D	7840
Ruggedize Rack Kit	8202	E4D	7841
Linux Software Preinstall	8202	E4D	8143
Linux Software Preinstall (Business Partners)	8202	E4D	8144
Mouse - USB, with Keyboard Attachment Cable	8202	E4D	8841
USB Mouse	8202	E4D	8845
Order Routing Indicator- System Plant	8202	E4D	9169
Language Group Specify - US English	8202	E4D	9300
Specify mode-1 & (1)5901/5278 for EXP24S #5887	8202	E4D	9359
Specify mode-1 & (2)5901/5278 for EXP24S #5887	8202	E4D	9360
Specify mode-2 & (2)5901/5278 for EXP24S #5887	8202	E4D	9361
Specify mode-4 & (4)5901/5278 for EXP24S #5887	8202	E4D	9365
Specify mode-2 & (4)5901/5278 for EXP24S #5887	8202	E4D	9366
Specify mode-1 & (2)5903/5805 for EXP24S #5887	8202	E4D	9367
Specify mode-2 & (4)5903/5805 for EXP24S #5887	8202	E4D	9368
Specify mode-1 & (1)5904/6/8 for EXP24S #5887	8202	E4D	9382
Specify mode-1 & (2) 5904/6/8 for EXP24S #5887	8202	E4D	9383
Specify mode-1 & CEC SAS port for EXP24 #5887	8202	E4D	9384
Specify mode-1 & (2) 5913 for EXP24S #5887	8202	E4D	9385
Specify mode-2 & (4) 5913 for EXP24S #5887	8202	E4D	9386
New AIX License Core Counter	8202	E4D	9440
New IBM i License Core Counter	8202	E4D	9441
New Red Hat License Core Counter	8202	E4D	9442
New SUSE License Core Counter	8202	E4D	9443
Other AIX License Core Counter	8202	E4D	9444
Other Linux License Core Counter	8202	E4D	9445
3rd Party Linux License Core Counter	8202	E4D	9446
VIOS Core Counter	8202	E4D	9447
Month Indicator	8202	E4D	9461
Day Indicator	8202	E4D	9462
Hour Indicator	8202	E4D	9463
Minute Indicator	8202	E4D	9464
Qty Indicator	8202	E4D	9465
Countable Member Indicator	8202	E4D	9466
Language Group Specify - Dutch	8202	E4D	9700
Language Group Specify - French	8202	E4D	9703
Language Group Specify - German	8202	E4D	9704
Language Group Specify - Polish	8202	E4D	9705
Language Group Specify - Norwegian	8202	E4D	9706
Language Group Specify - Portuguese	8202	E4D	9707

Language Group Specify - Spanish	8202	E4D	9708
Language Group Specify - Italian	8202	E4D	9711
Language Group Specify - Canadian French	8202	E4D	9712
Language Group Specify - Japanese	8202	E4D	9714
Language Group Specify - Traditional Chinese (Taiwan)	8202	E4D	9715
Language Group Specify - Korean	8202	E4D	9716
Language Group Specify - Turkish	8202	E4D	9718
Language Group Specify - Hungarian	8202	E4D	9719
Language Group Specify - Slovakian	8202	E4D	9720
Language Group Specify - Russian	8202	E4D	9721
Language Group Specify - Simplified Chinese (PRC)	8202	E4D	9722
Language Group Specify - Czech	8202	E4D	9724
Language Group Specify -- Romanian	8202	E4D	9725
Language Group Specify - Croatian	8202	E4D	9726
Language Group Specify -- Slovenian	8202	E4D	9727
Language Group Specify - Brazilian Portuguese	8202	E4D	9728
Language Group Specify - Thai	8202	E4D	9729
PCIe2 LP 2-Port 10GbE RoCE SFP+ Adapter	8202	E4D	EC27
PCIe2 2-Port 10GbE RoCE SFP+ Adapter	8202	E4D	EC28
PCIe2 LP 2-Port 10GbE RoCE SR Adapter	8202	E4D	EC29
PCIe2 2-Port 10GbE RoCE SR Adapter	8202	E4D	EC30
0.6m (2.0-ft), Blue CAT5 Ethernet Cable	8202	E4D	ECB0
1.5m (4.9-ft), Blue CAT5 Ethernet Cable	8202	E4D	ECB2
Custom Service Specify, Shenzhen, China	8202	E4D	ECSC
Storage Backplane -- 8 SFF Bays/175MB RAID/Dual IOA	8202	E4D	EJ01
Split Drive Bay Capability for #5618	8202	E4D	EJ02
GX++ 2-port PCIe2 x8 Adapter	8202	E4D	EJ03
GX++ Dual-port 12x Channel Attach	8202	E4D	EJ04
Specify Mode-1 & (1)ESA1/ESA2 for EXP24S #5887	8202	E4D	EJP1
Specify Mode-1 & (2)ESA1/ESA2 for EXP24S #5887	8202	E4D	EJP2
Specify Mode-2 & (2)ESA1/ESA2 for EXP24S #5887	8202	E4D	EJP3
Specify Mode-2 & (4)ESA1/ESA2 for EXP24S #5887	8202	E4D	EJP4
Specify Mode-4 & (4)ESA1/ESA2 for EXP24S #5887	8202	E4D	EJP5
Specify Mode-2 & (1)ESA1/ESA2 for EXP24S #5887	8202	E4D	EJP6
Specify Mode-2 (2 )ESA1/ESA2 for EXP24 #5887	8202	E4D	EJP7
Specify mode-2 (1) ESA1/ESA2 for EXP24 #5887	8202	E4D	EJPA
Specify mode-2 (2)ESA1/ESA2 for EXP24#5887	8202	E4D	EJPB
Specify mode-4 (1)ESA1/ESA2 for EXP24 #5887	8202	E4D	EJPC
Specify mode-4 (2)ESA1/ESA2 for EXP24 #5887	8202	E4D	EJPD
Specify mode-4 (3)ESA1/ESA2 for EXP24 #5887	8202	E4D	EJPE
Specify mode-2 (1)5901/5278 for EXP24 #5887	8202	E4D	EJPJ
Specify mode-2 (2)5901/5278 for EXP24 #5887	8202	E4D	EJPK
Specify mode-4 (1)5901/5278 for EXP24 #5887	8202	E4D	EJPL
Specify mode-4 (2)5901/5278 for EXP24 #5887	8202	E4D	EJPM
Specify mode-4 (3)5901/5278 for EXP24 #5887	8202	E4D	EJPN
Specify mode-2 (2)5903/5805 for EXP24 #5887	8202	E4D	EJPR
Specify mode-2 (2)5913 for EXP24 #5887	8202	E4D	EJPT
Specify Left Half 12X I/O Drawer to ESA1/ESA2	8202	E4D	EJPY
Specify Right Half 12X I/O Drawer to ESA1/ESA2	8202	E4D	EJPZ
Full width keyboard -- USB, US English, #103P	8202	E4D	EK51
Full width keyboard -- USB, French, #189	8202	E4D	EK52
Full width keyboard -- USB, Italian, #142	8202	E4D	EK53
Full width keyboard -- USB, German/Austrian, #129	8202	E4D	EK54
Full width keyboard -- USB, UK English, #166P	8202	E4D	EK55
Full width keyboard -- USB, Spanish, #172	8202	E4D	EK56
Full width keyboard -- USB, Japanese, #194	8202	E4D	EK57
Full width keyboard -- USB, Brazilian Portuguese, #275	8202	E4D	EK58
Full width keyboard -- USB, Hungarian, #208	8202	E4D	EK59
Full width keyboard -- USB, Korean, #413	8202	E4D	EK60
Full width keyboard -- USB, Chinese, #467	8202	E4D	EK61
Full width keyboard -- USB, French Canadian, #445	8202	E4D	EK62
Full width keyboard -- USB, Belgian/UK, #120	8202	E4D	EK64
Full width keyboard -- USB, Swedish/Finnish, #153	8202	E4D	EK65
Full width keyboard -- USB, Danish, #159	8202	E4D	EK66
Full width keyboard -- USB, Bulgarian, #442	8202	E4D	EK67
Full width keyboard -- USB, Swiss/French/German, #150	8202	E4D	EK68
Full width keyboard -- USB, Norwegian, #155	8202	E4D	EK69
Full width keyboard -- USB, Dutch, #143	8202	E4D	EK70
Full width keyboard -- USB, Portuguese, #163	8202	E4D	EK71

Full width Keyboard -- USB, Greek, #319	8202	E4D	EK72
Full width Keyboard -- USB, Hebrew, #212	8202	E4D	EK73
Full width Keyboard -- USB, Polish, #214	8202	E4D	EK74
Full width Keyboard -- USB, Slovakian, #245	8202	E4D	EK75
Full width Keyboard -- USB, Czech, #243	8202	E4D	EK76
Full width Keyboard -- USB, Turkish, #179	8202	E4D	EK77
Full width Keyboard -- USB, LA Spanish, #171	8202	E4D	EK78
Full width Keyboard -- USB, Arabic, #253	8202	E4D	EK79
Full width Keyboard -- USB, Thai, #191	8202	E4D	EK80
Full width Keyboard -- USB, Russian, #443	8202	E4D	EK81
Full width Keyboard -- USB, Slovenian, #234	8202	E4D	EK82
Full width Keyboard -- USB, US English Euro, #103P	8202	E4D	EK83
Power 720 AIX Solution Edition	8202	E4D	ELB8
Trial PowerVM Live Partition Mobility	8202	E4D	ELPM
Memory Riser Card	8202	E4D	EM01
8GB (2x4GB) Memory DIMMs, 1066 MHz, 2Gb DDR3 DRAM	8202	E4D	EM08
1m (3.3-ft), 10GbE'Net Cable SFP+ Act Twinax Copper	8202	E4D	EN01
3m (9.8-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper	8202	E4D	EN02
5m (16.4-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper	8202	E4D	EN03
PCIe x8 Cable 1.5m	8202	E4D	EN05
PCIe x8 Cable 3m	8202	E4D	EN07
PCIe2 LP 8Gb 4-port Fibre Channel Adapter	8202	E4D	EN0Y
Quantity 150 of #3452 SAS YO Cable 6m - HD 6Gb Adapter to Enclosure	8202	E4D	EQ02
Quantity 150 of #3453 SAS YO Cable 10m - HD 6Gb Adapter to Enclosure	8202	E4D	EQ03
Quantity of 150 #ES0C	8202	E4D	EQ0C
Quantity of 150 #ES0D	8202	E4D	EQ0D
Quantity 150 of #1738 (856GB SFF-2 disk)	8202	E4D	EQ38
Quantity 150 of #1752 (900GB SFF-2 disk)	8202	E4D	EQ52
RFID Tags for Servers, Compute Nodes, Chassis, Racks, and HMCs	8202	E4D	ERF1
387GB 1.8" SAS SSD for AIX/Linux with eMLC	8202	E4D	ES02
387GB SFF-1 SSD for AIX/Linux with eMLC	8202	E4D	ES0A
387GB SFF-1 SSD for IBM i with eMLC	8202	E4D	ES0B
387GB SFF-2 SSD for AIX/Linux with eMLC	8202	E4D	ES0C
387GB SFF-2 SSD for IBM i with eMLC	8202	E4D	ES0D
PCIe2 RAID SAS Adapter Dual-port 6Gb	8202	E4D	ESA1
PCIe2 LP RAID SAS Adapter Dual-port 6Gb	8202	E4D	ESA2
S&H - No Charge	8202	E4D	ESC0
S&H-b	8202	E4D	ESC6
1TB Removable Disk Drive Cartridge	8202	E4D	EU01
RDX USB Internal Docking Station for Removable Disk Cartridge	8202	E4D	EU03
RDX USB External Docking Station for Removable Disk Cartridge	8202	E4D	EU04
RDX SATA Internal Docking Station for Removable Disk Cartridge	8202	E4D	EU07
RDX 320 GB Removable Disk Drive	8202	E4D	EU08
80/160GB DAT160 USB Tape Drive	8202	E4D	EU16
Cognos on Power - Small	8202	E4D	EU24
Cognos on Power - Large	8202	E4D	EU25
Core Use HW Feature	8202	E4D	EUC6
Core Use HW Feature 10X	8202	E4D	EUC7

## Type/model conversions

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From Type	To Model
8203 E4A	8202 E4D

## Feature conversions

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The existing components being replaced during a model or feature conversion become the property of IBM and must be returned.



Feature conversions are always implemented on a "quantity of one for quantity of one" basis. Multiple existing features may not be converted to a single new feature. Single existing features may not be converted to multiple new features.

The following conversions are available to customers:

**Feature conversions for 8202-E4D adapters features**

From FC:	To FC:	Return parts
2054 - PCIe RAID & SSD SAS Adapter 3Gb	2055 - PCIe RAID & SSD SAS Adapter 3Gb w/ Blind Swap Cassette	No
4807 - PCIe Crypto Coprocessor No BSC 4765-001	4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	No

**Feature conversions for 8202-E4D rack related features**

From FC:	To FC:	Return parts
6246 - 1.8m Rack Trim Kit	6263 - 1.8m Rack Trim Kit	No
6247 - 2.0m Rack Trim Kit	6272 - 2.0m Rack Trim Kit	No

**Feature conversions for 8202-E4D virtualization engine features**

From FC:	To FC:	Return parts
5225 - PowerVM Express Edition	5227 - PowerVM Standard Edition	No
5225 - PowerVM Express Edition	5228 - PowerVM Enterprise Edition	No
5227 - PowerVM Standard Edition	5228 - PowerVM Enterprise Edition	No

**Feature conversions for 8203-E4A to 8202-E4D adapters features**

From FC:	To FC:	Return parts
4807 - PCIe Crypto Coprocessor No BSC 4765-001	4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	No
5903 - PCIe 380MB Cache Dual - x4 3Gb SAS RAID Adapter	5805 - PCIe 380MB Cache Dual - x4 3Gb SAS RAID Adapter	No
5904 - PCI-X DDR 1.5GB Cache SAS RAID Adapter	5908 - PCI-X DDR 1.5GB Cache SAS RAID Adapter (BSC)	No

**Feature conversions for 8203-E4A to 8202-E4D processor features**

From FC:	To FC:	Return parts
5577 - 2-core 4.7 GHZ POWER6 Processor Card, 4 Memory DIMM Slots	EPCL - 6-core 3.6 GHZ POWER7+ Processor Module	Yes
5587 - 4-core 4.7 GHZ POWER6 Processor Card, 8 Memory DIMM Slots	EPCL - 6-core 3.6 GHZ POWER7+ Processor Module	Yes
5634 - 2-core 4.2 GHZ POWER6 Processor Card, 4	EPCL - 6-core 3.6 GHZ POWER7+ Processor Module	Yes

Memory DIMM Slots			
5635 - 4-core 4.2 GHz	EPCL - 6-core 3.6 GHz		Yes
POWER6 Processor Card, 8	POWER7+ Processor Module		
Memory DIMM Slots			
5577 - 2-core 4.7 GHz	EPCM - 8-core 3.6 GHz		Yes
POWER6 Processor Card, 4	POWER7+ Processor Module		
Memory DIMM Slots			
5587 - 4-core 4.7 GHz	EPCM - 8-core 3.6 GHz		Yes
POWER6 Processor Card, 8	POWER7+ Processor Module		
Memory DIMM Slots			
5634 - 2-core 4.2 GHz	EPCM - 8-core 3.6 GHz		Yes
POWER6 Processor Card, 4	POWER7+ Processor Module		
Memory DIMM Slots			
5635 - 4-core 4.2 GHz	EPCM - 8-core 3.6 GHz		Yes
POWER6 Processor Card, 8	POWER7+ Processor Module		
Memory DIMM Slots			

### **Feature conversions for 8203-E4A to 8202-E4D rack-related features**

From FC:	To FC:	Return parts
6246 - 1.8m Rack Trim Kit	6263 - 1.8m Rack Trim Kit	No

### **Feature conversions for 8203-E4A to 8202-E4D virtualization engine features**

From FC:	To FC:	Return parts
7983 - PowerVM Express	5225 - PowerVM Express Edition	No
8506 - PowerVM Standard	5227 - PowerVM Standard Edition	No
8507 - PowerVM Enterprise	5228 - PowerVM Enterprise Edition	No

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## **Publications**

IBM Power Systems hardware documentation provides you with the following topical information:

- System overview
- Planning for the system
- Installing and configuring the system
- Working with consoles, terminals, and interfaces
- Managing system resources
- Working with operating systems and software applications
- Troubleshooting, service, and support

You can access the product documentation on a DVD (SK5T-7087) or at

<http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/index.jsp>

The following information is shipped with the 8202-E4D:

- Power Hardware Information DVD (SK5T-7087)
- Installing the 8202-E4D
- Safety Information
- Statement of Warranty

Hardware documentation such as installation instructions, user's information, and service information is available to download or view at

<http://www.ibm.com/systems/support>

AIX documentation can be found at the IBM AIX Information Center

<http://publib.boulder.ibm.com/infocenter/pseries/index.jsp>

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## Services

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### Global Technology Services

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IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an On Demand Business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

<http://www.ibm.com/services/>

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

<http://www.ibm.com/services/continuity>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

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## Technical information

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### Specified operating environment

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#### *Physical specifications*

Rack-mount:

width: 440 mm (17.3 in)  
depth: 610 mm (24.0 in)  
height: 173 mm (6.81 in)  
weight: 48.7 kg (107.4 lb)

Tower:

width without tip plate: 183 mm (7.2 in)  
width with tip plate: 328.5 mm (12.9 in)  
depth : 688 mm (27.1 in)  
height: 541 mm (21.3 in)  
weight without tip plate: 53.7 kg (118.1 lb)  
weight with tip plate: 57.2 kg (125.8 lb)

To assure installability and serviceability in non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

## **Operating environment**

Operating environment system exception with the 1.5 TB/3.0 TB LTO-5 SAS Tape Drive (#5638)

- Temperature (operating) 10 to 25 degrees C (50 to 95 F); allowable operating temperature 10 to 40 degrees C (50 to 104 F)
- Relative humidity: Nonoperating 10% to 80% noncondensing
- Maximum altitude: 3,048 m (10,000 ft)

System environment limits without the 1.5 TB/3.0 TB LTO-5 SAS Tape Drive (#5638)

- Temperature: (nonoperating) 5 to 45 degrees C (41 to 113 F); recommended temperature (operating) 18 to 27 degrees C (64 to 80 F); allowable operating temperature 5 to 35 degrees C (41 to 95 F) =
- Relative humidity: Nonoperating 8% to 80%; recommended 5.5 degrees C (42 F) dew point to 60% RH and 15 degrees C (59 F) dew point
- Maximum dew point: 28 degrees C (84 F)(operating)
- Operating voltage: 100 to 127 or 200 to 208 or 220 to 240 V ac
- Operating frequency: 47/63 Hz
- Maximum measured power consumption: 995 watts (maximum)
- Power factor: 0.98
- Thermal output: 3,395 Btu/hour (maximum)
- Power-source loading
  - 1.015 kVa (maximum configuration)
  - Maximum altitude: 3,050 m (10,000 ft)

**Note:** The maximum measured value is the worst case power consumption expected from a fully populated server under an intensive workload. The maximum measured value also accounts for component tolerance and non-ideal operating conditions. Power consumption and heat load vary greatly by server configuration and utilization. The IBM Systems Energy Estimator should be used to obtain a heat output estimate based on a specific configuration

<http://www-912.ibm.com/see/EnergyEstimator>

## **Noise level and sound power**

- Tower system: 5.6 Bels operating; 5.5 Bels idling
- Rack-mount system: 5.6 Bels operating; 5.5 Bels idling

## **EMC conformance classification:**

This equipment is subject to FCC rules and shall comply with the appropriate FCC rules before final delivery to the buyer or centers of distribution.

- US: FCC Class A
- Europe: CISPR 22 Class A
- Japan: VCCI-A
- Korea: Korean Requirement Class A
- China: People's Republic of China commodity inspection law Class A

## **Homologation -- Telecom environmental testing (Safety and EMC):**

Homologation approval for specific countries has been initiated with the IBM Homologation and Type Approval (HT&A) organization in LaGaude, France. This Power Systems model and applicable features meet the environmental testing

requirements of the country telecom and have been designed and tested in compliance with the Full Quality Assurance Approval (FQAA) process as delivered by the British Approval Board for Telecom (BABT), the UK Telecom regulatory authority.

This product is not certified for connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

### **Product safety/Country testing/Certification**

- UL 60950 Underwriters Laboratory, Safety Information
- CSA C22.2 No. 60950-00, Canadian Standards Association
- EN60950 European Norm
- IEC 60950, Edition 1, International Electrotechnical Commission, Safety Information
- Nordic deviations to IEC 60950-1 1st Edition

### **General requirements:**

The product is in compliance with IBM Corporate Bulletin C-B 0-2594-000 Statement of Conformity of IBM Product to External Standard (Suppliers Declaration).

### **Homologation**

This product is not certified for direct connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

### **Hardware requirements**

#### **Power 720 minimum system configuration:**

The Power 720 offers 4-, 6-, and 8-core configurations with one processor module. The system can contain up to 512 GB of system memory (256 GB maximum per memory riser card), six PCIe adapters in the base system with an additional four PCIe Low Profile adapters possible with the optional PCIe adapter riser card, and multiple media devices, as desired. This flexibility is made available through the many optional features for the Power 720.

Each Power 720 initial order must include a minimum of the following items:

- One system central electronics complex (CEC) enclosure with the following items:
  - One power cord (#6458, #6460, #6469-#6478, #6488-#6489, #6491-#6494, #6496, #6577, #6580, #6651, #6653-#6660, #6665, #6669, #6671, #6672, or #6680)
  - One Language Group, Specify (#9300 or #97xx)
- Choose one processor module from:
  - 4-core 3.6 GHz POWER7+ processor module (#EPCK)
  - 6-core 3.6 GHz POWER7+ processor module (#EPCL)
  - 8-core 3.6 GHz POWER7+ processor module (#EPCM)
- Choose processor activations from:
  - 4 x #EPDK, or 2 x #EPDK and 2 x #EPEK with processor module #EPCK
  - 6 x #EPDL, or 3 x #EPDL and 3 x #EPEL with processor module #EPCL
  - 8 x #EPDM, or 4 x #EPDM and 4 x #EPEM with processor module #EPCM
  - Features EPEK, EPEL, and EPEM are part of IBM Editions.
  - Processor activations are only available to SDIs as MES orders.
- Choose 8 GB minimum memory from:

- 8 GB (2 x 4 GB) Memory DIMMs, 1066 MHz, DDR3 (#EM08)
- 16 GB (2 x 8 GB) Memory DIMMs, 1066 MHz, DDR3 (#EM4B)
- 32 GB (2 x 16 GB) Memory DIMMs, 1066 MHz, DDR3 (#EM4C)
- 64 GB (2 x 32 GB) Memory DIMMs, 1066 MHz, DDR3 (#EM4D)

**Note:** 32 GB memory feature EM4C and 64 GB memory feature EM4D are not orderable with 4-core processor module feature EPCK.

- Choose storage backplane from:
  - 6 x SFF HDD or SSD/SATA DVD/Media backplane (#5618)
  - 8 x SFF HDD or SSD/SATA DVD/Media backplane with Dual Write Cache RAID, and an external SAS port (#EJ01)
- One PCIe2 4-port 1 GbE Adapter (#5899)
 

**Note:** Takes up one PCIe slot.
- Choose HDD/SSD from any orderable SFF HDD or SSD:
  - Default is 146.8 GB SAS SFF HDD 15,000 RPM (#1886)
  - Features 1995 and 1996 require feature 2053, 2054, or 2055.
  - When feature 2145, the IBM i operating system, is selected, a minimum of two HDDs or SSDs is required.
  - No internal HDD or SSD is required if feature 0837 (Boot from SAN) is selected. In this case, a Fibre Channel or Fibre Channel over Ethernet adapter must also be ordered.
- One 1925 watt ac power supply (#5532)
- Choose cover set from:
  - IBM Tower cover set (#7567)
  - OEM Tower cover set (#7568)
  - IBM Rack-mount Drawer Bezel and Hardware (#7134)
  - OEM Rack-mount Drawer Bezel and Hardware (#7135)
- Choose Primary Operating System Indicator from:
  - IBM i (#2145 -- requires #0566 or #0567, and #0040)
  - AIX (#2146)
  - Linux (#2147)

**Note:** One nonfeaturized memory riser card is included in the base system. A second memory riser card feature (#EM01) can be ordered.

## RAID

Multiple protection options exist for HDD/SSD drives in the SAS SFF bays in the Power 720 system unit or drives in 12X attached I/O drawers or drives in disk-only I/O drawers. Although protecting drives is always recommended, AIX/Linux users may choose to leave some or all drives unprotected at their own risk and IBM supports these configurations. IBM i configuration rules differ in this regard, and IBM supports IBM i partition configurations only when HDD/SSD drives are protected.

This HDD/SSD drive protection can be provided by AIX/IBM i/Linux software or by the HDD/SSD hardware controllers. Mirroring of drives is provided by AIX/IBM i/Linux software. In addition, AIX/Linux supports controllers providing RAID 0, 5, 6, or 10. IBM i integrated storage management already provides striping, so IBM i also supports controllers providing RAID 5 or 6. To further augment HDD/SSD protection, hot spare capability can be used for protected drives. Specific hot spare prerequisites apply.

An integrated SAS HDD/SSD controller is provided in the Power 720 system unit and is indicated by feature 5618 and provides support for JBOD and RAID 0, 1, and 10. Feature 5618 is optionally augmented by the ability to split the drive bays into two groups when feature EJ02 is added to the configuration. For even more function, feature EJ01 can be used instead of feature 5618 or feature 5618 plus feature EJ02.

Feature EJ01 provides RAID 0, 5, 6, and 10. In addition to these protection options, mirroring of drives by the operating system is supported. AIX or Linux supports all of these options. IBM i does not use JBOD and uses imbedded functions instead of RAID 10, but does leverage the RAID 5 or 6 function of the integrated controllers. Other disk/SSD controllers are provided as PCI adapters. PCI-X SCSI, PCI-X SAS, and PCIe SAS adapters are supported. PCI Controllers with and without write cache are supported. RAID 5 and RAID 6 on controllers with write cache are supported with one exception. The PCIe RAID and SSD SAS Adapter has no write cache but supports RAID 5 and RAID 6.

AIX/Linux can use disk drives formatted with 512 byte blocks when being mirrored by the operating system. These disk drives must be reformatted to 528 byte sectors when used in RAID arrays. Although a small percentage of the drive's capacity is lost, additional data protection such as ECC and bad block detection is gained in this reformatting. For example, a 300 GB disk drive when reformatted provides around 283 GB. IBM i always uses drives formatted to 528 bytes. IBM Power SSDs are formatted to 528 bytes.

### **Software requirements**

If installing the AIX operating system (one of these):

- AIX 7.1 with the 7100-02 Technology Level and Service Pack 2, or later
- AIX 6.1 with the 6100-08 Technology Level and Service Pack 2, or later
- AIX 6.1 with the 6100-07 Technology Level and Service Pack 7, or later (Planned availability March 29, 2013)
- AIX 6.1 with the 6100-06 Technology Level and Service Pack 11, or later (Planned availability March 29, 2013)

If installing the IBM i operating system (one of these):

- IBM i 7.1, or later
- IBM i 6.1 with i 6.1.1 machine code, or later (Planned availability March 8, 2013)

**Note:** Feature EB34 is required to have native I/O with IBM i 6.1 with machine code 6.1.1.

If installing the Linux operating system, use SUSE Linux Enterprise Server 11 Service Pack 2, or later, with current maintenance updates available from SUSE to enable all planned functionality.

Users interested in Red Hat Enterprise Linux should consult the Red Hat [Statement of general direction](#) .

Users should also update their systems with the latest Linux for Power service and productivity tools available at

<http://www.ibm.com/support/customercare/sas/f/lopdiags/home.html>

If installing VIOS, use VIOS 2.2.2.2, or later.

### **Java™ 1.4.2 on POWER7**

There are unique considerations when running Java 1.4.2 on POWER7+ . For best exploitation of the outstanding performance capabilities and most recent improvements of POWER7 technology, IBM recommends upgrading Java-based applications to Java 7, Java 6 or Java 5 whenever possible.

For more information, visit

<http://www.ibm.com/developerworks/java/jdk/aix/service.html>

Refer to the IBM Prerequisite website for software requirements for each feature number

[https://www-912.ibm.com/e\\_dir/eServerPrereq.nsf](https://www-912.ibm.com/e_dir/eServerPrereq.nsf)

## **Limitations**

### **System**

- Integrated system ports are not supported under AIX or Linux when the HMC ports are connected to an HMC. Either the HMC ports or the integrated system ports can be used, but not both. IBM i can continue to use a system port for communication to a UPS, even with an HMC attached.
- The integrated system ports are supported for modem and asynch terminal connections by AIX or Linux . Any other application using serial ports requires a serial port adapter to be installed in a PCI slot. The integrated system ports do not support HACMP™ configurations. IBM i only supports the use of the system ports for attachment to a UPS.

### **Hardware Management Console (HMC) machine code**

An HMC or IVM is required to manage the Power 720 (8202-E4D) implementing partitioning. Multiple POWER7+ processor-based servers can be supported by a single HMC.

If an HMC is used to manage the Power 720, the HMC must be a rack-mount HMC model CR3, or later, or deskside HMC model C05, or later.

If attaching an HMC to a new server or adding function to an existing server that requires a firmware update, the HMC machine code may need to be updated. Machine code includes firmware and microcode. Access to machine code updates is conditioned on entitlement and license validation in accordance with IBM policy and practice. IBM may verify entitlement through customer number, serial number, electronic restrictions, or any other means or methods employed by IBM in its discretion.

To determine the HMC machine code level required for the firmware level on any server, go to the following web page to access the Fix Level Recommendation Tool (FLRT) on or after the planned availability date for this product. FLRT will identify the correct HMC machine code for the selected system firmware level

<https://www14.software.ibm.com/webapp/set2/sas/f/hmc/home.html>

If a single HMC is attached to multiple servers, the HMC machine code level must be updated to the server with the most recent firmware level. All prior levels of server firmware are supported with the latest HMC machine code level.

When IBM Systems Director is used to manage an HMC or if the HMC manages more than 254 partitions, the HMC should have 3 GB of RAM minimum and be CR3 model, or later, rack-mount or C06, or later, deskside.

The HMC Release 7.7.0 Service Pack 1 contains support for managing IBM Power 710, 720, 730, 740, and IBM PowerLinux™ 7R1/7R2 systems.

The HMC V7.7.0 (SP1) contains the following:

- Support for managing IBM Power 750 and 760
- Support for PowerVM functions such as new HMC GUI interface for VIOS install
- Improved transition from IVM to HMC management
- Support for 802.1 Qbg on virtual Ethernet adapters
- Ability to update the user's password in Kerberos from the HMC for clients utilizing remote HMC

### **Boot requirements**

- Selection of feature 0837 will indicate boot from SAN.



- If IBM i (#2145) is selected as the primary operating system and SAN boot is not selected (#0837), one of the following Load/Source specify codes must be specified:
  - #0722 -- #1787 (177 GB SFF SSD) Load Source Specify
  - #0724 -- #1996 (177 GB 1.8" SSD) Load Source Specify
  - #0726 -- Remote Load Source Specify in #5802/#5803
  - #0727 -- Remote Load Source Specify in #5886
  - #0728 -- Remote Load Source Specify in #5887
  - #0729 -- Remote Load Source Specify in #5888
  - #0838 -- #3676 (69.7 GB 15K RPM HDD) Load Source Specify (supported)
  - #0839 -- #3677 (139.5 GB 15K RPM HDD) Load Source Specify
  - #0840 -- #3678 (283.7 GB 15K RPM HDD) Load Source Specify
  - #0844 -- #3658 (428 GB 15K RPM HDD) Load Source Specify
  - #0851 -- #1884 (69.7 GB 15K RPM SFF HDD) Load Source Specify
  - #0853 -- #1888 (139.5 GB 15K RPM SFF HDD) Load Source Specify
  - #0855 -- #3586 (69 GB SSD) Load Source Specify
  - #0856 -- #1911 (283 GB 10K RPM SFF HDD) Load Source Specify
  - #0857 -- #1916 (571 GB 10K RPM SFF HDD) Load Source Specify
  - #0870 -- #1879 (283 GB 15K RPM SFF HDD) Load Source Specify
  - #0871 -- #1947 (139 GB 15K RPM SFF HDD) Load Source Specify
  - #0872 -- #1948 (283 GB 15K RPM SFF HDD) Load Source Specify
  - #0874 -- #1956 (283 GB 10K RPM SFF HDD) Load Source Specify
  - #0875 -- #1962 (571 GB 10K RPM SFF HDD) Load Source Specify
  - #0876 -- #1794 (177 GB SFF SSD) Load Source Specify
  - #0879 -- #1737 (856 GB 10K RPM SFF HDD) Load Source Specify
  - #0880 -- #1738 (856 GB 10K RPM SFF HDD) Load Source Specify
  - #0893 -- #ES0B (387 GB SFF SSD) Load Source Specify
  - #0894 -- #ES0D (387 GB SFF SSD) Load Source Specify
- If IBM i (#2145) is selected and the load source disk unit is not in the CEC (system unit), one of the following specify codes must also be selected:
  - #0726 -- Remote Load Source in #5802 12X I/O Drawer PCIe, SFF Disk
  - #0727 -- Remote Load Source in #5886 EXP12S Expansion Drawer
  - #0728 -- Remote Load Source in #5887 EXP24S Expansion Drawer
  - #0729 -- Remote Load Source Specify in #EDR1 EXP30 Ultra SSD I/O Drawer
  - #0837 -- SAN Load Source Specify (Boot from SAN)
- If IBM i (#2145) is selected, one of the following system console specify codes must be selected:
  - #5550 -- System Console on HMC
  - #5557 -- System Console - Internal LAN

## Processor modules

- A minimum of one processor module is required on an order with four, six, or eight processor cores on the processor module. A maximum of one processor module is allowed on an order.
- All processor cores must be activated.
  - The 4-core 3.6 GHz processor module (#EPCK) requires that four processor activation codes be ordered. A maximum of four processor activation code features (4 x #EPDK, or 2 x #EPDK and 2 x #EPEK) is allowed per processor module.
  - The 6-core 3.6 GHz processor module (#EPCL) requires that six processor activation codes be ordered. A maximum of six processor activation code

features (6 x #EPDL, or 3 x #EPDL and 3 x #EPEL) are allowed per processor module.

- The 8-core 3.6 GHz processor module (#EPCM) requires that eight processor activation codes be ordered. A maximum of eight processor activation code features (8 x #EPDM, or 4 x #EPDM and 4 x #EPEM) are allowed per processor module.

## Power supply

- The base machine contains one 1725 watt ac power supply.
- A second 1925 watt ac power supply (#5532) is available for redundant power and hot-swap.

## Redundant fans

Standard

## Power cords

One power cord is required for each power supply installed in the system. A maximum of 2 x feature 6665 is allowed on the system unless a valid I/O drawer or tower is attached to the system.

The Power 720 supports 110-127 V ac and 200-240 V ac.

## System memory

- A minimum 8 GB or two DIMMs of memory is required on the Power 720 system.
- A system with the 4-core processor module (#EPCK) does not support the 32 GB memory feature EM4C or 64 GB memory feature EM4D. Maximum system memory with feature EPCK is 32 GB without feature EM01 and 64 GB with feature EM01.
- The base machine contains one nonfeaturized memory riser card with eight DIMM sockets. Memory features consume two memory DIMM sockets.
- An optional memory riser card feature (#EM01) with an additional eight DIMM sockets is available. Maximum system memory is 256 GB without feature EM01 and 512 GB with feature EM01.
- A system can be ordered with a single memory feature.
- It is generally recommended that memory be installed evenly across all memory riser cards in the system. Balancing memory across the installed memory riser cards allows memory access in a consistent manner and typically results in the best possible performance for your configuration. However, balancing memory fairly evenly across multiple memory riser cards, compared to balancing memory exactly evenly, typically has a very small performance difference.

Plans for future memory upgrades should be taken into account when deciding which memory feature size to use at the time of initial system order.

Memory features			
Feature	Feature number	Minimum quantity	Maximum quantity
8 GB 1066 MHz (2 x 4 GB RDIMMs)	EM08	0	8
16 GB 1066 MHz (2 x 8 GB RDIMMs)	EM4B	0	8
32 GB 1066 MHz (2 x 16 GB RDIMMs)	EM4C	0	8
64 GB 1066 MHz (2 x 32 GB RDIMMs)	EM4D	0	8

## Drawer/Tower attachment:

- 7314-G30 (#5796) PCI-X Expansion Drawer (supported -- not orderable)
  - A maximum of four drawers is allowed per GX++ adapter (#EJ04 or follow-ons) or per 12X loop.
  - A maximum of one GX++ adapter is allowed on the Power 720.
  - The system maximum is 4.
  - The PCI-X Expansion Drawer is not supported on a 4-core system (#EPCK).
- Feature number 5886 EXP12S SAS HDD or SSD Expansion Drawer (supported -- not orderable)
  - Feature number EJ01 supports one feature number 5886 drawer directly off the system unit's SAS port.
  - EXP12S drawers are attached to a PCI-X or PCIe SAS adapter via SAS cables.
  - The system maximum is 28.
  - Feature 5886 is not supported on a 4-core system (#EPCK).
- Feature number 5887 EXP24S SAS HDD or SSD Expansion Drawer
  - Feature number EJ01 supports one feature number 5887 drawer directly off the system unit's SAS port.
  - EXP24S drawers are attached to a PCI-X or PCIe SAS adapter via SAS cables.
  - The system maximum is 14.
  - Feature 5887 is not orderable on a 4-core system (#EPCK).
- Feature number 5802 12X I/O Drawer PCIe SFF Disk and feature number 5877 12X I/O Drawer PCIe No Disks
  - A maximum of two per 12X loop is allowed.
  - A maximum of two is supported on the Power 720.
  - No mixing of features 5802 and 5877 is allowed with other drawers on the same loop.
  - Features 5802 and 5877 are not orderable on a 4-core system (#EPCK).
- Feature number EDR1 EXP30 Ultra SSD I/O Drawer
  - EXP30 Ultra SSD I/O Drawer is attached to a PCIe SAS adapter (#EJ03) via PCIe x8 Cable (example: #EN05 or #EN07).
  - The system maximum is two with AIX or Linux .
  - The system maximum is one with IBM i.
- Feature number EDR1 EXP30 Ultra SSD I/O Drawer
  - EXP30 Ultra SSD I/O Drawer is attached to a PCIe SAS adapter (#EJ03) via PCIe x8 Cable (example: #EN05 or #EN07).
  - Feature EDR1 is not orderable on a 4-core system (#EPCK).
  - The system maximum is two.

The following list shows I/O drawers that are supported or available on the 8202 machine type and the correct interface to use for each of the drawers.

Feature description	Order status	Interface
5796 PCI-X DDR 12X Exp Drawer	Supported	12X
5802 PCIe 12X I/O Drawer (w/Disk Bays)	Available	12X
5877 PCIe 12X I/O Drawer (No Disk Bays)	Available	12X
5886 EXP12S SAS DASD Drawer	Supported	SAS
5887 EXP24S SAS DASD Drawer	Available	SAS
EDR1 EXP30 Ultra SSD I/O Drawer	Available	SAS
7214-1U2 Tape and DVD Enclosure	Supported	SAS/USB
7216-1U2 Tape and DVD Enclosure	Available	SAS
7314-G30 PCI-X DDR 12X I/O Drawer	Supported	12X

Maximum number of attached I/O drawers per system:

Feature	Power 720 (6-core or 8-core)			
	O/S	AIX	Linux	IBM i
5796	4	4	4	4
5802	2	2	2	2
5877	2	2	2	2
5886	28	28	28	28
5887	14	14	14	14
EDR1	2	2	1	1
7214-1U2	6	6	6	6
7216-1U2	6	6	6	6
7314-G30	4	4	4	4

### PCI card slots

The Power 720 (8202-E4D) contains five full-height, short, 8x, PCIe slots. An optional PCIe Adapter Riser Card feature 5685 adds four short, 8x, PCIe Low Profile slots. One GX++ slot is available. When feature 5685 is installed in the system, the GX++ slot is unavailable. Feature EJ04 can be installed in the GX++ slot. Feature number 5899 is required in the 8202-E4D minimum configuration.

**Note:** Optional 12X GX++ adapter is used for attaching I/O expansion drawers with PCI slots and, optionally, disk/SSD bays.

**Note:** Full-height PCIe adapters and low-profile PCIe adapters are not interchangeable. Even if the card was designed with low-profile dimensions, the tail stock at the end of the adapter is specific to either low-profile or full-height PCIe slots.

### Graphics adapters

- A graphics adapter, keyboard, and mouse are not required in the minimum configuration.
- The maximum number of graphics adapters supported in the Power 720 CEC is five. Not supported under IBM i.

### I/O adapters

- PCIe2 4-port 1 GbE Adapter (#5899) is in the 8202-E4D minimum configuration.
- All low-profile adapters can be installed in the PCIe Adapter Riser Card (#5685).
- Refer to the following table for additional I/O adapter information.

I/O adapter features

I/O adapter	Orderable feature number	Supported feature number	CEC Max qty	Sys Max qty	Size
PCIe LP RAID & SSD SAS A	2053		2	2	Short
PCIe RAID & SSD SAS	2054		2	2	Short
PCIe RAID & SSD SAS w/ BSC	2055		0	10	Short
4-port USB PCIe	2728		5	8	Short
2-port USB PCI		2738	0	24	Short
8-port Asynchronous EIA-232		2943	0	24	Short
4-port ARTIC960HX		2947	0	24	Long
2-port Multiprotocol		2962	0	24	Short
GXT135P Graphics Accelerator		2849/1980	0	8	Short
PCIe 2-Line WAN w/Modem	2893		5	25	Short
PCIe 2-Line WAN w/Modem CIM	2894		5	25	Short
PCI-X Cryptographic Coprocessor		4764	0	24	Long
PCIe Crypto Coprocessor No BSC	4807		2	2	Short
PCIe Crypto Coprocessor Gen3 BSC	4808		0	8	Short
PCIe2 LP 4-port 1GbE Adapter	5260		4	4	LP
PCIe LP POWER GXT145 Graphics Acc	5269		4	4	LP

PCIe LP 10Gb FCoE 2-port Adapter	5270		4	4	LP
PCIe LP 4-Port 10/100/1000 Base-T	5271		4	4	LP
PCIe LP 10GbE CX4 1-port Adapter	5272		4	4	LP
PCIe LP 8Gb 2-Port Fibre Channel	5273		4	4	LP
PCIe LP 2-Port 1GbE SX Adapter	5274		4	4	LP
PCIe LP 10GbE SR 1-port Adapter	5275		4	4	LP
PCIe LP 4Gb 2-Port Fibre Channel	5276		4	4	LP
PCIe LP 4-Port Async EIA-232 Adap	5277		4	4	LP
PCIe LP 2-x4-port SAS Adapter 3Gb	5278		4	4	LP
PCIe2 LP 4-port 1/10GbE SFP+	5279		4	4	LP
PCIe2 LP 4-port 1/10GbE SR	5280		4	4	LP
PCIe2 LP 2-port 1GbE	5281		4	4	LP
PCIe2 LP PCIe2 2-port 4X IB QDR	5283		2	2	LP
PCIe2 LP PCIe2 2-port 10GbE SR	5284		4	4	LP
PCIe2 PCIe2 2-port 4X IB QDR	5285		2	2	Short
PCIe2 LP PCIe2 2-Port 10GbE SFP	5286		4	4	LP
PCIe2 2-port 10GbE SR	5287		5	5	Short
PCIe2 2-port 10GbE SFP+	5288		5	5	Short
PCIe2 2-Port Async EIA 232	5289		2	12	Short
PCIe LP 2-Port Async EIA 232	5290		2	2	LP
Gigabit Ethernet		5700/1978	0	24	Short
10/100/1000 Ethernet		5701/1979	0	24	Short
2-port 10/100/1000 Ethernet	5706	1983	0	24	Short
10 Gigabit FCoE PCIe Dual Port	5708		5	25	Short
ISCI TOE Gb Ethernet (Copper)	5713	1986	0	24	Short
ISCI TOE Gb Ethernet (Fiber)		5714/1987	0	24	Short
2 Gb Fibre Channel PCI-X		5716/1977	0	24	Short
4-port 1 Gb Ethernet PCI-e 4x	5717		5	25	Short
10 Gb Ethernet - Short Reach		5721	0	24	Short
10 Gb Ethernet - Long Reach		5722	0	24	Short
2-port Asynchronous EIA-232		5723	0	24	Short
PCIe2 8x 4-port Fibre Channel	5729		5	5	Short
10 Gigabit Ethernet-CX4 PCI Exp.	5732		5	25	Short
8 Gb Dual-port Fibre Channel	5735		5	25	Short
PCI-X Ultra320 SCSI DDR	5736	1912	0	24	Short
4-port 10/100/1000 Ethernet		5740/1954	0	24	Short
PCIe2 4-Port 10GbE/1GbE SR&RJ4	5744		5	5	Short
PCIe2 4-Port 10GbE/1GbE SFP+Cop	5745		5	5	Short
GXT145 PCIe Graphics Accelerator	5748		5	8	Short
2-port 4 Gbps Fibre Channel	5749		0	24	Short
1-port 4 Gb Fibre Channel		5758/1905	0	24	Short
2-port 4 Gb Fibre Channel	5759	1910	0	24	Short
2-port 1 Gb Ethernet (UTP) PCIe	5767		5	25	Short
2-port 1 Gb Ethernet (Fiber) PCIe	5768		5	25	Short
10 Gb Ethernet-SR	5769		5	25	Short
10 Gb Ethernet-LR	5772		5	25	Short
1-port 4 Gb Fibre Channel		5773	5	25	Short
2-port 4 Gb Fibre Channel	5774		5	25	Short
4-port Async EIA-232 PCIe	5785		5	25	Short
PCIe 380MB Cache Dual SAS RAID	5805		5	25	Short
PCIe2 4-port 1GbE Adapter	5899		6	26	Short
SAS Controller PCI-X 2.0		5900	0	24	Short
PCIe Dual-x4 SAS	5901		5	25	Short
PCI-X DDR Dual-x4 SAS RAID		5902	0	24	Long
PCI-X DDR SAS RAID Adapter (BSC)	5908		0	8	Long
PCI-X DDR Dual-x4 SAS	5912		0	24	Short
PCIe2 1.8GB Cache RAID SAS	5913		2	18	Short
PCI 2-line WAN IOA, no IOP		6805	0	24	Short
PCI 4-Modem WAN IOA, no IOP		6808	0	24	Short
PCI 4-Modem WAN IOA, no IOP, CIM		6809	0	24	Short
PCI 2-line WAN w/Modem, no IOP		6833	0	24	Short
PCI 2-line WAN w/Modem, no IOP, CIM		6834	0	24	Short
PCIe2 LP 2-Port 10GbE RoCE SFP+	EC27		4	4	LP
PCIe2 2-Port 10GbE RoCE SFP+	EC28		5	5	Short
PCIe2 LP 2-Port 10GbE RoCE SR	EC29		4	4	LP
PCIe2 2-Port 10GbE RoCE SR	EC30		5	5	Short
GX++ 2-port PCIe2 x8 Adapter	EJ03		1	1	GX++
GX++ Dual-port 12x Chan Attach	EJ04		1	1	GX++
PCIe2 16Gb 2-port Fibre Channel	EN0A		5	5	Short
PCIe2 LP 16Gb 2-port Fibre Channel	EN0B		4	4	LP
PCIe2 4-port (10Gb FCoE & 1GbE)	EN0H		5	5	Short
PCIe2 LP 4-port (10Gb FCoE&1GbE)	EN0J		4	4	LP
PCIe2 LP 8Gb 4-port Fibre Channel	EN0Y		4	4	LP
PCIe2 RAID SAS Adapter Dual-port	ESA1		2	22	Short

**Note:** All low-profile (LP) adapter cards require feature number 5685.

### Storage devices/bays

- The Power 720 has a slim media bay that can contain an optional DVD-ROM (#5743, or follow-on) or DVD-RAM (#5762, #5771, or follow-on) and a half-high bay that can contain a tape drive or removable disk drive.
- Either feature number 5618 or EJ01 must be selected.
  - Feature number 5618 supports six small form-factor (SFF) disk units, either HDD or SSD. Split (3x3) drive bays supported with feature EJ02. No RAID 5/6 support. No IBM i support.
  - Feature number EJ01 supports eight SFF disk units, either HDD or SSD. RAID 5 or RAID 6 support. No split backplane.
  - A valid orderable HDD or SSD is required in a minimum configuration. (No HDDs/SSDs are required in the CEC if feature number 0837 is selected).
  - If tape device feature 5619, 5638, 5746, or 5661 is installed in the half-high media bay, feature 3656 must be selected.
  - Disk units can be placed in any slot at any time with or without a split backplane.
  - A half-high tape feature and a feature 1103 Removable USB Disk Drive Docking Station are mutually exclusive. One or the other can be in the half-high bay in the system but not both. Feature 3656 is not required with feature 1103.
- Split storage backplane drive bay support requirements:
  - Storage backplane feature 5618 with feature EJ02 supports 3 x 3 split drive bays.
- SAS-bay-based SSDs support restrictions:
  - SFF features ES0A, ES0B, 1775, 1787, 1890, and 1909 are supported in the Power 720 CEC.
  - 3.5-inch features 3586 and 3587 are not supported in the Power 720 CEC.
  - SSDs and HDDs are not allowed to mirror each other.
  - SSDs are not supported by features 5278, 5900, 5901, 5902, and 5912.
  - When an SSD is placed in feature EJ01, no feature 5886 or 5887 DASD drawer is allowed to connect to the system's external SAS port.
  - When an SSD is placed in a feature 5886 or 5887 DASD drawer, the drawer is not allowed to connect to the system's external SAS port.
  - A maximum of eight per feature 5886 drawer is allowed. No mixing of SSDs and HDDs is allowed in a feature 5886. A maximum of one feature 5886 EXP12S drawer containing SSDs attached to a single controller or pair of controllers is allowed. A feature 5886 containing SSD drives cannot be connected to other feature 5886's. A feature 5886 containing SSD drives cannot be attached to the CEC external SAS port on the Power 720.
  - In a Power 720 with a split backplane, SSDs and HDDs may be placed in either "split," but no mixing of SSDs and HDDs within a split is allowed. IBM i does not support split backplane.
  - In a Power 720 without a split backplane, SSDs and HDDs may be mixed in any combination. However, they cannot be in the same RAID array.
- HDD/SSD Data Protection -- if IBM i (#2145) is selected, one of the following is required:
  - Disk mirroring (default) -- requires feature 0040, 0043, or 0308
  - SAN boot (#0837)
  - RAID -- requires feature EJ01
  - Mixed Data Protection (#0296)

Storage device features

Device	Maximum quantity	Bay	Orderable feature number	Supported feature number
DVD-ROM (SATA)	1	Slim		5743
DVD-RAM (SATA)	1	Slim		5762
DVD-RAM (SATA)	1	Slim	5771	
80GB/160GB DAT160 Tape-SAS	1	Half high	5619	
1.5TB/3.0TB LTO-5 Tape-SAS	1	Half high	5638	
800GB/1.6TB LTO4 Tape-SAS	1	Half high		5746
DAT320 160/320GB Tape-SAS	1	Half high		5661
Internal Docking Station for Removable Disk Drive	1	Half high		1103
External Docking Station for Removable Disk Drive	1	USB Port		1104
RDX USB Internal Docking Station for Removable Disk Cartridge	1	Half high	EU03	
RDX USB External Docking Station for Removable Disk Cartridge	11	USB port	EU04	
RDX SATA Internal Docking Station for Removable Disk Cartridge	1	Half high	EU07	
2.5/6TB LTO-6 Tape Drive	1	Half high	EU11	

Device	Maximum quantity	Bay	Orderable feature number	Supported feature number
AIX IBM i Linux				
856 GB 10K, SAS, SFF	0 44	0 SFF 1-8	1737	
856 GB 10K, SAS, SFF, GEN2	0 336	0 36 in 2 x #5802	1738	
900 GB 10K, SAS, SFF	44 0	44 SFF 1-8,	1751	
900 GB 10K, SAS, SFF, GEN2	336 0	336 36 in 2 x #5802	1752	
177 GB SAS SFF, SSD	44 0	44 SFF 1-8,	1775	
177 GB SAS SFF, SSD	0 44	0 36 in 2 x #5802	1787	
600 GB 10K, SAS, SFF	44 0	44 SFF 1-8,	1790	
177 GB SAS SFF, SSD, GEN2	336 0	336 36 in 2 x #5802	1793	
177 GB SAS SFF, SSD, GEN2	0 336	0 336 in 14 x #5887	1794	
283 GB 10K, SAS, SFF	0 44	0 SFF 1-8	1879	
300 GB 10K, SAS, SFF	44 0	44 36 in 2 x #5802	1880	
146.8 GB 15K, SAS, SFF	44 0	44 SFF 1-8,		1882
73.4 GB 15K, SAS, SFF	44 0	44 36 in 2 x #5887		1883
69.7 GB 15K, SAS, SFF	0 44	0 SFF 1-8,		1884
300 GB 10K, SAS, SFF	44 0	44 36 in 2 x #5802	1885	
146.8 GB 15K, SAS, SFF	44 0	44 SFF 1-8,	1886	
139.5 GB 15K, SAS, SFF	0 44	0 SFF 1-8,	1888	
283 GB 10K, SAS, SFF	0 44	0 36 in 2 x #5802	1911	
571 GB 10K, SAS, SFF	0 44	0 SFF 1-8,	1916	
146.8 GB, 15K, SAS, SFF, GEN2	336 0	336 36 in 2 x #5802	1917	

300 GB 10K, SAS, SFF, GEN2	336	0	336	336 in 14 x #5887	1925	
139 GB 15K, SAS, SFF, GEN2	0	336	0	336 in 14 x #5887	1947	
283 GB 15K, SAS, SFF, GEN2	0	336	0	336 in 14 x #5887	1948	
300 GB 15K, SAS, SFF, GEN2	336	0	336	336 in 14 x #5887	1953	
283 GB 10K, SAS, SFF, GEN2	0	336	0	336 in 14 x #5887	1956	
571 GB 10K, SAS, SFF, GEN2	0	336	0	336 in 14 x #5887	1962	
600 GB 10K, SAS, SFF, GEN2	336	0	336	336 in 14 x #5887	1964	
69 GB SAS, SFF, SDD	48	0	48	2 per #2053, #2054, #2055	1995	
69 GB SAS, SFF, SDD	0	48	0	2 per #2053, #2054, #2055	1996	
69 GB SAS, 3.5", Solid-state	224	0	224	224 in 28 x #5886		3586
69 GB SAS, 3.5", Solid-state	0	224	0	224 in 28 x #5886		3587
387 GB SAS SSD for #EDR1	60	0	60	Maximum 60 in 2 x #EDR1	ES01	
387 GB SAS SSD for #EDR1	0	30	0	Maximum 30 in 1 x #EDR1	ES04	
387 GB SAS SFF, SSD	44	0	44	SFF 1-8, 36 in 2 x #5802	ES0A	
387 GB SAS SFF, SSD	0	44	0	SFF 1-8, 36 in 2 x #5802	ES0B	
387 GB SAS SFF, SSD, GEN2	336	0	336	336 in 14 x #5887	ES0C	
387 GB SAS SFF, SSD, GEN2	0	336	0	336 in 14 x #5887	ES0D	
6 x #ES02	10	0	10	Maximum 60 in 2 x #EDR1	ESR2	
6 x #ES04	0	5	0	Maximum 30 in 1 x #EDR1	ESR4	
4 x #ES0A	1	0	1	4 in SFF 1-8 or in 2 x #5802	ESRA	
4 x #ES0B	0	1	0	4 in SFF 1-8 or in 2 x #5802	ESRB	
4 x #ES0C	1	0	1	4 in 14 x #5887	ESRC	
4 x #ES0D	0	1	0	4 in 14 x #5887	ESRD	

- Eight HDD or SSD drives maximum can be installed internally.
- A maximum of 336 Gen2 HDDs or SSDs can be installed in 14 x feature 5887.
- A maximum of 36 HDDs or SSDs can be installed in 2 x feature 5802.
- Feature 3586 and 3587 cannot be installed internally. Eight of feature 3586 or 3587 can be placed in each feature 5886.
- Maximum of ESRA+ESRB+ESRC+ESRD is 1.

Device	Maximum quantity		Bay	Orderable feature number	Supported feature number
73.4 GB 15K RPM, SAS	336	0	336	28 x #5886	3646
146.8 GB 15K RPM, SAS	336	0	336	28 x #5886	3647
300 GB 15K RPM, SAS	336	0	336	28 x #5886	3648
450 GB 15K RPM, SAS	336	0	336	28 x #5886	3649
69.8 GB 15K RPM, SAS	0	336	0	28 x #5886	3676
139.6 GB 15K RPM, SAS	0	336	0	28 x #5886	3677
283.8 GB 15K RPM, SAS	0	336	0	28 x #5886	3678



**Note:** 3.5-inch DASD is not supported in the 8202-E4D CEC.

## Planning information

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### **Cable orders**

No cables required.

### **Security, auditability, and control**

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This product uses the security and auditability features of host software and application software.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

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## IBM Electronic Services

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Electronic Service Agent and the IBM Electronic Support web portal are dedicated to providing fast, exceptional support to IBM Systems customers. The IBM Electronic Service Agent tool is a no-additional-charge tool that proactively monitors and reports hardware events, such as system errors, performance issues, and inventory. The Electronic Service Agent tool can help you stay focused on your company's strategic business initiatives, save time, and spend less effort managing day-to-day IT maintenance issues. Servers enabled with this tool can be monitored remotely around the clock by IBM Support all at no additional cost to you.

Now integrated into the base operating system of AIX 6.1 and AIX 7.1, Electronic Service Agent is designed to automatically and electronically report system failures and utilization issues to IBM, which can result in faster problem resolution and increased availability. System configuration and inventory information collected by the Electronic Service Agent tool also can be viewed on the secure Electronic Support web portal, and used to improve problem determination and resolution by you and the IBM support team. To access the tool main menu, simply type "smitty esa\_main", and select "Configure Electronic Service Agent ." In addition, ESA now includes a powerful Web user interface, giving the administrator easy access to status, tool settings, problem information, and filters. For more information and documentation on how to configure and use Electronic Service Agent, refer to

<http://www.ibm.com/support/electronic>

The IBM Electronic Support portal is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. This portal enables you to gain easier access to IBM resources for assistance in resolving technical problems. The My Systems and Premium Search functions make it even easier for Electronic Service Agent tool-enabled customers to track system inventory and find pertinent fixes.

### **Benefits**

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**Increased uptime:** The Electronic Service Agent tool is designed to enhance the Warranty or Maintenance Agreement by providing faster hardware error reporting and uploading system information to IBM Support. This can translate to less wasted time monitoring the "symptoms," diagnosing the error, and manually calling IBM Support to open a problem record. Its 24 x 7 monitoring and reporting mean no more dependence on human intervention or off-hours customer personnel when errors are encountered in the middle of the night.

**Security:** The Electronic Service Agent tool is designed to be secure in monitoring, reporting, and storing the data at IBM . The Electronic Service Agent tool securely transmits either via the Internet (HTTPS or VPN) or modem, and can be configured to communicate securely through gateways to provide customers a single point of exit from their site. Communication is one way. Activating Electronic Service Agent does not enable IBM to call into a customer's system. System inventory information is stored in a secure database, which is protected behind IBM firewalls. It is viewable only by the customer and IBM . The customer's business applications or business data is never transmitted to IBM .

**More accurate reporting:** Since system information and error logs are automatically uploaded to the IBM Support center in conjunction with the service request, customers are not required to find and send system information, decreasing the risk of misreported or misdiagnosed errors. Once inside IBM , problem error data is run through a data knowledge management system and knowledge articles are appended to the problem record.

**Customized support:** Using the IBM ID entered during activation, customers can view system and support information in the "My Systems" and "Premium Search" sections of the Electronic Support Web site at

<http://www.ibm.com/support/electronic>

My Systems provides valuable reports of installed hardware and software using information collected from the systems by Electronic Service Agent . Reports are available for any system associated with the customer's IBM ID. Premium Search combines the function of search and the value of Electronic Service Agent information, providing advanced search of the technical support knowledgebase. Using Premium Search and the Electronic Service Agent information that has been collected from your system, customers are able to see search results that apply specifically to their systems.

For more information on how to utilize the power of IBM Electronic Services, contact your IBM Systems Services Representative, or visit

<http://www.ibm.com/support/electronic>

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## Terms and conditions

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**Volume orders:** Contact your IBM representative.

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## Pricing

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### **IBM Global Financing**

Yes

ICA Lease or Financing Offering:	Yes
Eligible for Maintenance:	Yes

### **Warranty period**

Three year

Alternative warranty options are available on a special bid basis from your IBM representative or Business Partner.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified

otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

### **Warranty service**

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically via an IBM website. IBM may request Electronic Service Agent (ESA) activation and you must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend the time of your call and is subject to parts availability. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard warranty service.

Service levels are response-time objectives, may be limited in some areas, and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country-specific and location-specific information.

### **CRU service**

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU.

#### *Tier 1 CRU*

Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

#### *Tier 2 CRU*

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs will be shipped for next-business-day (NBD) delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU. You may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts have been designated as Tier 1 CRUs:

- DASD Drive
- DVD Drive
- DASD Backplane
- Fan Air Baffle
- Fans
- All PCI Adapters
- Power Supply
- Adapter - GX ++
- Line/power cord
- Keyboard
- Mouse
- External cables
- Display
- Operator Panel

- TOD Battery
- Memory DIMMs
- Processor VRM
- SAS Conduit Cable
- Tape drive power/signal cable
- Interlock Switch
- RAID Battery
- RAID Battery Card
- RAID Package Card
- SPCN Cable
- Memory Riser Card

To service a Linux system end-to-end, Linux service and productivity tools must be installed from the web page at

<http://www.ibm.com/support/customercare/sas/f/lopdiags/home.html>

It's automatically loaded if IBM manufacturing installs Linux image or IBM Installation Toolkit. PowerPack is the best way to install required service packages from the website. Linux callhome feature is also supported in a stand-alone system configuration to report serviceable events.

### ***On-site service***

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

Service level is:

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response. Calls must be received by 5:00 p.m. local time in order to qualify for next-business-day response.

### **Non-IBM parts service**

Warranty service

IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to their customers, and normal warranty service procedures for the IBM machine apply.

### ***Warranty service upgrades***

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-Site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed. See the Warranty services section for additional details.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM . You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

### **On-site service**

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. The following on-site response-time objectives are available as warranty service upgrades for your machine.

The service level is:

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response. Calls must be received by 5:00 p.m. local time in order to qualify for next-business-day response.
- 24 hours per day, 7 days a week, 4-hour average response, same day
- 24 hours per day, 7 days a week, 2-hour average response, same day

**Note:** Canada does not offer 2-hour response option.

Customer Replaceable Units (CRUs) may be provided as part of the machine's standard warranty CRU Service except that you may install a CRU yourself or request IBM installation, at no additional charge, under the CRU and On-site Service level specified above. For additional information on the CRU Service, see the warranty information.

### **Maintenance services**

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If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. IBM may request Electronic Service Agent (ESA) activation and you must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response-time objectives and are not guaranteed. The specified level of maintenance service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country-specific and location-specific information. The following service selections are available as maintenance options for your machine type.

### **On-site service**

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

Service levels are:

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response
- 9 hours per day, Monday through Friday, excluding holidays, 4-hour average response, same-business-day
- 24 hours per day, 7 days a week, 4-hour average response, same day
- 24 hours per day, 7 days a week, 2-hour average response, same day

**Note:** Canada does not offer 2-hour response option.

### **Customer Replaceable Unit (CRU) Service**

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), and depending upon the maintenance service offerings in your geography, IBM will ship the replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request.

Based upon availability, CRUs will be shipped for next-business-day delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU.

Tier 1 (mandatory) CRUs: Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

For machines with On-site Same-day Response Service, IBM will replace a Tier 1 CRU part at your request, at no additional charge.

Tier 2 (optional) CRUs: You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

The following parts have been designated as Tier 1 CRUs:

- DASD Drive
- DVD Drive
- DASD Backplane
- Fan Air Baffle
- Fans
- All PCI Adapters
- Power Supply
- Adapter - GX ++
- Line/power cord
- Keyboard
- Mouse
- External cables
- Display
- Operator Panel
- TOD Battery
- Memory DIMMs
- Processor VRM
- SAS Conduit Cable
- Tape drive power/signal cable
- Interlock Switch
- RAID Battery
- RAID Battery Card
- RAID Package Card
- SPCN Cable
- Memory Riser Card

### **Non-IBM parts service**

Under certain conditions, IBM provides services for selected non-IBM parts at no additional charge for machines that are covered under warranty service upgrades or maintenance services.

This service includes hardware problem determination (PD) on the non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within

IBM machines and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

***Warranty service upgrades***

***Usage plan machine***

No

***IBM hourly service rate classification***

Two

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

***Field-installable features***

Yes

***Model conversions***

Yes

***Machine installation***

Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

***Graduated program license charges apply***

Yes The applicable processor tier is: Small

***Licensed machine code***

IBM Machine Code is licensed for use by a customer on the IBM Machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative or visiting

[http://www-1.ibm.com/servers/support/machine\\_warranties/machine\\_code.html](http://www-1.ibm.com/servers/support/machine_warranties/machine_code.html)

Machine using LMC Type Model: 8202-E4D

Access to Machine Code updates is conditioned on entitlement and license validation in accordance with IBM policy and practice. IBM may verify entitlement through customer number, serial number, electronic restrictions, or any other means or methods employed by IBM in its discretion.

If the machine does not function as warranted and your problem can be resolved through your application of downloadable machine code, you are responsible for downloading and installing these designated machine code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable machine code changes; however, you may be charged.

### **Educational allowance**

Educational allowance: A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

The educational allowance is 5% for the products in this announcement.

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## **Prices**

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Prices are subject to change without notice.

GST, QST, and sales taxes, where applicable, are extra.

For additional information and current prices, contact your local IBM representative.

### **Product charges**

The following are newly announced features on the specific models of the IBM Power Systems 8202 machine type:

Description	Model Number	Feature Numbers	Both/Support	RP CSU MES
IBM Power 720	E4D			Yes
One CSC Billing Unit	E4D	0010	Both	Yes No
Ten CSC Billing Units	E4D	0011	Both	Yes No
Mirrored System Disk Level, Sp	E4D	0040	Both	Yes No
Device Parity Protection All	E4D	0041	Both	Yes No
Mirrored System Bus Level	E4D	0043	Both	Yes No
Device Parity RAID 6 All	E4D	0047	Both	Yes No
RISC to RISC Data Migration	E4D	0205	Initial	N/A No
AIX Partition Specify	E4D	0265	Both	Yes No
Linux Partition Specify	E4D	0266	Both	Yes No
IBM i Partition Specify	E4D	0267	Both	Yes No
Specify Custom Data Protection	E4D	0296	Both	Yes No
Mirrored Level System Specify	E4D	0308	Both	Yes No
RAID Hot Spare Specify	E4D	0347	Both	Yes No
V.24/EIA232 6.1m (20 Ft) PCI C	E4D	0348	Both	Yes No
V.24/EIA232 15.2m (50 Ft) PCI	E4D	0349	Support	Yes No
V.35 6.1m (20 Ft) PCI Cable	E4D	0353	Both	Yes No
V.35 15.2m (50 Ft) PCI Cable	E4D	0354	Support	Yes No
V.36 6.1m (20 Ft) PCI Cable	E4D	0356	Support	Yes No
X.21 6.1m (20 Ft) PCI Cable	E4D	0359	Both	Yes No
X.21 15.2m (50 Ft) PCI Cable	E4D			



	E4D	0360	Support	Yes	No
V.24/EIA232 (80 Ft) PCI Cable	E4D	0365	Support	Yes	No
CBU Specify					
	E4D	0444	Both	Yes	No
Customer Specified Placement					
	E4D	0456	Initial	N/A	No
SSD Placement Indicator CEC					
	E4D	0462	Both	Yes	No
SSD Placement Indicator 5802/3					
	E4D	0463	Initial	N/A	No
SSD Placement Indicator 5886					
	E4D	0464	Initial	N/A	No
SSD Placement Indicator 5887					
	E4D	0465	Initial	N/A	No
19 inch, 1.8 meter high rack					
	E4D	0551	MES	Yes	No
19 inch, 2.0 meter high rack					
	E4D	0553	MES	Yes	No
19 inch, 1.3 meter high rack					
	E4D	0555	Support	Yes	No
IBM i 6.1 w/6.1.1 Machine Code					
	E4D	0566	Both	Yes	No
IBM i 7.1 Specify Code					
	E4D	0567	Both	Yes	No
Rack Filler Panel Kit					
	E4D	0599	Both	Yes	No
Load Source Not in CEC					
	E4D	0719	Both	Yes	No
#1787 Load Source Specify					
	E4D	0722	Both	Yes	No
#1996 Load Source Specify					
	E4D	0724	Both	Yes	No
Specify Load Source 5802/3/77					
	E4D	0726	Both	Yes	No
Specify 5886 Load Source plac					
	E4D	0727	Both	Yes	No
#5887 Load Source Specify					
	E4D	0728	Both	Yes	No
EXP30 Load Source Specify					
	E4D	0729	Both	Yes	No
Power 720 4 core Express Edit					
	E4D	0777	Initial	N/A	No
Power 720 6 8 core Express E					
	E4D	0779	Initial	N/A	No
SAN Load Source Specify					
	E4D	0837	Both	Yes	No
3676 Load Source Specify					
	E4D	0838	Support	Yes	No
3677 Load Source Specify					
	E4D	0839	MES	Yes	No
3678 Load Source Specify					
	E4D	0840	MES	Yes	No
3658 Load Source Specify					
	E4D	0844	MES	Yes	No
1884 Load Source Specify					
	E4D	0851	Support	Yes	No
1888 Load Source Specify					
	E4D	0853	Both	Yes	No
3587 Load Source Specify					
	E4D	0855	Support	Yes	No
1911 Load Source Specify					
	E4D	0856	Both	Yes	No
#1916 Load Source Specify					
	E4D	0857	Both	Yes	No
#1879 Load Source Specify					
	E4D	0870	Both	Yes	No
#1947 Load Source Specify					
	E4D	0871	Both	Yes	No
#1948 Load Source Specify					
	E4D	0872	Both	Yes	No
#1956 Load Source Specify					
	E4D	0874	Both	Yes	No
#1962 Load Source Specify					

	E4D	0875	Both	Yes	No
#1794 Load Source Specify	E4D	0876	Both	Yes	No
#1737 Load Source Specify(856G	E4D	0879	Both	Yes	No
#1738 Load Source Specify SFF2	E4D	0880	Both	Yes	No
#ES04 Load Source Specify	E4D	0882	Both	Yes	No
#ES0B Load Source Specify	E4D	0893	Both	Yes	No
#ES0D Load Source Specify	E4D	0894	Both	Yes	No
Modem Cable US/Canada and GU	E4D	1025	Both	Yes	No
USB Internal Docking Station R	E4D	1103	Support	Yes	No
USB External Docking Station R	E4D	1104	Support	Yes	No
USB 160 GB Removable Disk Dr	E4D	1106	Support	Yes	No
USB 500 GB Removable Disk Dr	E4D	1107	Both	Yes	No
3m, Blue Cat5e Cable	E4D	1111	Both	Yes	No
10m, Blue Cat5e Cable	E4D	1112	Both	Yes	No
25m, Blue Cat5e Cable	E4D	1113	Both	Yes	No
Custom Serv. Specify, Roch	E4D	1140	Both	Yes	No
200V 16A 4.3m (14 Ft) TL Line	E4D	1406	Support	Yes	No
125V 4.3m (14 Ft) Line Cord	E4D	1413	Support	Yes	No
200V 1.8m (6 Ft) Locking Line	E4D	1414	Support	Yes	No
4.3m 200V/16A Power Cord EU/As	E4D	1420	Support	Yes	No
4.3m 200V/16A Power Cord CH/DK	E4D	1421	Support	Yes	No
200V 4.3m (14 Ft) Locking Line	E4D	1426	Support	Yes	No
200V 4.3m (14 Ft) Watertight L	E4D	1427	Support	Yes	No
4.3m 200V/10A Power Cord EU/As	E4D	1439	Support	Yes	No
4.3m 200V/10A Power Cord Denma	E4D	1440	Support	Yes	No
4.3m 200V/10A Power Cord S. Af	E4D	1441	Support	Yes	No
4.3m 200V/10A Power Cord Swiss	E4D	1442	Support	Yes	No
4.3m 200V/10A Power Cord UK	E4D	1443	Support	Yes	No
4.3m 200V/10A Power Cord Israe	E4D	1445	Support	Yes	No
4.3m 200V/32A Power Cord EU 1	E4D	1449	Support	Yes	No
4.3m 200V/16A Power Cord EU 2	E4D	1450	Support	Yes	No
200V (14 Ft) 4.3m Line Cord					

E4D	1452	Support	Yes	No
200V 12A (14 Ft) 4.3m TL Line	E4D	1454	Support	Yes No
200V (14 Ft) 4.3m watertight L	E4D	1456	Support	Yes No
4.3m 200V/12A Pwr Cd UK	E4D	1476	Support	Yes No
4.3m 200V/16A Pwr Cd	E4D	1477	Support	Yes No
856GB 10k RPM SAS SFF Disk	E4D	1737	Both	Yes No
856GB 10k RPM SAS SFF-2 Disk	E4D	1738	Both	Yes No
900GB 10k RPM SAS SFF Disk	E4D	1751	Both	Yes No
900GB 10k RPM SAS SFF-2 Disk	E4D	1752	Both	Yes No
177GB SFF-1 SSD w/ eMLC AIX/Li	E4D	1775	Both	Yes No
177GB SFF-1 SSD w/ eMLC IBM i	E4D	1787	Both	Yes No
600GB 10k RPM SAS SFF Disk	E4D	1790	Both	Yes No
177GB SFF-2 SSD w/ eMLC AIX/Li	E4D	1793	Both	Yes No
177GB SFF-2 SSD w/ eMLC IBM i	E4D	1794	Both	Yes No
Quantity 150 of #1962	E4D	1817	Both	Yes No
Quantity 150 of #1964	E4D	1818	Both	Yes No
System port/UPS Conversion Cab	E4D	1827	Both	Yes No
1.5 Meter 12X to 4X Channel CC	E4D	1828	Both	Yes No
0.6 Meter 12X Cable	E4D	1829	Support	Yes No
1.5 Meter 12X cable	E4D	1830	Support	Yes No
8.0 Meter 12X Cable	E4D	1834	Support	Yes No
3.0 Meter 12X Cable	E4D	1840	Support	Yes No
3 Meter 12X to 4X Channel CC	E4D	1841	Both	Yes No
Quantity 150 of #1956	E4D	1844	Both	Yes No
10 Meter 12X to 4X Enhance CCC	E4D	1854	Both	Yes No
0.6 Meter 12X DDR Cable	E4D	1861	Both	Yes No
1.5 Meter 12X DDR Cable	E4D	1862	Both	Yes No
8 Meter 12X DDR Cable	E4D	1864	Both	Yes No
3.0 Meter 12X DDR Cable	E4D	1865	Both	Yes No
Quantity 150 of #1917	E4D	1866	Both	Yes No
Quantity 150 of #1947	E4D	1868	Both	Yes No
Quantity 150 of #1925	E4D	1869	Both	Yes No
283GB 15K RPM SAS Disk	E4D	1879	Both	Yes No
300GB 15K RPM SAS Disk	E4D	1880	Both	Yes No
146.8GB 10K RPM SAS SFF Disk D				

	E4D	1882	Support	Yes	No
73.4 GB 15K RPM SAS SFF Disk D	E4D	1883	Support	Yes	No
69.7 GB 15K RPM SAS SFF Disk D	E4D	1884	Support	Yes	No
300GB 10K RPM SFF SAS Disk D	E4D	1885	Both	Yes	No
146GB 15K RPM SFF SAS Disk D	E4D	1886	Both	Yes	No
Quantity 150 of #1793	E4D	1887	Both	Yes	No
139GB 15K RPM SFF SAS Disk D	E4D	1888	Both	Yes	No
4 GB Single Port Fibre Channel	E4D	1905	Support	Yes	No
4 GB Dual Port Fibre Channel P	E4D	1910	Support	Yes	No
283GB 10K RPM SFF SAS Disk Dri	E4D	1911	Both	Yes	No
PCI X DDR Dual Channel Ultra32	E4D	1912	Support	Yes	No
571GB 10k RPM SAS SFF Disk	E4D	1916	Both	Yes	No
146GB 15k RPM SAS SFF-2 Disk	E4D	1917	Both	Yes	No
300GB 10k RPM SAS SFF-2 Disk	E4D	1925	Both	Yes	No
Quantity 150 of #1948	E4D	1927	Both	Yes	No
Quantity 150 of #1953	E4D	1929	Both	Yes	No
139GB 15k RPM SAS SFF-2 Disk	E4D	1947	Both	Yes	No
283GB 15k RPM SAS SFF-2 Disk	E4D	1948	Both	Yes	No
300GB 15k RPM SAS SFF-2 Disk	E4D	1953	Both	Yes	No
4 Port 10 100 1000 Base TX PCI	E4D	1954	Support	Yes	No
283GB 10k RPM SAS SFF-2 Disk	E4D	1956	Both	Yes	No
Quantity 150 of #1794	E4D	1958	Both	Yes	No
571GB 10k RPM SAS SFF-2 Disk	E4D	1962	Both	Yes	No
600GB 10k RPM SAS SFF-2 Disk	E4D	1964	Both	Yes	No
2 Gigabit Fibre Channel PCI X	E4D	1977	Support	Yes	No
IBM Gigabit Ethernet SX PCI X	E4D	1978	Support	Yes	No
10 100 1000 Base TX Ethernet P	E4D	1979	Support	Yes	No
POWER GXT135P Graphics Acceler	E4D	1980	Support	Yes	No
2-Port Base-TX Etht PCI-X Adpt	E4D	1983	Support	Yes	No
1 Gigabit iSCSI TOE PCI X on C	E4D	1986	Support	Yes	No
1 Gigabit iSCSI TOE PCI X on O	E4D	1987	Support	Yes	No
177GB SSD Module with eMLC (AI	E4D	1995	Both	No	No
1 Gigabit iSCSI TOE PCI X on C	E4D	1996	Both	No	No
PCIe LP RAID SSD SAS Adapter 3	E4D	2053	Both	Yes	No
PCIe RAID SSD SAS Adapter 3Gb	E4D	2054	Both	Yes	No
PCIe RAID SSD SAS Adapter 3Gb	E4D	2055	Both	Yes	No
Converter Cable, VHDCI to P, M	E4D	2118	Support	Yes	No
Primary OS - IBM i					

Primary OS AIX	E4D	2145	Both	Yes	No
Primary OS Linux	E4D	2146	Both	Yes	No
Factory Deconfiguration of 1 c	E4D	2147	Both	Yes	No
LC-SC 50 Micron Fiber Conv Cab	E4D	2319	Initial	N/A	No
LC-SC 62.5 Mic.Fib.Conv.Cable	E4D	2456	Both	Yes	No
4 port USB PCIe Adapter	E4D	2459	Both	Yes	No
2 Port USB PCI Adapter	E4D	2728	Both	Yes	No
POWER GXT135P Graphics Acceler	E4D	2738	Support	Yes	No
ARTIC960Hx 4 Port EIA 232 Cabl	E4D	2849	Support	Yes	No
ARTIC960Hx 4 Port X 21 Cable	E4D	2861	Support	Yes	No
ARTIC960Hx 4-Port V.35(DTE)Cab	E4D	2863	Support	Yes	No
PCIe 2 Line WAN w/Modem	E4D	2864	Support	Yes	No
Asynch.Termin/Print.Cbl EIA232	E4D	2893	Both	Yes	No
Asynchronous Cable EIA 232/V	E4D	2934	Both	Yes	No
8P Async Adp. EIA232/RS-422	E4D	2936	Both	Yes	No
ARTIC960Hx 4Port Mult.PCI Adp	E4D	2943	Support	Yes	No
Cable, v.24 / EIA-232	E4D	2947	Support	Yes	No
Cable, v.35	E4D	2951	Support	Yes	No
Cable, v.36 / EIA 499	E4D	2952	Support	Yes	No
Cable, X.21	E4D	2953	Support	Yes	No
2-Port Multip. PCI Adapter	E4D	2954	Support	Yes	No
Ser to Ser Port Cab Draw/Draw	E4D	2962	Support	Yes	No
Serial to Se.Port Cbl Rack 8M	E4D	3124	Both	Yes	No
1m, QDR IB Copper Cable	E4D	3125	Both	Yes	No
3m, QDR IB Copper Cable	E4D	3287	Both	Yes	No
5m QDR IB/E'Net Copper Cable	E4D	3288	Both	Yes	No
10m QDR IB Optic Cable	E4D	3289	Both	Yes	No
30m QDR IB Optic Cable	E4D	3290	Both	Yes	No
SAS YO Cable 1.5m - HD 6Gb Ada	E4D	3293	Both	Yes	No
SAS YO Cable 3m - HD 6Gb Adapt	E4D	3450	Both	Yes	No
SAS YO Cable 6m - HD 6Gb Adapt	E4D	3451	Both	Yes	No
SAS YO Cable 10m - HD 6Gb Adap	E4D	3452	Both	Yes	No
SAS X Cable 3m - HD 6Gb 2-Adap	E4D	3453	Both	Yes	No
SAS X Cable 6m - HD 6Gb 2-Adap	E4D	3454	Both	Yes	No
SAS X Cable 10m - HD 6Gb 2-Ada	E4D	3455	Both	Yes	No
SAS YO Cable 15m - HD 3Gb Adap	E4D	3456	Both	Yes	No
SAS X Cable 15m - HD 3Gb 2-Ada	E4D	3457	Both	Yes	No

	E4D	3458	Both	Yes	No
69GB 3.5 SAS Solid State Driv	E4D	3586	Support	Yes	No
69GB 3.5 SAS Solid State Driv	E4D	3587	Support	Yes	No
Widescreen LCD Monitor					
	E4D	3632	Both	Yes	No
T541H/L150p 15inchTFT Col.M	E4D	3637	Support	Yes	No
ThinkVision L170p Flat Pan.M	E4D	3639	Support	Yes	No
ThinkVision L171p Flat Panel M	E4D	3640	Support	Yes	No
IBM T115 Flat Panel Monitor	E4D	3641	Support	Yes	No
ThinkVision L191p Flat Panel M	E4D	3642	Support	Yes	No
IBM T120 Flat Panel Monitor	E4D	3643	Support	Yes	No
19in. Flat Panel Monitor	E4D	3644	Support	Yes	No
17in. Flat Panel Monitor	E4D	3645	Support	Yes	No
73GB 15K RPM SAS Disk Drive	E4D	3646	Support	Yes	No
146GB 15K RPM SAS Disk Drive	E4D	3647	Support	Yes	No
300GB 15K RPM SAS Disk Drive	E4D	3648	Support	Yes	No
450GB 15K RPM SAS Disk Drive	E4D	3649	Support	Yes	No
SAS Cable (EE) Drawer to Dr 1M	E4D	3652	Both	Yes	No
SAS Cable (EE) Drawer to Dr 3M	E4D	3653	Both	Yes	No
SAS Cable (EE) Drawer to Dr 6M	E4D	3654	Both	Yes	No
SAS SFF Cable	E4D	3656	Both	Yes	No
428GB 15K RPM SAS Disk Drive	E4D	3658	Support	Yes	No
SAS Cable (X) Adapter to SAS E	E4D	3661	Both	Yes	No
SAS Cbl X Adp SAS Enclosure 6M	E4D	3662	Both	Yes	No
SAS Cbl X Adp SAS Enclosure 15M	E4D	3663	Both	Yes	No
SAS EX cable 3M - Drw to Drw	E4D	3675	Both	Yes	No
69.7GB 15k rpm SAS Disk Drv	E4D	3676	Support	Yes	No
139.5GB 15k rpm SAS Disk Drive	E4D	3677	Support	Yes	No
283.7GB 15k rpm SAS Disk Drive	E4D	3678	Support	Yes	No
SAS EX Cable 6m - Drw to Drw	E4D	3680	Both	Yes	No
3M SAS CABLE, ADPTR TO ADPTR (	E4D	3681	Both	Yes	No
6M SAS CABLE, ADPTR TO ADPTR (	E4D	3682	Support	Yes	No
SAS Cab (AE) Adapter to En 3M	E4D	3684	Both	Yes	No
SAS Cable(AE) Adapter to En 6M	E4D	3685	Both	Yes	No
SAS Ca(YI) System to SAS 1.5M	E4D	3686	Support	Yes	No
SAS Ca(YI) System to SAS 3M	E4D	3687	Both	Yes	No
SAS Cable (AT) 0.6 Meter					

SAS AT Cable 0.6m - HD 6Gb Ada	E4D	3688	Both	Yes	No
SAS Cab(YO) Adapter to SAS1.5M	E4D	3689	Both	Yes	No
SAS Cab(YO) Adapter to SAS 3M	E4D	3691	Both	Yes	No
SAS Cab(YO) Adapter to SAS 6M	E4D	3692	Both	Yes	No
SAS Cab(YO) Adapter to SAS 15M	E4D	3693	Both	Yes	No
0.3M Serial Prt Converter Cbl	E4D	3694	Both	Yes	No
Asynch Printer/Term.Cab,4M	E4D	3925	Both	Yes	No
Serial Port Null Mod Cab 3.7M	E4D	3926	Support	Yes	No
Ser.Port Null Modem Cable,10M	E4D	3927	Both	Yes	No
System Serial Port Converter C	E4D	3928	Both	Yes	No
6Foot Extend.Cbl for Displays	E4D	3930	Both	Yes	No
Extender Cable USB Keybo 1.8M	E4D	4242	Both	Yes	No
VGA to DVI Connection Converte	E4D	4256	Both	Yes	No
Package 5X 2055 20X 1995	E4D	4276	Both	Yes	No
Package 5X 2055 20X 1995	E4D	4367	Both	Yes	No
Package 5X 2055 20X 1995	E4D	4377	Both	Yes	No
One and only one rack indicator feature is required on all orders (#4650 to #4666). No Factory Integration Ind.					
Rack Indicator, Rack 1	E4D	4650	Initial	N/A	No
Rack Indicator, Rack 2	E4D	4651	Initial	N/A	No
Rack Indicator, Rack 3	E4D	4652	Initial	N/A	No
Rack Indicator, Rack 4	E4D	4653	Initial	N/A	No
Rack Indicator, Rack 5	E4D	4654	Initial	N/A	No
Rack Indicator, Rack 6	E4D	4655	Initial	N/A	No
Rack Indicator, Rack 7	E4D	4656	Initial	N/A	No
Rack Indicator, Rack 8	E4D	4657	Initial	N/A	No
Rack Indicator, Rack 9	E4D	4658	Initial	N/A	No
Rack Indicator, Rack 10	E4D	4659	Initial	N/A	No
Rack Indicator, Rack 11	E4D	4660	Initial	N/A	No
Rack Indicator, Rack 12	E4D	4661	Initial	N/A	No
Rack Indicator, Rack 13	E4D	4662	Initial	N/A	No
Rack Indicator, Rack 14	E4D	4663	Initial	N/A	No
Rack Indicator, Rack 15	E4D	4664	Initial	N/A	No
Rack Indicator, Rack 16	E4D	4665	Initial	N/A	No
PCI-X Crypt.Coproc.(FIPS 4)	E4D	4666	Initial	N/A	No
Power Active Memory Expansion	E4D	4764	Support	Yes	No
PCIe Crypto Coprocessor No B	E4D	4793	Both	Yes	No
PCIe Crypto Coprocessor Gen3	E4D	4807	Both	Yes	No

Power 720 Solution Edition	E4D	4808	Both	Yes	No
Power 720 Solution Edition	E4D	4927	Initial	N/A	No
Power 720 Solution Edition	E4D	4928	Initial	N/A	No
IBM i for BI - Small Config	E4D	4934	Initial	N/A	No
IBM i for BI - Medium Config	E4D	4935	Initial	N/A	No
IBM i for BI - Large Config	E4D	4936	Initial	N/A	No
Software Preload Required	E4D	5000	Initial	N/A	No
Power Dist Unit 1 Phase NEMA	E4D	5160	Support	Yes	No
Power Dist Unit 1 Phase IEC	E4D	5161	Support	Yes	No
Power Dist Unit 2 of 3 Phase	E4D	5162	Support	Yes	No
Power Dist Unit - 3 Phase	E4D	5163	Support	Yes	No
PowerVM Express Edition	E4D	5225	Both	Yes	No
PowerVM Standard Edition	E4D	5227	Both	Yes	No
PowerVM Enterprise Edition	E4D	5228	Both	Yes	No
PCIe2 LP 4-port 1GbE Adapter	E4D	5260	Both	Yes	No
PCIe LP POWER GXT145 Graphics	E4D	5269	Both	Yes	No
PCIe LP 10Gb FCoE 2 port Adapt	E4D	5270	Both	Yes	No
PCIe LP 4 Port 10/100/1000 Bas	E4D	5271	Both	Yes	No
PCIe LP 10GbE CX4 1 port Adapt	E4D	5272	Both	Yes	No
PCIe LP 8Gb 2 Port Fibre Chann	E4D	5273	Both	Yes	No
PCIe LP 2 Port 1GbE SX Adapter	E4D	5274	Both	Yes	No
PCIe LP 10GbE SR 1 port Adapt	E4D	5275	Both	Yes	No
PCIe LP 4Gb 2 Port Fibre Chann	E4D	5276	Both	Yes	No
PCIe LP 4 Port Async EIA 232 A	E4D	5277	Both	Yes	No
PCIe LP 2 x4 port SAS Adapter	E4D	5278	Both	Yes	No
PCIe2 4Port 10GBE&1GBE SFP+ LP	E4D	5279	Both	Yes	No
PCIe2 4-Port 10GbE&1GbE SR LP	E4D	5280	Both	Yes	No
PCIe LP 2-Port 1GbE TX Adapter	E4D	5281	Both	Yes	No
PCIe2 LP 2-Port 4X IB QDR Adap	E4D	5283	Both	Yes	No
PCIe2 LP 2 port 10GbE SR Adapt	E4D	5284	Both	Yes	No
PCIe 2-Port 4X IB QDR Adapt	E4D	5285	Both	Yes	No
PCIe2 LP 2 Port 10GbE SFP Copp	E4D	5286	Both	Yes	No
PCIe2 2-port 10GbE SR Adapter	E4D	5287	Both	Yes	No
PCIe2 2-port 10GbE SFP+ Adaptr	E4D	5288	Both	Yes	No
2 Port Async EIA 232 PCIe Adap	E4D	5289	Both	Yes	No
PCIe LP 2 Port Async EIA 232 A	E4D	5290	Both	Yes	No
System Pwr Sup -1925W	E4D	5532	Both	Yes	No
sys Console On HMC					



	E4D	5550	Both	Yes	No
Sys Console-Ethernet No IOP	E4D	5557	Both	Yes	No
Storage Backplane 6 SFF Bays	E4D	5618	Both	Yes	No
80/160GB DAT160 SAS Tape Drive	E4D	5619	Both	Yes	No
1.5TB/3.0TB LTO 5 SAS Tape Dr	E4D	5638	Both	Yes	No
DAT320 160/320 GB Tape Drive	E4D	5661	Support	Yes	No
DAT320 160 GB USB Tape Drive	E4D	5673	Support	Yes	No
PCIe Riser Card (Gen2)	E4D	5685	Both	Yes	No
DAT160 Data Cartridge	E4D	5689	Support	Yes	No
IBM Gigab.Eth-SX PCI-X Adapter	E4D	5700	Support	Yes	No
10/100/1000 BaseTX Eth.PCI-X	E4D	5701	Support	Yes	No
2-Port BaseTX Etht.PCI-X Adp	E4D	5706	Both	Yes	No
10Gb FCoE PCIe Dual Port Adapt	E4D	5708	Both	Yes	No
1Gb iSCSI TOE PCI-X-Copp.Adpt	E4D	5713	Both	Yes	No
1Gb iSCSI TOE PCI-X-Opt.Adpt	E4D	5714	Support	Yes	No
2 Gigab.Fibre Chann.PCI-X Adp	E4D	5716	Support	Yes	No
4 Port 10/100/1000 Base TX PCI	E4D	5717	Both	Yes	No
10Gb Etht-SR PCI-X 2.0 DDR Adp	E4D	5721	Support	Yes	No
10Gb Etht-LR PCI-X 2.0 DDR Adp	E4D	5722	Support	Yes	No
2 Port Asyn.EIA-232 PCI Adpt	E4D	5723	Support	Yes	No
PCIe2 8Gb 4-port Fibre Channel	E4D	5729	Both	Yes	No
10 Gigabit Ethernet CX4 PCI Ex	E4D	5732	Both	Yes	No
8 Gigabit PCI Express Dual Por	E4D	5735	Both	Yes	No
PCI X DDR Dual Channel Ultra32	E4D	5736	Both	Yes	No
4-Port 10/100/1000 BaseTX Adpt	E4D	5740	Support	Yes	No
SATA Slim DVD-ROM drive	E4D	5743	Support	Yes	No
PCIe2 4-Port 10GbE&1GbE SR&RJ4	E4D	5744	Both	Yes	No
PCIe2 4-Port 10GbE&GbE SFP+Cop	E4D	5745	Both	Yes	No
Half High 800GB/1.6TB LTO4 SAS	E4D	5746	Support	Yes	No
LTO Ultrium 4 800 GB Data Cart	E4D	5747	Both	Yes	No
POWER GXT145 PCI Express Graph	E4D	5748	Both	Yes	No
4Gbps Fibre Channel (2 Port)	E4D	5749	Both	Yes	No
4 GB Single-Port Fibre Channel	E4D	5758	Support	Yes	No
4 Gb Dual Port Fibre Channel	E4D	5759	Both	Yes	No
SATA Slimline DVD RAM Drive	E4D	5762	Support	Yes	No
2 Port 10/100/1000 Base TX Eth	E4D	5767	Both	Yes	No
2 Port Gigabit Ethernet SX PCI	E4D	5768	Both	Yes	No
10 Gb Eth SR PCI Express Adp					

	E4D	5769	Both	Yes	No
SATA Slimline DVD-RAM Drive	E4D	5771	Both	Yes	No
10 Gigabit Ethernet LR PCI	E4D	5772	Both	Yes	No
4GigabitPCI-E Single Port Fibr	E4D	5773	Support	Yes	No
4 Gigabit PCI Express Dual Por	E4D	5774	Both	Yes	No
4 Port Async EIA 232 PCIe Adap	E4D	5785	Both	Yes	No
PCI DDR 12X Expansion Drawer	E4D	5796	Support	Yes	No
12X I/O Drawer PCIe, SFF disk	E4D	5802	Both	Yes	No
PCIe 380MB Cache Dual x4 3Gb S	E4D	5805	Both	Yes	No
12X I/O Drawer PCIe, No Disk	E4D	5877	Both	Yes	No
EXP 12S Expansion Drawer	E4D	5886	Support	Yes	No
EXP24S SFF Gen2-bay Drawer	E4D	5887	Both	Yes	No
PCIe2 4-port 1GbE Adapter	E4D	5899	Both	Yes	No
PCI-X SAS Adapter	E4D	5900	Support	Yes	No
PCIe Dual x4 SAS Adapter	E4D	5901	Both	Yes	No
PCI X DDR Dual x4 3Gb SAS RAID	E4D	5902	Support	Yes	No
PCI X DDR 1.5GB Cache SAS RAID	E4D	5908	Both	Yes	No
PCI X DDR Dual x4 SAS Adapter	E4D	5912	Support	Yes	No
PCIe2 1.8GB Cache RAID SAS Ada	E4D	5913	Both	Yes	No
SAS AA Cable 3m - HD 6Gb Adapt	E4D	5915	Both	Yes	No
SAS AA Cable 6m - HD 6Gb Adapt	E4D	5916	Both	Yes	No
SAS AA Cable 1.5m - HD 6Gb Ada	E4D	5917	Both	Yes	No
SAS AA Cbl 0.6m - HD 6Gb Adapt	E4D	5918	Both	Yes	No
Non paired SAS RAID indicator	E4D	5922	Support	Yes	No
Non paired PCIe SAS RAID Ind	E4D	5923	Both	Yes	No
Non-paired Indicator 5913 PCIe	E4D	5924	Both	Yes	No
Shared EXP30 Indicator	E4D	5925	Both	Yes	No
SAS EX Cable 1.5m - Drw to Drw	E4D	5926	Both	Yes	No
Remote EXP30 Indicator	E4D	5927	Both	Yes	No
Full width Key USB, US English	E4D	5951	Support	Yes	No
Full width Key USB, French	E4D	5952	Support	Yes	No
Full width Key USB, Italian	E4D	5953	Support	Yes	No
Full width Key USB, German/Aus	E4D	5954	Support	Yes	No
Full width Key USB, UK English	E4D	5955	Support	Yes	No
Full width Key USB, Spanish	E4D	5956	Support	Yes	No
Full width Key USB, Japanese	E4D	5957	Support	Yes	No
Full width Key USB, BrazilianP	E4D	5958	Support	Yes	No
Full width Key USB, Hungarian					

Full width Key USB, Korean	E4D	5959	Support	Yes	No
Full width Key USB, Chinese	E4D	5960	Support	Yes	No
Full width Key USB, French Can	E4D	5961	Support	Yes	No
Full width Key USB, Belgian/UK	E4D	5962	Support	Yes	No
Full width Key USB, Swedish/Fi	E4D	5964	Support	Yes	No
Full width Key USB, Danish	E4D	5965	Support	Yes	No
Full width Key USB, Bulgarian	E4D	5966	Support	Yes	No
Full width Key USB, Swiss/Fr/G	E4D	5967	Support	Yes	No
Full width Key USB, Norwegian	E4D	5968	Support	Yes	No
Full width Key USB, Dutch	E4D	5969	Support	Yes	No
Full width Key USB, Portuguese	E4D	5970	Support	Yes	No
Full width Key USB, Greek	E4D	5971	Support	Yes	No
Full width Key USB, Hebrew	E4D	5972	Support	Yes	No
Full width Key USB, Polish	E4D	5973	Support	Yes	No
Full width Key USB, Slovakian	E4D	5974	Support	Yes	No
Full width Key USB, Czech	E4D	5975	Support	Yes	No
Full width Key USB, Turkish	E4D	5976	Support	Yes	No
Full width Key USB, LA Spanish	E4D	5977	Support	Yes	No
Full width Key USB, Arabic	E4D	5978	Support	Yes	No
Full width Key USB, Thai	E4D	5979	Support	Yes	No
Full width Key USB, Russian	E4D	5980	Support	Yes	No
Full width Key USB, Slovenian	E4D	5981	Support	Yes	No
Full width Key USB, US English	E4D	5982	Support	Yes	No
Power Control Cable(SPCN)-2m	E4D	5983	Support	Yes	No
Power Control Cbl (SPCN) 3 m	E4D	6001	Support	Yes	No
Power Control Cbl (SPCN) 15 m	E4D	6006	Both	Yes	No
Power Control Cable(SPCN)-6m	E4D	6007	Both	Yes	No
Power Control Cable(SPCN)-30m	E4D	6008	Support	Yes	No
Opt Front Door for 1.8m Rack	E4D	6029	Support	Yes	No
Opt Front Door for 2.0m Rack	E4D	6068	MES	Yes	No
1.8m Rack Trim Kit	E4D	6069	MES	Yes	No
2.0m Rack Trim Kit	E4D	6246	Support	Yes	No
1.8m Rack Acoustic Doors	E4D	6247	Support	Yes	No
2.0m Rack Acoustic Doors	E4D	6248	MES	Yes	No
Redundant or Base PWR Supply	E4D	6249	MES	Yes	No
Redundant or Base PWR Supply	E4D	6260	Support	Yes	No
1.8m Rack Trim Kit	E4D	6261	Support	Yes	No

	E4D	6263	MES	Yes	No
2.0m Rack Trim Kit					
	E4D	6272	MES	Yes	No
Dual prt 12X Chan Attach Short					
	E4D	6446	Support	Yes	No
Dual port 12X Chan Attach Long					
	E4D	6457	Support	Yes	No
Pwr Crd 4.3m 14ft wall	IBM PDU				
	E4D	6458	Both	Yes	No
Pwr Crd (14FT), Drwr -	OEM PDU				
	E4D	6460	Both	Yes	No
Pwr Crd 4.3m 14ft wall	OEM PDU				
	E4D	6469	Both	Yes	No
Pwr Crd 1.8m 6ft wall	125V/15A				
	E4D	6470	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6471	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6472	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6473	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6474	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6475	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6476	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6477	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6478	Both	Yes	No
PWR Cord(9foot), (250V,10A)					
	E4D	6479	Support	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6488	Both	Yes	No
4.3m (14 Ft) 3PH/24A Power Cor					
	E4D	6489	MES	Yes	No
4.3m (14 Ft) 1PH/48A Pwr Cord					
	E4D	6491	MES	Yes	No
4.3m (14 Ft) 1PH/48 60A Pwr Co					
	E4D	6492	MES	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6493	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	E4D	6494	Both	Yes	No
To wall/OEM PDU, (250V, 10A)					
	E4D	6495	Support	Yes	No
Pwr Crd 2.7m 9ft wall	250V,10A				
	E4D	6496	Both	Yes	No
PWR Cord(6ft),To wall/OEM PDU					
	E4D	6497	Support	Yes	No
Power Cord 6ftTo wall	OEM PDU				
	E4D	6498	Support	Yes	No
Power Cable Drawer to	IBM PD				
	E4D	6577	Both	Yes	No
Optional Rack Security Kit					
	E4D	6580	MES	Yes	No
Modem Tray for 19-Inch Rack					
	E4D	6586	MES	Yes	No
Pwr Crd 2.7m 9ft wall	125V,15A				
	E4D	6651	Both	Yes	No
4.3m 1PH/24-30A Pwr Cord					
	E4D	6654	MES	Yes	No
4.3m 14Ft 1PH/24 30A WR Pwr					
	E4D	6655	MES	Yes	No
4.3m 14Ft 1PH/24A Power Cord					
	E4D	6656	MES	Yes	No
Pwr.Cord(9ft),To wall/OEM PDU					
	E4D	6659	Both	Yes	No
Pwr Crd 14ft 4.3m wall	OEM PDU				
	E4D	6660	Both	Yes	No
Pwr Crd 2.8m 9.2ft wall	PDU				
	E4D	6665	Both	Yes	No
Pwr Crd 4.3M, Drwr -	OEM PDU				

E4D	6669	Both	Yes	No	
Pwr Crd 6-FT, (125V,15A)PT#59	E4D	6670	Support	Yes	No
Pwr Crd 2.7M, Drwr - IBM PDU	E4D	6671	Both	Yes	No
Pwr Crd 1.5M, Drwr - IBM PDU	E4D	6672	Both	Yes	No
Pwr Crd 2.7m 9ft wall OEM PDU	E4D	6680	Both	Yes	No
Power Cord (6ft),To wall	E4D	6687	Support	Yes	No
PCI 2-Line WAN IOA No IOP	E4D	6805	Support	Yes	No
PCI 4-Modem WAN IOA No IOP	E4D	6808	Support	Yes	No
IIntelligent PDU+ 1 EIA Unit	E4D	7109	MES	Yes	No
Environmental Monitoring Probe	E4D	7118	Both	Yes	No
IBM Rack mount Drawer Bezel	E4D	7134	Both	Yes	No
OEM Rack mount Drawer Bezel	E4D	7135	Both	Yes	No
IBM/OEM Rack mount Drawer Rail	E4D	7145	Both	Yes	No
Power Distribution Unit	E4D	7188	MES	Yes	No
Dual I/O Unit Enclosure	E4D	7311	Support	Yes	No
I/O Drawer Mounting Enclosure	E4D	7314	Support	Yes	No
Quantity 150 of #3676	E4D	7517	Support	Yes	No
Quantity 150 of #3677	E4D	7518	Support	Yes	No
Quantity 150 of #3678	E4D	7519	Support	Yes	No
Quantity 150 of 3586	E4D	7535	Support	Yes	No
Quantity 150 of 3587	E4D	7536	Support	Yes	No
Quantity 150 of 3658	E4D	7538	Support	Yes	No
Quantity 150 of 3647	E4D	7549	Support	Yes	No
Quantity 150 of 3648	E4D	7564	Support	Yes	No
Quantity 150 of 3649	E4D	7565	Support	Yes	No
IBM Tower Cover Set	E4D	7567	Both	Yes	No
OEM Tower Cover Set	E4D	7568	Both	Yes	No
2.0m Rack Side Attach Kit	E4D	7780	Support	Yes	No
Eth Cbl 6M HW Management	E4D	7801	Support	Yes	No
Eth Cbl 15M HW Management	E4D	7802	Both	Yes	No
Side-by-Side for 1.8m Racks	E4D	7840	Support	Yes	No
Ruggedize Rack Kit	E4D	7841	Support	Yes	No
Linux Software Preinstall	E4D	8143	Initial	N/A	No
Linux Software Preinstall BP	E4D	8144	Initial	N/A	No
Mouse-USB,Black KBD Att C	E4D	8841	Support	Yes	No
USB Mouse	E4D	8845	Both	Yes	No
Order Routing Indicator System	E4D	9169	Initial	N/A	No

Language Group Spcf-US Eng	E4D	9300	NC	Initial	N/A	No
specify mode-1 & (1)5901/5278	E4D	9359	Both	Yes	No	
Specify mode-1 & (2)5901/5278	E4D	9360	Both	Yes	No	
Specify mode-2 & (2)5901/5278	E4D	9361	Both	Yes	No	
Specify mode-4 & (4)5901/5278	E4D	9365	Both	Yes	No	
Specify mode-2 & (4)5901/5278	E4D	9366	Both	Yes	No	
Specify mode-1 & (2)5903/5805	E4D	9367	Both	Yes	No	
Specify mode-2 & (4)5903/5805	E4D	9368	Both	Yes	No	
Specify mode-1 & (1)5904/6/8	E4D	9382	Both	Yes	No	
Specify mode-1 & (2) 5904/6/8	E4D	9383	Both	Yes	No	
Specify mode-1 & CEC SAS port	E4D	9384	Both	Yes	No	
Specify mode-1 & (2) 5913 EXP	E4D	9385	Both	Yes	No	
Specify mode-2 & (4) 5913 EXP	E4D	9386	Both	Yes	No	
Mode-1 & EXP30 for 1 EXP24S #5	E4D	9388	Both	Yes	No	
New AIX License Core Counter	E4D	9440	NC	Initial	N/A	No
New IBM i Lic Core Counter	E4D	9441	NC	Initial	N/A	No
New Red Hat Lic Core Counter	E4D	9442	NC	Initial	N/A	No
New SUSE Lic Core Counter	E4D	9443	NC	Initial	N/A	No
Other AIX Lic Core Counter	E4D	9444	NC	Initial	N/A	No
Other Linux Lic Core Counter	E4D	9445	NC	Initial	N/A	No
3rd Party Linux Lic Core Cnt	E4D	9446	NC	Initial	N/A	No
VIOS Core Counter	E4D	9447	NC	Initial	N/A	No
Month Indicator	E4D	9461	Initial	N/A	No	
Day Indicator	E4D	9462	Initial	N/A	No	
Hour Indicator	E4D	9463	Initial	N/A	No	
Minute Indicator	E4D	9464	Initial	N/A	No	
Qty Indicator	E4D	9465	Initial	N/A	No	
Countable Member Indicator	E4D	9466	Initial	N/A	No	
Language Group Spcf-Dutch	E4D	9700	NC	Initial	N/A	No
Language Group Spcf-French	E4D	9703	NC	Initial	N/A	No
Language Group Spcf-German	E4D	9704	NC	Initial	N/A	No
Language Group Spcf-Polish	E4D	9705	NC	Initial	N/A	No
Lang Group Specify - Norwegian	E4D	9706	NC	Initial	N/A	No
Lang.Group Spcf-Portuguese	E4D	9707	NC	Initial	N/A	No
Language Group Spcf-Spanish	E4D	9708	NC	Initial	N/A	No
Language Group Spcf-Italian	E4D	9711	NC	Initial	N/A	No
Langua Gr Speci Canadian Frenc	E4D	9712	NC	Initial	N/A	No

Language Group Spcf-Japanese	E4D	9714	NC	Initial	N/A	No
Language Group Specify Tr Chin	E4D	9715	NC	Initial	N/A	No
Language Group Spcf-Korean	E4D	9716	NC	Initial	N/A	No
Language Group Spcf-Turkish	E4D	9718	NC	Initial	N/A	No
Language Group Spcf-Hungarian	E4D	9719	NC	Initial	N/A	No
Language Group Spcf-Slovakian	E4D	9720	NC	Initial	N/A	No
Language Group Spcf-Russian	E4D	9721	NC	Initial	N/A	No
Lang Group Spcf Simpl Chinese	E4D	9722	NC	Initial	N/A	No
Language Group Spcf-Czech	E4D	9724	NC	Initial	N/A	No
Language Group Spcf-Romanian	E4D	9725	NC	Initial	N/A	No
Lang Group Specify - Croatian	E4D	9726	NC	Initial	N/A	No
Language Group Spcf-Slovenian	E4D	9727	NC	Initial	N/A	No
Lang Group Specify - Braz Port	E4D	9728	NC	Initial	N/A	No
Lang Group Specify - Thai	E4D	9729	NC	Initial	N/A	No
IBM i 6.1.1 Native I/O Enablem	E4D	EB34	Both		Yes	No
PCIe2 LP 2-Port 10GbE RoCE SFP	E4D	EC27	Both		Yes	No
PCIe2 2-Port 10GbE RoCE SFP+ A	E4D	EC28	Both		Yes	No
PCIe2 LP 2-Port 10GbE RoCE SR	E4D	EC29	Both		Yes	No
PCIe2 2-Port 10GbE RoCE SR Ada	E4D	EC30	Both		Yes	No
0.6m Blue CAT5 Ethernet Cable	E4D	ECB0	Both		Yes	No
1.5m Blue CAT5 Ethernet Cable	E4D	ECB2	Both		Yes	No
Custom Serv. Specify, Shen	E4D	ECSC	Both		Yes	No
EXP30 Ultra SSD I/O Drawer	E4D	EDR1	Both		Yes	No
SPSS on Pwr Sol Ind	E4D	EHSS	Initial		N/A	No
Storage B/P--8 SFF/RAID/IOA	E4D	EJ01	Both		Yes	No
Split Drive Capability/#5618	E4D	EJ02	Both		Yes	No
GX++ 2-port PCIe2 x8 Adapter	E4D	EJ03	Both		Yes	No
GX++ Dual-port 12x Chan Attach	E4D	EJ04	Both		Yes	No
Mode-1 & (1)ESA1/ESA2 for 5887	E4D	EJP1	Both		Yes	No
Mode-1 & (2)ESA1/ESA2 for 5887	E4D	EJP2	Both		Yes	No
Mode-2 & (2)ESA1/ESA2 for 5887	E4D	EJP3	Both		Yes	No
Mode-2 & (4)ESA1/ESA2 for 5887	E4D	EJP4	Both		Yes	No
Mode-4 & (4)ESA1/ESA2 for 5887	E4D	EJP5	Both		Yes	No
Mode-2 & (1)ESA1/ESA2 for 5887	E4D	EJP6	Both		Yes	No
Specify Mode-2(2)ESA1/ESA2	E4D	EJP7	Both		Yes	No
Specify mode-2(1) ESA1/ESA2	E4D	EJPA	Both		Yes	No
Specify mode-2 (2) ESA1/ESA2	E4D	EJPB	Both		Yes	No

Specify mode-4 (1)ESA1/ESA2	E4D	EJPC Both	Yes	No
Specify mode-4(2)ESA1/ESA2	E4D	EJPD Both	Yes	No
Specify mode-4 (3)ESA1/ESA2	E4D	EJPE Both	Yes	No
Specify mode-2 (1)5901/5278	E4D	EJPJ Both	Yes	No
Specify mode-2(2)5901/5278	E4D	EJPK Both	Yes	No
Specify mode-4 (1)5901/5278	E4D	EJPL Both	Yes	No
Specify mode-4 (2) 5901/5278	E4D	EJPM Both	Yes	No
Specify mode-4 (3) 5901/5278	E4D	EJPN Both	Yes	No
Specify mode-2 (2)5903/5805	E4D	EJPR Both	Yes	No
Specify mode-2 (2) 5913	E4D	EJPT Both	Yes	No
Specify Left Half 12X I/O Draw	E4D	EJPY Both	Yes	No
Specify Right Half 12X I/O Dra	E4D	EJPZ Both	Yes	No
Full width Key USB, US English	E4D	EK51 Both	Yes	No
Full width Key USB, French	E4D	EK52 Both	Yes	No
Full widthKey USB,Italian	E4D	EK53 Both	Yes	No
Full width Key USB, German/Aus	E4D	EK54 Both	Yes	No
Full width Key USB, UK English	E4D	EK55 Both	Yes	No
Full width Key USB, Spanish	E4D	EK56 Both	Yes	No
Full width Key USB, Japanese	E4D	EK57 Both	Yes	No
Full width Key USB, BrazilianP	E4D	EK58 Both	Yes	No
Full width Key USB, Hungarian	E4D	EK59 Both	Yes	No
Full width Key USB, Korean	E4D	EK60 Both	Yes	No
Full width Key USB, Chinese	E4D	EK61 Both	Yes	No
Full width Key USB, French Can	E4D	EK62 Both	Yes	No
Full width Key USB, Belgian/UK	E4D	EK64 Both	Yes	No
Full width Key USB, Swedish/Fi	E4D	EK65 Both	Yes	No
Full width Key USB, Danish	E4D	EK66 Both	Yes	No
Full width Key USB, Bulgarian	E4D	EK67 Both	Yes	No
Full width Key USB, Swiss/Fr/G	E4D	EK68 Both	Yes	No
Full width Key USB, Norwegian	E4D	EK69 Both	Yes	No
Full width Key USB, Dutch	E4D	EK70 Both	Yes	No
Full width Key USB, Portuguese	E4D	EK71 Both	Yes	No
Full width Key USB, Greek	E4D	EK72 Both	Yes	No
Full width Key USB, Hebrew	E4D	EK73 Both	Yes	No
Full width Key USB, Polish	E4D	EK74 Both	Yes	No
Full width Key USB, Slovakian	E4D	EK75 Both	Yes	No
Full width Key USB, Czech	E4D	EK76 Both	Yes	No



Full width Key USB, Turkish	E4D	EK77	Both	Yes	No
Full width Key USB, LA Spanish	E4D	EK78	Both	Yes	No
Full width Key USB, Arabic	E4D	EK79	Both	Yes	No
Full width Key USB, Thai	E4D	EK80	Both	Yes	No
Full width Key USB, Russian	E4D	EK81	Both	Yes	No
Full width Key USB, Slovenian	E4D	EK82	Both	Yes	No
Full width Key USB, US English	E4D	EK83	Both	Yes	No
Power 720 AIX Solution Edition	E4D	ELB8	Initial	N/A	No
Trial Live Partition Mobility	E4D	ELPM	Both	Yes	No
Memory Riser Card	E4D	EM01	Both	Yes	No
8GB (2x4GB) Memory DIMMs 1066	E4D	EM08	Both	Yes	No
16GB (2x8GB) Memory DIMMs 1066	E4D	EM4B	Both	Yes	No
32GB (2x16GB) Mem DIMMs 1066	E4D	EM4C	Both	Yes	No
64GB (2x32GB) Mem DIMMs 1066	E4D	EM4D	Both	Yes	No
1m 10GbE Cable SFP+ Act Twinax	E4D	EN01	Both	Yes	No
3m 10GbE Cable SFP+ Act Twinax	E4D	EN02	Both	Yes	No
5m 10GbE Cable SFP+ Act Twinax	E4D	EN03	Both	Yes	No
PCIe x8 Cable 1.5m	E4D	EN05	Both	Yes	No
PCIe x8 Cable 3m	E4D	EN07	Both	Yes	No
PCIe2 16Gb 2-port Fibre Channe	E4D	EN0A	Both	Yes	No
PCIe2 LP 16Gb 2-port Fibre Cha	E4D	EN0B	Both	Yes	No
PCIe2 4-port 10Gb FCoE & 1GbE	E4D	EN0H	Both	Yes	No
PCIe2 LP 4-port 10Gb FCoE & 1G	E4D	EN0J	Both	Yes	No
PCIe2 LP 8Gb 4-port Fibre Chan	E4D	EN0Y	Both	Yes	No
4-core 3.6 GHz Proc. Module	E4D	EPCK	Both	No	No
6-core 3.6 GHz Proc. Module	E4D	EPCL	Both	No	No
8-core 3.6 GHz Proc. Module	E4D	EPCM	Both	No	No
One processor Activ for #EPCK	E4D	EPDK	Both	Yes	No
One processor Activ for #EPCL	E4D	EPDL	Both	Yes	No
One processor Activ for #EPCM	E4D	EPDM	Both	Yes	No
One Zero-priced Act for #EPCK	E4D	EPEK	Both	Yes	No
One Zero-priced Act for #EPCL	E4D	EPEL	Both	Yes	No
One Zero-priced Act for #EPCM	E4D	EPEM	Both	Yes	No
Quantity 150 of #3452 SAS Cabl	E4D	EQ02	Both	Yes	No
Quantity 150 of #3453 SAS YO	E4D	EQ03	Both	Yes	No
Quantity of 150 #ES0C	E4D	EQ0C	Both	Yes	No
Quantity of 150 #ES0D	E4D	EQ0D	Both	Yes	No

Quantity 150 of #1738	E4D	EQ38 Both	Yes	No
Quantity 150 of #1752	E4D	EQ52 Both	Yes	No
RFID Tags for Compute Nodes	E4D	ERF1 Initial	N/A	No
387GB 1.8" SAS SSD (AIX/Linux)	E4D	ES02 Both	Yes	No
387 GB 1.8 SSD for IBMi w/eMLC	E4D	ES04 Both	Yes	No
387GB SFF-1 SSD for AIX/Linux	E4D	ES0A Both	Yes	No
387GB SFF-1 SSD for IBMi	E4D	ES0B Both	Yes	No
387GB SFF-2 SSD for AIX/Linux	E4D	ES0C Both	Yes	No
387GB SFF-2 SSD for IBM i	E4D	ES0D Both	Yes	No
PCIe2 RAID SAS Adapter 6Gb	E4D	ESA1 Both	Yes	No
PCIe2 LP RAID SAS Adapter 6Gb	E4D	ESA2 Both	Yes	No
S&H - No Charge	E4D	ESC0 Initial	N/A	No
S&H-b	E4D	ESC6 Initial	N/A	No
Six ES02 387GB 1.8" SAS AIX/Li	E4D	ESR2 Initial	N/A	No
Six ES04 387 GB 1.8 SSD IBMi	E4D	ESR4 Initial	N/A	No
Four ES0A 387GB SFF-1 SSD AIX	E4D	ESRA Initial	N/A	No
Four ES0B 387GB SFF-1 SSD IBMi	E4D	ESRB Initial	N/A	No
Four ES0C387GB SFF-2 SSD AIX	E4D	ESRC Initial	N/A	No
Four ES0D 387GB SFF-2 SSD IBMi	E4D	ESRD Initial	N/A	No
1TB Removable Disk Cartridge	E4D	EU01 Both	Yes	No
RDX USB Internal Docking	E4D	EU03 Both	Yes	No
RDX USB External Docking	E4D	EU04 Both	Yes	No
RDX SATA Internal Docking	E4D	EU07 Both	Yes	No
RDX 320 GB Removable Disk Driv	E4D	EU08 Both	Yes	No
2.5/6.25TB LTO-6 SAS Tape Dr H	E4D	EU11 Both	Yes	No
1.5TB Removable Disk Cartridge	E4D	EU15 Both	Yes	No
80/160GB DAT160 USB Tape Drive	E4D	EU16 Both	Yes	No
2.5 TB LTO-6 Tape Cartridge	E4D	EU17 Both	Yes	No
5-Pack of #EU17	E4D	EU18 Both	Yes	No
Cognos on Power - Small	E4D	EU24 Initial	N/A	No
Cognos on Power - Large	E4D	EU25 Initial	N/A	No
Core Use HW Feature	E4D	EUC6 MES	Yes	No
Core Use HW Feature 10	E4D	EUC7 MES	Yes	No

### Type/Model Conversions

From Type	To Model	Parts Returned
8203	E4A 8202	E4D Yes

## Feature conversions

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### Feature conversions for 8202-E4D adapter features

From FC:	To FC:	Parts returned
2054 - PCIe RAID & SSD SAS Adapter 3Gb	2055 - PCIe RAID & SSD SAS Adapter 3Gb w/ Blind Swap Cassette	No
4807 - PCIe Crypto Coprocessor No BSC 4765-001	4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	No

### Feature conversions for 8202-E4D rack-related features

From FC:	To FC:	Parts returned
6246 - 1.8m Rack Trim Kit	6263 - 1.8m Rack Trim Kit	No
6247 - 2.0m Rack Trim Kit	6272 - 2.0m Rack Trim Kit	No

### Feature conversions for 8202-E4D virtualization engine features

From FC:	To FC:	Parts returned
5225 - PowerVM Express Edition	5227 - PowerVM Standard Edition	No
5225 - PowerVM Express Edition	5228 - PowerVM Enterprise Edition	No
5227 - PowerVM Standard Edition	5228 - PowerVM Enterprise Edition	No

### Feature conversions for 8203-E4A to 8202-E4D adapter features

From FC:	To FC:	Parts returned
4807 - PCIe Crypto Coprocessor No BSC 4765-001	4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	No
5903 - PCIe 380MB Cache Dual - x4 3Gb SAS RAID Adapter	5805 - PCIe 380MB Cache Dual - x4 3Gb SAS RAID Adapter	No
5904 - PCI-X DDR 1.5GB Cache SAS RAID Adapter	5908 - PCI-X DDR 1.5GB Cache SAS RAID Adapter (BSC)	No

### Feature conversions for 8203-E4A to 8202-E4D processor features

From FC:	To FC:	Parts returned
5577 - 2-core 4.7 GHz POWER6 Processor Card, 4 Memory DIMM Slots	EPCL - 6-core 3.6 GHz POWER7+ Processor Module	Yes
5587 - 4-core 4.7 GHz POWER6 Processor Card, 8 Memory DIMM Slots	EPCL - 6-core 3.6 GHz POWER7+ Processor Module	Yes
5634 - 2-core 4.2 GHz POWER6 Processor Card, 4 Memory DIMM Slots	EPCL - 6-core 3.6 GHz POWER7+ Processor Module	Yes
5635 - 4-core 4.2 GHz POWER6 Processor Card, 8 Memory DIMM Slots	EPCL - 6-core 3.6 GHz POWER7+ Processor Module	Yes
5577 - 2-core 4.7 GHz POWER6 Processor Card, 4 Memory DIMM Slots	EPCM - 8-core 3.6 GHz POWER7+ Processor Module	Yes
5587 - 4-core 4.7 GHz	EPCM - 8-core 3.6 GHz	Yes

POWER6 Processor Card, 8 Memory DIMM Slots	POWER7+ Processor Module	
5634 - 2-core 4.2 GHz	EPCM - 8-core 3.6 GHz	Yes
POWER6 Processor Card, 4 Memory DIMM Slots	POWER7+ Processor Module	
5635 - 4-core 4.2 GHz	EPCM - 8-core 3.6 GHz	Yes
POWER6 Processor Card, 8 Memory DIMM Slots	POWER7+ Processor Module	

### **Feature conversions for 8203-E4A to 8202-E4D rack-related features**

From FC:	To FC:	Parts returned
6246 - 1.8m Rack Trim Kit	6263 - 1.8m Rack Trim Kit	No

### **Feature conversions for 8203-E4A to 8202-E4D virtualization engine features**

From FC:	To FC:	Parts returned
7983 - PowerVM Express	5225 - PowerVM Express Edition	No
8506 - PowerVM Standard	5227 - PowerVM Standard Edition	No
8507 - PowerVM Enterprise	5228 - PowerVM Enterprise Edition	No

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