

# IBM Power 740 Express server offers POWER7 technology and large-enterprise compute capability in a small form factor

## Table of contents

<a href="#">2 Overview</a>	<a href="#">32 Publications</a>
<a href="#">3 Key prerequisites</a>	<a href="#">33 Technical information</a>
<a href="#">4 Planned availability date</a>	<a href="#">48 Terms and conditions</a>
<a href="#">4 Description</a>	<a href="#">52 Pricing</a>
<a href="#">22 Statement of general direction</a>	<a href="#">53 AP distribution</a>
<a href="#">22 Product number</a>	

## At a glance



The Power® 740 offers large memory capacity, outstanding performance of the POWER7™ processor, PowerVM™, and workload-optimizing capabilities to enable companies to get the most out of their systems by increasing utilization and performance, helping to reduce infrastructure and energy costs.

- Powerful 64-bit POWER7 processors that offer 4-, 6-, 8-, 12-, and 16-core configuration options
- Tower or rack-mount configuration
- Up to 256 GB of memory with optional memory riser cards, optionally augmented with Active Memory™ Expansion
- Up to four optional PCIe I/O drawers, adding up to 40 PCIe slots, or up to eight optional PCI-X I/O drawers, adding up to 48 PCI-X slots
- Rich I/O options in the system unit:
  - Four PCIe slots in the system unit with an additional four PCIe Low Profile slots available as an option
  - Eight hard disk drive (HDD)/solid-state drive (SSD) SAS small form factor (SFF) bays -- up to 2.4 TB
  - Optional slimline DVD-RAM
  - Half-high bay for tape or removable drive
  - Integrated SAS/SATA controller for disk/SSD/DVD
  - Host Ethernet Adapters (four 1 Gb or two 10 Gb)
- EnergyScale™ technology

Businesses want systems that deliver outstanding performance but also demand those systems achieve higher levels of energy efficiency and utilization to help conserve energy and reduce infrastructure costs. The Power 740 Express® server is fueled by the outstanding performance of the POWER7 processor, making it possible for applications to run faster with fewer processors, which can result in lower per-core software licensing costs in some software. The Power 740 Express is designed with innovative workload-optimizing and energy-management technologies to help clients get the most out of their systems by enabling applications to run fast and energy efficiently to conserve energy and reduce infrastructure costs.

The Power 740 Express offers the performance, capacity, and configuration flexibility to meet the most demanding growth requirements and, combined with industrial-strength PowerVM virtualization for AIX®, IBM® i, and Linux®, can fully utilize the capability of the system. These capabilities are designed to satisfy even the most demanding processing environments and can deliver business advantages and higher client satisfaction.

The Power 740 Express tower and 4U rack-mount servers (8205-E6B) offer POWER7 64-bit processor modules in the following configurations:

- 4-core or 8-core 3.3 GHz
- 4-, 6-, 8-, or 12-core 3.7 GHz
- 16-core 3.55 GHz

The 4- or 8-core 3.7 GHz configuration (feature number 8347) is not available in China or Taiwan on the Power 740 Express server.

The Power 740 Express server supports a maximum of 32 DDR3 DIMM slots, with 8 DIMM slots included in the base configuration and 24 DIMM slots available with three optional memory riser cards. Memory features (two memory DIMMs per feature) supported are 8 GB and 16 GB running at speeds of 1066 MHz. A system with three optional memory riser cards installed has a maximum memory of 256 GB. Also, the optional Active Memory Expansion can allow the effective maximum memory capacity to be much larger than the true physical memory. Innovative compression/decompression of memory content using processor cycles can allow memory expansion up to 100%. A server with a maximum of 256 GB can effectively be expanded up to 512 GB. This can enhance virtualization and server consolidation by allowing 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 Power 740 Express server provides great I/O expandability. For example, with 12X-attached I/O drawers, you can have up to 48 PCI-X slots or up to 40 PCIe slots in addition to the PCI slots in the system unit. Using disk bays in the system unit, 12X #5802 I/O drawers and/or #5886 EXP 12S Disk Drawers, up to 416 disk drives can be attached. Extensive quantities of externally attached storage and tape drives and libraries can also be attached.

The Power 740 Express system offers two storage backplanes. The first supports up to six SFF SAS HDDs/SSDs, a SATA DVD, and a half-high tape drive. The second is a higher function backplane which supports up to eight SFF SAS disks/SSDs, a 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.

Also available in the Power 740 system unit is a choice of quad gigabit or dual 10 Gb integrated host Ethernet adapters. These native ports can be selected at the time of initial order. Virtualization of these integrated Ethernet adapters is supported.

Other integrated features include:

- Four or eight PCIe x8 expansion slots

- Four PCIe x8 expansion slots standard
- Four additional PCIe x8 Low Profile slots optional
- Two GX++ slots for 12X I/O loop or 4X connections
- Service Processor
- Integrated SAS/SATA controller for disk/SSD/DVD in system unit
- EnergyScale technology
- Two system ports and three USB ports
- Two hardware management console (HMC) ports and two SPCN ports
- Redundant and hot-swap power
- Redundant and hot-swap cooling

Also being announced on the IBM Power 750 Express server (8233-E8B) is the availability of the 3.55 GHz processor in 8-, 16- and 24-core configurations. These configurations will be available on September 17, 2010.

---

## Key prerequisites

---

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

- AIX Version 7.1, or later
- AIX Version 6.1 with the 6100-06 Technology Level, or later
- AIX Version 5.3 with the 5300-12 Technology Level and Service Pack 1, or later
- AIX Version 5.3 with the 5300-11 Technology Level and Service Pack 5, or later (planned availability: September 30, 2010)
- AIX Version 5.3 with the 5300-10 Technology Level and Service Pack 5, or later (planned availability: September 30, 2010)

**Note:** VIOS support requires VIOS 2.2 or later.

If installing IBM i:

- IBM i 6.1 with i 6.1.1 machine code, or later
- IBM i 7.1, or later

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

- SUSE Linux Enterprise Server 11 Service Pack 1 for the Power 740 Express Server, or later, with current maintenance updates available from Novell to enable all planned functionality
- SUSE Linux Enterprise Server 10 Service Pack 3 for the Power 740 Express Server, or later, with current maintenance updates available from Novell to enable all planned functionality
- Red Hat Enterprise Linux Version 5.5 for Power, or later

Users should also update their systems with the latest Linux for Power service and productivity tools available from IBM's Web site

<http://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/home.html>

If installing VIOS:

- VIOS 2.2, or later

If installing IBM Systems Director:

- IBM Systems Director Editions for Power Servers 6.2.0.1 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 potentially outstanding performance capabilities and most recent improvements of POWER7 technology, IBM recommends upgrading Java-based applications to Java 6 or Java 5 whenever possible.

For more information refer to the following Web site

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

Refer to the IBM Prerequisite Web site 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)

---

## Planned availability date

---

September 17, 2010, except for feature 2319, which is planned to be available on December 10, 2010.

---

## Description

---



---

### Power 740

---

Summary of standard features:

- Tower or rack-mount (4U) configuration
- One or two processor modules:
  - 1 or 2 x 4-core 3.3 GHz
  - 1 or 2 x 4-core 3.7 GHz
  - 1 or 2 x 6-core 3.7 GHz
  - 2 x 8-core 3.55 GHz
- 8 GB or 16 GB of 1066 MHz DDR3 ECC (error checking and correcting) memory, expandable to 256 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 HDD or SSDs (mixing allowed)
- Choice of three Host Ethernet Adapter (HEA) daughter cards:
  - Quad-port RJ45 1 Gb HEA (Copper)
  - Dual-port SFP+ 10 Gb HEA (Fiber SR)
  - Dual-port SFP+ 10 Gb HEA (Copper TwinAx)

- Two media bays:
  - One slim bay for an optional DVD-RAM
  - One half-high bay for an optional tape drive or removable disk
- A maximum of four PCIe x8 slots in base configuration:
  - Optional PCIe Riser Card that provides an additional four additional PCIe x8 Low Profile slots
  - Two GX++ slots for I/O loops available unless the PCIe Riser Card is installed in the system
- Integrated:
  - Service Processor
  - EnergyScale technology
  - Hot-swap and redundant cooling
  - Three USB ports; two system ports
  - Two HMC ports; two SPCN ports
- Two power supplies, 1725 Watt AC, hot-swap

The minimum Power 740 initial order must include a processor, processor activation(s), memory, two power supplies, two power cords, one HDD/SSD, a storage backplane, a Host Ethernet Adapter (HEA), 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 Indicator. A DVD is defaulted on every order but may be de-selected.

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

Feature number	Description
8353	0/4 core 3.3 GHz POWER7 Processor Module
4 x 8366	4 Processor Activations
4526	8 GB (2 x 4096 MB) Memory
1883	73.4 GB 15k SFF HDD
5618	Storage Backplane for 2.5-inch HDD or SSD/SATA DVD/Tape
1824	Quad-port RJ45 1 Gb HEA (Copper)
2 x 5603	Power Supply, 1725 watt AC, Base
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)
2 x 6xxx	Two Power Cords

**Note:** No internal HDD or SSD is required if feature 0837 (Boot from SAN) is selected. A Fibre Channel or Fibre Channel over Ethernet 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
8353	0/4 core 3.3 GHz POWER7 Processor Module
4 x 8366	4 Processor Activations
4526	8 GB (2 x 4096 MB) Memory
2 x 1884	69.7 GB 15K RPM SAS SFF HDD
5630	Storage Backplane for 2.5-inch HDD or SSD/SATA DVD/Tape/RAID/External SAS Port
1824	Quad-port 1 Gb RJ45 HEA (Copper)
2 x 5603	Power Supply, 1725 watt AC, Base
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
5550	System Console on HMC Indicator
2 x 6xxx	Two Power Cords

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

**Note:** When IBM i is the primary operating system (#2145) a DVD-ROM or DVD-RAM must be accessible by the Power 740.

## IBM Editions

---

IBM Editions are available only as initial order.

If you order a Power 740 Express server IBM Edition as defined below, you can qualify for half the initial configuration's processor core activations at no additional charge.

IBM Editions are not available in GCG.

The total memory (based on the number of cores) and the quantity and 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 a customer is entitled to a processor activation at no additional charge.

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

- One 3.3 GHz 4-core processor module (1 x #8353)
  - 2 x #8366 (chargeable) and 2 x #8369 (no-charge) with 4-core configuration
- Two 3.3 GHz 4-core processor modules (2 x #8353)
  - 4 x #8366 (chargeable) and 4 x #8369 (no-charge) with 8-core configuration
- One 3.7 GHz 4-core processor module (1 x #8347)
  - 2 x #8373 (chargeable) and 2 x #8374 (no-charge) with 4-core configuration
- Two 3.7 GHz 4-core processor modules (2 x #8347)
  - 4 x #8373 (chargeable) and 4 x #8374 (no-charge) with 8-core configuration
- One 3.7 GHz 6-core processor module (1 x #8354)
  - 3 x #8367 (chargeable) and 3 x #8370 (no-charge) with 6-core configuration
- Two 3.7 GHz 6-core processor modules (2 x #8354)
  - 6 x #8367 (chargeable) and 6 x #8370 (no-charge) with 12-core configuration
- Two 3.55 GHz 8-core processor modules (2 x #8355)
  - 8 x #8368 (chargeable) and 8 x #8371 (no-charge) with 16-core configuration

When you purchase an IBM Edition, you can purchase an AIX, IBM i, or Linux operating system license, or you may choose to purchase the system with no operating system. The AIX, IBM i, or Linux operating system is processed via a feature number on AIX 5.3, 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 5.3, 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/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 partners (SDIs) as MES orders.

## IBM Edition minimum memory definition details

A minimum of 4 GB memory per core is needed to qualify for the IBM Edition, except on the 6-core IBM Edition where there is effectively a 32 GB minimum memory requirement. For example, a 4-core minimum is 16 GB, a 6-core minimum is 32 GB, an 8-core minimum is 32 GB, and a 16-core minimum is 64 GB. There can be different valid memory configurations that meet the minimum requirement. However, 1 x 16 GB feature (#4529) is not allowed. This feature must always be ordered in pairs.

For example:

- 4-core (16 GB minimum) -- 2 x 8 GB (2 x 4 GB DIMMs) Memory (#4526)  
Also, 2 x 32 GB (2 x 8 GB DIMMs) Memory (#4529)
- 6-core (32 GB minimum) -- 4 x 8 GB (2 x 4 GB DIMMs) Memory (#4526)  
Also, 2 x 16 GB (2 x 8 GB DIMMs) Memory (#4529)
- 8-core (32 GB minimum)-- 4 x 8 GB (2 x 4 GB DIMMs) Memory (#4526)  
Also, 2 x 16 GB (2 x 8 GB DIMMs) Memory (#4529)
- 12-core (48 GB minimum) -- 6 x 8 GB (2 x 4 GB DIMMs) Memory (#4526)  
Also, 3 x 16 GB (2 x 8 GB DIMMs) Memory (#4529)
- 16-core (64 GB minimum)-- 8 x 8 GB (2 x 4 GB DIMMs) Memory (#4526)  
Also, 4 x 16 GB (2 x 8 GB DIMMs) Memory (#4529)

## Edition minimum Disk/SSD/Fibre Channel/FCoE definition details

- Minimum of two HDD, or two SSD, or two Fibre Channel adapters, or two FCoE adapters. You need to meet only one of these HDD/SSD/FC/FCoE criteria. Partial criteria cannot be combined.
  - Two SAS HDDs -- Any capacity drives located in the system unit, feature 5802 I/O drawer, or feature 5886 disk drawer qualify.
  - Two SAS SSDs -- Any capacity drives located in the system unit, feature 5802 I/O drawer, or feature 5886 disk drawer qualify.
  - Two SSD Modules with eMLC (#1995/#1996) -- Modules located in the system unit with #2053 or #2054, or in #5802/#5877 I/O drawer with #2055 qualify.
  - Two Fibre Channel adapters -- Fibre Channel adapters located in the system unit or PCIe 12X-attached I/O drawer qualify.
  - Two Fibre Channel over Ethernet adapters -- Either PCI-X or PCI-e adapters located in the system unit or 12X-attached I/O drawer qualify.

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

- 3.3 and 3.7 GHz 4-core processor modules
- 3.7 GHz 6-core processor module
- 3.55 GHz 8-core processor module

## IBM i Solution Edition for Power 740

---

The IBM i Solution Editions are designed to help you take advantage of the combined experience and expertise of IBM and independent software vendors (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 740 Solution Edition supports all processor configurations. For a list of participating ISVs, registration form, and additional details, visit the Solution Edition Web site at

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

The Power 740 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 740 Solution Edition order are:

- The offering must include new and/or upgrade software licenses and/or software maintenance from the ISV for the qualifying IBM server. Services and/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.

### **Dynamic logical partitioning**

---

The dynamic logical partitioning (LPAR) function provides enhanced resource management for the Power 740 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 allows 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 16 LPARs are supported in a 16-core Power 740. If the PowerVM Standard or Enterprise Edition feature is installed in the system, a maximum of 10 dynamic LPARs for each physical processor can be defined, with a system maximum of 160 dynamic LPARs.

An HMC or IVM is required to manage POWER7 processor-based servers implementing partitioning. Multiple POWER7 processor-based servers can be supported by a single HMC.

If an HMC is used to manage any POWER7 processor-based server, the HMC must be a CR3, or later, model rack-mount HMC or C05, or later, deskside HMC.

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 a CR3 model, or later, rack-mount or C06, or later, deskside.

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

Three optional PowerVM Edition features are now available on the Power 740: PowerVM Express Edition, PowerVM Standard Edition, and PowerVM Enterprise Edition. These are managed using built-in Integrated Virtualization Manager (IVM) software or optionally through use of an HMC.

PowerVM Standard Edition (#5227) and PowerVM Enterprise Edition (#5228) allow you to create partitions in units of less than 1 CPU (sub-CPU LPARs) and allow 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 10 partitions per processor, 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. When ordering feature number 5227 or 5228 as an MES, an activation key will be posted on an IBM Web site, and you must retrieve it and install it on the system.

The IBM Web site is

<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.

**Note:** PowerVM 2.1.2.11 with Fix Pack 22.1 and Service Pack 1, or later, and a supported AIX or Linux operating system level are minimum requirements for performing Live Partition Mobility functions on POWER7. Refer to the [Software requirements](#) section for more information on minimum AIX and Linux OS levels.

**Note:** Active Memory Sharing is planned to be supported with the availability of SLES 11 SP1.

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

By upgrading to PowerVM Standard or PowerVM Enterprise, users gain the ability to create up to 160 logical partitions on the Power System 740. Users also gain the ability to manage their PowerVM enabled machine with either an HMC or the Integrated Virtualization Manager.

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

### **Power 740 Capacity BackUp (CBU) capability**

(Applies to IBM i only)

The Power 740 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 5250 Enterprise Enablement 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. 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 5250 OLTP (Enterprise Enablement) 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 5250 Enterprise Enablement 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 systems are in deployment for the high-availability or disaster-recovery operation.

The primary system for a Power 740 (8205-E6B) server with its P20 software tier can be:

- Power 740: 8205-E6B
- Power 750: 8233-E8B
- Power 770: 9117-MMB
- Power 550: 9409-M50, 8204-E8A, 9406-550
- Power 560: 8234-EMA
- Power 570: 9406-MMA, 9117-MMA, 9406-570

These systems have IBM i software licenses with an IBM i P20 or P30 software tier. The primary machine must be in the same enterprise 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 5250 entitlements, you must have more than one 5250 Enterprise Enablement entitlement on the primary server and at least one 5250 Enterprise Enablement entitlement on the CBU system. You can then transfer the entitlements that are not required on the primary server during the time of transfer and that are above the minimum of one entitlement.

For example, if you have a 12-core Power 740 as your primary system with two IBM i processor license entitlements (five above the minimum) and two 5250 Enterprise Enablement entitlements (one above the minimum), you can temporarily transfer up to five IBM i entitlement and one 5250 Enterprise Enablement entitlement. During the temporary transfer, the CBU system's internal records of its total number of IBM i processor entitlements are not updated, and you may see IBM i license noncompliance warning messages from the CBU system.

Note that if the Power 740 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 processors 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**

---

Four 12X attached I/O drawers are supported on the Power 740, providing extensive capability to expand the overall server expandability and connectivity.

- Feature 5802 provides PCIe slots and SFF SAS disk slots.
- Feature 5877 provides PCIe slots.
- Feature 5796 provides PCI-X slots.
- The 7314-G30 provides 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 5886 EXP 12S holds 3.5-inch SAS disk or SSD.
- Feature 5786 EXP24 holds 3.5-inch SCSI disk (used for migrating existing SCSI drives).
- The 7031-D24 holds 3.5-inch SCSI disk (supported but not orderable).

### **TotalStorage® EXP24 Disk Drawer (#5786) (supported only -- not orderable)**

The TotalStorage EXP24 (#5786) is a 4 EIA unit drawer and mounts in a 19-inch rack. The front of the IBM TotalStorage EXP24 Ultra320 SCSI Expandable Storage Disk Enclosure has bays for up to 12 disk drives organized in two SCSI groups of up to six drives. The rear also has bays for up to 12 disk drives organized in two additional SCSI groups of up to six drives plus slots for the four SCSI interface cards. Each SCSI drive group can be connected by either a Single Bus Ultra320 SCSI Repeater Card (#5741) or a Dual Bus Ultra320 SCSI Repeater Card (#5742). This allows the EXP24 to be configured as four sets of six bays, two sets of 12 bays, or two sets of six bays plus one set of 12 bays.

The EXP24 feature 5786 has three cooling fans and two power supplies to provide redundant power and cooling. The SCSI disk drives contained in the EXP24 are controlled by PCI-X SCSI adapters connected to the EXP24 SCSI repeater cards via SCSI cables. The PCI-X adapters are located in the Power 740 system unit or in an attached I/O drawer with PCI-X slots.

The EXP24S SCSI Disk Drawer is an earlier technology drawer compared to the later SAS EXP 12S drawer. It is used to house the older SCSI disk drives that are supported but no longer orderable.

## **Feature number I/O drawers available for order on the Power 740**

---

### **PCI-X DDR 12X Expansion Drawer (#5796)**

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 8.8 inches 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. The client 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 740 uses the GX++ Dual-port 12x Channel Attach (#5615) 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 and considerations as feature 5796.

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

This feature provides 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, feature 5802 provides up to 5.4 TB of storage.

The 18 disk bays can be organized into either one group of 18 bays (AIX/Linux), two groups of nine slots (AIX/IBM i/Linux), or four groups of four or five bays (AIX/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 Gen 3 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 740 uses the GX++ Dual-port 12x Channel Attach (#5615) adapter to attach a feature 5802 12X I/O Drawer. The feature 5615 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 Gen 3 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 740 uses the GX++ Dual-port 12x Channel Attach (#5615) adapter to attach a feature 5877 12X I/O Drawer. Feature 5615 provides double data rate (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)**

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 SSD. 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 SSD contained in the EXP 12S are controlled by one or two PCIe or PCI-X SAS adapters connected to the EXP 12S via SAS cables. The SAS cable will vary, depending upon the adapter being used, the operating system being used, and the protection desired.

- The large-cache PCI-X feature 5904/5908 uses a SAS Y cable when a single port is running the EXP 12S. A SAS X cable is used when a pair of adapters are used for controller redundancy.
- The medium-cache PCI-X feature 5902 and PCIe feature 5903 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 EXP 12S. A SAS X cable is used for AIX/Linux environments when a pair of adapters are 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 EXP 12S 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 740, providing a very low-cost disk-storage solution. When used this way, the imbedded SAS controllers in the system unit drive the disk drives in EXP 12S. A second unit cannot be cascaded to a feature 5886 attached in this way.

## **19-inch racks**

---

The Model 8205-E6B and its I/O drawers are designed to mount in the 25U 7014-S25 (#0555), 36U 7014-T00 (#0551), or 42U 7014-T42 (#0553) rack. These racks are built to the 19-inch EIA standard. When you order a new 8205 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 8205-E6B 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)**

The 1.3-Meter Rack (#0555) is a 25 EIA unit rack. The rack is the same rack delivered when you order the 7014-S25 rack.

### **1.8-Meter Rack (#0551)**

The 1.8-Meter Rack (#0551) is a 36 EIA unit rack. The rack that is delivered as feature 0551 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)**

The 2.0-Meter Rack (#0553) is a 42 EIA unit tall rack. The rack that is 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**

---

IBM offers a portfolio of integration, configuration, and customization services for IBM Power Systems™. These Deployment-ready Services are designed to accelerate 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
- Customer-specified placement

### Asset tagging

- Standard tagging Radio Frequency Item Device (RFID)

### Special packaging

- Box consolidation

### System customization

- Remote access partitioning and customization of operating system or firmware

For more information on Deployment-ready Services, refer to

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

## **Reliability, Availability, and Serviceability (RAS) features**

---

### ***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 provides 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 provided via hardware RAID adapters.

The Journalled File System, also known as JFS or JFS2, helps maintain file system consistency and reduces the likelihood of data loss when the system is abnormally halted due to a power failure. JFS, the recommended file system for 32-bit kernels, now supports extents on the Linux operating system. This feature is designed to reduce or eliminate fragmentation. Its successor, JFS2, is the recommended file system for 64-bit kernels.

With 64-bit addressing, a maximum file system size of 32 TB, and a maximum file size of 16 TB, JFS2 is highly recommended for systems running the AIX operating system.

### ***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***

- When a POWER7 processor-based system is initially powered on, BIST and POST (power-on self-test) check processor, cache, memory, and associated hardware required for proper booting of the operating system. If a noncritical error is detected or if the errors occur in resources that can be removed from the system configuration, the restarting process is designed to proceed to completion. The errors are logged in the system nonvolatile RAM (NVRAM).
- Disk drive fault tracking is designed to alert the system administrator of an impending disk drive failure before it impacts your 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 is designed to notify the operating system and the operating system can take appropriate action, including calling for service.

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

POWER7-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, the POWER7 processor has the ability to do processor instruction retry and alternate processor recovery for a number of core-related faults. This is designed to 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 will

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 prior to 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, POWER7 processors have the ability to 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 provides single processor checkstopping. This is designed to reduce the probability of a fault in 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 Power processor-based line of servers continues to be at the forefront of cache availability enhancements. The L3 cache is now integrated on the POWER7 processor. The POWER7 processor provides both L2 and L3 cache line delete functions.

### **Special uncorrectable error handling**

Special uncorrectable error (SUE) handling was an IBM innovation introduced for POWER5™ processors, where an uncorrectable error in memory or cache does not immediately cause 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 checkstop.

### **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 had the capability 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), and while maintaining high customer satisfaction. Serviceability includes system installation, MES (system upgrades and downgrades), and system maintenance and repair. Depending upon the system and warranty contract, service may be performed by the customer, 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 Customer Set Up (CSU), Customer Installed Features (CIF), and Customer Replaceable Units (CRUs)
- 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 systems or full-system partitions using a GUI or command-line interface (CLI). An HMC attached to the system allows 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 provides some of the functions provided by the HMC.

## **Service Interface**

The Service Interface allows 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 allows 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 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 and Error Data Analysis**

First Failure Data Capture (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:

- Provide a common error code format equivalent to a system reference code, system reference number, checkpoint, or firmware error code.
- Provide fault detection and problem isolation procedures. Support remote connection ability to be used by the IBM Remote Support Center or IBM Designated Service.
- Provide 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:

- Applying compact 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, PCI adapters, 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 screwdrivers 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, thumb-screws, 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. Customer 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.

### ***Service Processor***

The Service Processor provides the capability 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 customer location to the 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-managed or 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***

Electronic Service Agent and the IBM Electronic Services Web portal comprise the IBM Electronic Services solution -- dedicated to providing fast, exceptional support to IBM customers. 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 you focus on your company's 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 customer-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 your staff and the IBM support team. As part of an increased focus to provide even better service, Electronic Service Agent tool configuration and activation comes standard with the system. In support of this effort, a new HMC External Connectivity security whitepaper 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 of 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 24 x 7 monitoring and reporting means no more dependency on human intervention or off-hours customer personnel when errors are encountered in the middle of the night.

**Security:** Electronic Service Agent is highly 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 you a single point of exit from your site. Communication between you and IBM flows only one way; activating Service Agent does not enable IBM to call into your system. System inventory information is stored in a secure database, which is protected behind IBM firewalls. Your 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, you 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 Web site.

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 users 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 your 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 are able to 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 Web site or contact an IBM Systems Services Representative

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

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

---

A U.S. 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)

---

## Statement of general direction

---

On Power 740 servers, IBM plans to support the following AIX technology levels:

- AIX V6.1 with the 6100-05 Technology Level and Service Pack 3, or later
- AIX V6.1 with the 6100-04 Technology Level and Service Pack 7, or later
- AIX V6.1 with the 6100-03 Technology Level and Service Pack 7, or later

Red Hat intends for the upcoming release of Red Hat Enterprise Linux 6 to support the latest POWER7 models, Power 710, 720, 730, 740, and 795.

IBM is pursuing Energy Star computer server qualification for certain configurations of the Power 740 Express Server.

IBM intends to offer a DC power supply on the Power 750 in fourth quarter 2010. IBM also intends to complete conformance testing of the Power 750, and the BladeCenter® PS700, PS701, and PS702 to Network Equipment-Building System (NEBS) Level 3 and ETSI in fourth quarter 2010.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchase 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 remain at our sole discretion.

---

## Product number

---

The following are newly announced features on the specific models of the IBM Power Systems 8205 machine type:

Description	MT	Model	Feature
IBM Power 740	8205	E6B	
Specify Code for External High Speed Modem	8205	E6B	0032
Mirrored System Disk Level, Specify Code	8205	E6B	0040
Device Parity Protection-All, Specify Code	8205	E6B	0041
Mirrored System Bus Level, Specify Code	8205	E6B	0043
Device Parity RAID-6 All, Specify Code	8205	E6B	0047
RISC-to-RISC Data Migration	8205	E6B	0205
AIX Partition Specify	8205	E6B	0265
Linux Partition Specify	8205	E6B	0266
IBM i Operating System Partition Specify	8205	E6B	0267
CSC Specify	8205	E6B	0275
Specify Custom Data Protection	8205	E6B	0296
Mirrored Level System Specify Code	8205	E6B	0308
RAID Hot Spare Specify	8205	E6B	0347
V.24/EIA232 6.1m (20-Ft) PCI Cable	8205	E6B	0348
V.24/EIA232 15.2m (50-Ft) PCI Cable	8205	E6B	0349
V.35 6.1m (20-Ft) PCI Cable	8205	E6B	0353
V.35 15.2m (50-Ft) PCI Cable	8205	E6B	0354
V.36 6.1m (20-Ft) PCI Cable	8205	E6B	0356
X.21 6.1m (20-Ft) PCI Cable	8205	E6B	0359
X.21 15.2m (50-Ft) PCI Cable	8205	E6B	0360
V.24/EIA232 (80-Ft) PCI Cable	8205	E6B	0365
CBU Specify	8205	E6B	0444
Customer Specified Placement	8205	E6B	0456

SSD Placement Indicator - CEC	8205	E6B	0462
SSD Placement Indicator (5802/5803)	8205	E6B	0463
SSD Placement Indicator - 5886	8205	E6B	0464
19 inch, 1.8 meter high rack	8205	E6B	0551
19 inch, 2.0 meter high rack	8205	E6B	0553
19 inch, 1.3 meter high rack	8205	E6B	0555
IBM i 6.1 with 6.1.1 Machine Code Specify Code	8205	E6B	0566
IBM i 7.1 Specify Code	8205	E6B	0567
Rack Filler Panel Kit	8205	E6B	0599
Balanced Warehouse Solution Indicator	8205	E6B	0710
Load Source Not in CEC	8205	E6B	0719
#1996 Load Source Specify	8205	E6B	0724
Specify Load Source in #5802/5803	8205	E6B	0726
Specify #5886 Load Source placement	8205	E6B	0727
#4326 Load Source Specify	8205	E6B	0834
#4327 Load Source Specify	8205	E6B	0835
#4328 Load Source Specify	8205	E6B	0836
SAN Load Source Specify	8205	E6B	0837
#3676 Load Source Specify	8205	E6B	0838
#3677 Load Source Specify	8205	E6B	0839
#3678 Load Source Specify	8205	E6B	0840
#4329 Load Source Specify	8205	E6B	0841
#3658 Load Source Specify	8205	E6B	0844
#1884 Load Source Specify	8205	E6B	0851
#1888 Load Source Specify	8205	E6B	0853
#1909 Load Source Specify	8205	E6B	0854
#3587 Load Source Specify	8205	E6B	0855
#1911 Load Source Specify	8205	E6B	0856
US TAA Compliance Indicator	8205	E6B	0983
Modem Cable - Australia	8205	E6B	1019
Modem Cable - HK/NZ	8205	E6B	1020
Modem Cable - US/Canada and General Use	8205	E6B	1025
USB Internal Docking Station for Removable Disk Drive	8205	E6B	1103
USB External Docking Station for Removable Disk Drive	8205	E6B	1104
USB 160 GB Removable Disk Drive	8205	E6B	1106
USB 500 GB Removable Disk Drive	8205	E6B	1107
Juniper EXP4200 Ethernet Switch	8205	E6B	1108
CAT5E Ethernet Cable, 3M BLUE	8205	E6B	1111
CAT5E Ethernet Cable, 10M BLUE	8205	E6B	1112
Smart Analytics System routing indicator	8205	E6B	1114
CAT5E Ethernet Cable, 3M GREEN	8205	E6B	1115
CAT5E Ethernet Cable, 10M GREEN	8205	E6B	1116
CAT5E Ethernet Cable, 3M YELLOW	8205	E6B	1118
CAT5E Ethernet Cable, 10M YELLOW	8205	E6B	1119
Integrated Storage Controller	8205	E6B	1135
1-meter Cable for EXP4500 Switch	8205	E6B	1141
3-meter Cable for EXP4500 Switch	8205	E6B	1143
Juniper EXP4500 10 Gb Ethernet Switch	8205	E6B	1145
4.3m 200V/16A Power Cord CHINA	8205	E6B	1396
200V 16A 4.3m (14-Ft) TL Line Cord	8205	E6B	1406
4.3m 200V/16A Power Cord AU/NZ	8205	E6B	1409
125V 4.3m (14-Ft) Line Cord	8205	E6B	1413
200V 1.8m (6-Ft) Locking Line Cord	8205	E6B	1414
200V 1.8m (6-Ft) Watertight Line Cord	8205	E6B	1415
200V 4.3m (14-Ft) watertight Line Cord	8205	E6B	1417

4.3m 200V/16A Power Cord S. Africa	8205	E6B	1418
4.3m 200V/16A Power Cord Israel	8205	E6B	1419
4.3m 200V/16A Power Cord EU/Asia	8205	E6B	1420
4.3m 200V/16A Power Cord CH/DK	8205	E6B	1421
200V 4.3m (14-Ft) Locking Line Cord	8205	E6B	1426
200V 4.3m (14-Ft) Watertight Line Cord	8205	E6B	1427
4.3m 200V/10A Power Cord AU/NZ	8205	E6B	1438
4.3m 200V/10A Power Cord EU/Asia	8205	E6B	1439
4.3m 200V/10A Power Cord Denmark	8205	E6B	1440
4.3m 200V/10A Power Cord S. Africa	8205	E6B	1441
4.3m 200V/10A Power Cord Swiss	8205	E6B	1442
4.3m 200V/10A Power Cord UK	8205	E6B	1443
4.3m 200V/10A Power Cord Israel	8205	E6B	1445
4.3m 200V/30A Power Cord Korea	8205	E6B	1446
4.3m 200V/30A Power Cord AU	8205	E6B	1447
4.3m 200V/30A Power Cord NZ	8205	E6B	1448
4.3m 200V/32A Power Cord EU 1-PH	8205	E6B	1449
4.3m 200V/16A Power Cord EU 2-PH	8205	E6B	1450
200V (6-Ft) 1.8m Line Cord	8205	E6B	1451
200V (14-Ft) 4.3m Line Cord	8205	E6B	1452
200V (6-Ft) 1.8m Locking Line Cord	8205	E6B	1453
200V 12A (14-Ft) 4.3m TL Line Cord	8205	E6B	1454
200V (6-Ft) 1.8m Watertight Line Cord	8205	E6B	1455
200V (14-Ft) 4.3m Watertight Line Cord	8205	E6B	1456
4.3m 200V/12A Pwr Cd UK	8205	E6B	1476
4.3m 200V/16A Pwr Cd	8205	E6B	1477
Quad-port 1 Gb HEA Daughter Card	8205	E6B	1824
Dual-port 10 Gb HEA Daughter Card (Fiber)	8205	E6B	1825
Dual-port 10 Gb HEA Daughter Card (Copper)	8205	E6B	1826
System port/UPS Conversion Cable	8205	E6B	1827
1.5 Meter 12X to 4X Channel Conversion Cable	8205	E6B	1828
0.6 Meter 12X Cable	8205	E6B	1829
1.5 Meter 12X cable	8205	E6B	1830
8.0 Meter 12X Cable	8205	E6B	1834
3.0 Meter 12X Cable	8205	E6B	1840
3 Meter 12X to 4X Channel Conversion Cable	8205	E6B	1841
10 Meter 12X to 4X Enhanced Channel Conversion Cable	8205	E6B	1854
0.6 Meter 12X DDR Cable	8205	E6B	1861
1.5 Meter 12X DDR Cable	8205	E6B	1862
8.0 Meter 12X DDR Cable	8205	E6B	1864
3.0 Meter 12X DDR Cable	8205	E6B	1865
146.8GB 10K RPM SAS SFF Disk Drive	8205	E6B	1882
73.4 GB 15K RPM SAS SFF Disk Drive	8205	E6B	1883
69.7 GB 15K RPM SAS SFF Disk Drive	8205	E6B	1884
300GB 10K RPM SFF SAS Disk Drive	8205	E6B	1885
146GB 15K RPM SFF SAS Disk Drive	8205	E6B	1886
139GB 15K RPM SFF SAS Disk Drive	8205	E6B	1888
69GB SFF SAS Solid State Drive	8205	E6B	1890
4 GB Single-Port Fibre Channel PCI-X 2.0 DDR Adapter	8205	E6B	1905
69GB SFF SAS Solid State Drive	8205	E6B	1909
4 GB Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter	8205	E6B	1910
283GB 10K RPM SFF SAS Disk Drive (IBM i)	8205	E6B	1911
PCI-X DDR Dual Channel Ultra320 SCSI Adapter	8205	E6B	1912
4-Port 10/100/1000 Base-TX PCI-X Adapter	8205	E6B	1954
73.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly	8205	E6B	1971
146.8 GB 15,000 RPM Ultra320 SCSI Disk Drive			



Assembly	8205	E6B	1972
2 Gigabit Fibre Channel PCI-X Adapter	8205	E6B	1977
IBM Gigabit Ethernet-SX PCI-X Adapter	8205	E6B	1978
IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	8205	E6B	1979
POWER GXT135P Graphics Accelerator with Digital Support	8205	E6B	1980
IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	8205	E6B	1983
1 Gigabit iSCSI TOE PCI-X on Copper Media Adapter	8205	E6B	1986
1 Gigabit iSCSI TOE PCI-X on Optical Media Adapter	8205	E6B	1987
177GB SSD Module with eMLC (AIX/Linux)	8205	E6B	1995
177GB SSD Module with eMLC (IBM i)	8205	E6B	1996
PCIe LP RAID & SSD SAS Adapter 3Gb	8205	E6B	2053
PCIe RAID & SSD SAS Adapter 3Gb	8205	E6B	2054
PCIe RAID & SSD SAS Adapter 3Gb w/ Blind Swap Cassette	8205	E6B	2055
Converter Cable, VHDCI to P, Mini-68 pin to 68 pin, 0.3M	8205	E6B	2118
Ultra 320 SCSI Cable 1 Meter	8205	E6B	2124
Ultra 320 SCSI Cable 3 Meter	8205	E6B	2125
Ultra 320 SCSI Cable 5 Meter	8205	E6B	2126
Ultra 320 SCSI Cable 10 Meter	8205	E6B	2127
Ultra 320 SCSI Cable 20 Meter	8205	E6B	2128
0.55 Meter Ultra 320 SCSI Cable	8205	E6B	2138
Primary OS - IBM i	8205	E6B	2145
Primary OS - AIX	8205	E6B	2146
Primary OS - Linux	8205	E6B	2147
Factory Deconfiguration of 1-core	8205	E6B	2319
2M LC-SC 50 Micron Fiber Converter Cable	8205	E6B	2456
2M LC-SC 62.5 Micron Fiber Converter Cable	8205	E6B	2459
4 port USB PCIe Adapter	8205	E6B	2728
2-Port USB PCI Adapter	8205	E6B	2738
POWER GXT135P Graphics Accelerator with Digital Support	8205	E6B	2849
ARTIC960Hx 4-Port EIA-232 Cable	8205	E6B	2861
ARTIC960Hx 4-Port X.21 Cable	8205	E6B	2863
ARTIC960Hx 4-Port V.35 (DTE) Cable	8205	E6B	2864
PCIe 2-Line WAN w/Modem	8205	E6B	2893
PCIe 2-Line WAN w/Modem CIM	8205	E6B	2894
3M Asynchronous Terminal/Printer Cable EIA-232	8205	E6B	2934
Asynchronous Cable EIA-232/V.24 3M	8205	E6B	2936
8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus	8205	E6B	2943
IBM ARTIC960Hx 4-Port Multiprotocol PCI Adapter	8205	E6B	2947
Cable, V.24 / EIA-232	8205	E6B	2951
Cable, V.35	8205	E6B	2952
Cable, V.36 / EIA-499	8205	E6B	2953
Cable, X.21	8205	E6B	2954
2-Port Multiprotocol PCI Adapter	8205	E6B	2962
Serial-to-Serial Port Cable for Drawer/Drawer-3.7M	8205	E6B	3124
Serial-to-Serial Port Cable for Rack/Rack- 8M	8205	E6B	3125
73.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly	8205	E6B	3278
146.8 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly	8205	E6B	3279
300 GB 15K RPM SCSI Disk Drive	8205	E6B	3585
69GB 3.5" SAS Solid State Drive	8205	E6B	3586
69GB 3.5" SAS Solid State Drive	8205	E6B	3587
Widescreen LCD Monitor	8205	E6B	3632
IBM T541H /L150p 15" TFT Color Monitor	8205	E6B	3637
IBM ThinkVision® L170p Flat Panel Monitor	8205	E6B	3639
ThinkVision L171p Flat Panel Monitor	8205	E6B	3640
IBM T115 Flat Panel Monitor	8205	E6B	3641
ThinkVision L191p Flat Panel Monitor	8205	E6B	3642
IBM T120 Flat Panel Monitor	8205	E6B	3643
IBM T119 Flat Panel Monitor	8205	E6B	3644
IBM T117 Flat Panel Monitor	8205	E6B	3645
73GB 15K RPM SAS Disk Drive	8205	E6B	3646
146GB 15K RPM SAS Disk Drive	8205	E6B	3647
300GB 15K RPM SAS Disk Drive	8205	E6B	3648

450GB 15K RPM SAS Disk Drive	8205	E6B	3649
SAS Cable (EE) Drawer to Drawer 1M	8205	E6B	3652
SAS Cable (EE) Drawer to Drawer 3M	8205	E6B	3653
SAS Cable (EE) Drawer to Drawer 6M	8205	E6B	3654
SAS SFF Cable	8205	E6B	3656
428GB 15K RPM SAS Disk Drive	8205	E6B	3658
SAS Cable (X) Adapter to SAS Enclosure, Dual Controller/Dual Path 3M:	8205	E6B	3661
SAS Cable (X) Adapter to SAS Enclosure, Dual Controller/Dual Path 6M:	8205	E6B	3662
SAS Cable (X) Adapter to SAS Enclosure, Dual Controller/Dual Path 15M:	8205	E6B	3663
69.7GB 15k rpm SAS Disk Drive	8205	E6B	3676
139.5GB 15k rpm SAS Disk Drive	8205	E6B	3677
283.7GB 15k rpm SAS Disk Drive	8205	E6B	3678
SAS Cable (AI)- Adapter to Internal drive 1M	8205	E6B	3679
3M SAS CABLE, ADPTR TO ADPTR (AA)	8205	E6B	3681
6M SAS CABLE, ADPTR TO ADPTR (AA)	8205	E6B	3682
SAS Cable (AE) Adapter to Enclosure, single controller/single path 3M	8205	E6B	3684
SAS Cable (AE) Adapter to Enclosure, single controller/single path 6M	8205	E6B	3685
SAS Cable (YI) System to SAS Enclosure, Single Controller/Dual Path 1.5M	8205	E6B	3686
SAS Cable (YI) System to SAS Enclosure, Single Controller/Dual Path 3M	8205	E6B	3687
SAS Cable (AT) 0.6 Meter	8205	E6B	3688
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 1.5 M	8205	E6B	3691
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 3 M	8205	E6B	3692
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 6 M	8205	E6B	3693
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 15 M	8205	E6B	3694
0.3M Serial Port Converter Cable, 9-Pin to 25-Pin	8205	E6B	3925
Asynch Printer/Terminal Cable, 9-pin to 25-pin, 4M	8205	E6B	3926
Serial Port Null Modem Cable, 9-pin to 9-pin, 3.7M	8205	E6B	3927
Serial Port Null Modem Cable, 9-pin to 9-pin, 10M	8205	E6B	3928
System Serial Port Converter Cable	8205	E6B	3930
1.8 M (6-ft) Extender Cable for Displays (15-pin D-shell to 15-pin D-shell)	8205	E6B	4242
Extender Cable - USB Keyboards, 1.8M	8205	E6B	4256
VGA to DVI Connection Converter	8205	E6B	4276
70.56GB 15k rpm Disk Unit	8205	E6B	4327
141.12GB 15k rpm Disk Unit	8205	E6B	4328
282.25GB 15k rpm Disk Unit	8205	E6B	4329
Package 5X #2055 & 20X #1995 (AIX/Linux)	8205	E6B	4367
Package 5X #2055 & 20X #1996 (IBM i)	8205	E6B	4377
8GB (2x4GB) Memory DIMMs, 1066 MHZ, 2Gb DDR3 DRAM	8205	E6B	4526
16GB (2x8GB) Memory DIMMs, 1066 MHZ, 2Gb DDR3 DRAM	8205	E6B	4529
Rack Indicator- Not Factory Integrated	8205	E6B	4650
Rack Indicator, Rack #1	8205	E6B	4651
Rack Indicator, Rack #2	8205	E6B	4652
Rack Indicator, Rack #3	8205	E6B	4653
Rack Indicator, Rack #4	8205	E6B	4654
Rack Indicator, Rack #5	8205	E6B	4655
Rack Indicator, Rack #6	8205	E6B	4656
Rack Indicator, Rack #7	8205	E6B	4657
Rack Indicator, Rack #8	8205	E6B	4658
Rack Indicator, Rack #9	8205	E6B	4659
Rack Indicator, Rack #10	8205	E6B	4660
Rack Indicator, Rack #11	8205	E6B	4661
Rack Indicator, Rack #12	8205	E6B	4662
Rack Indicator, Rack #13	8205	E6B	4663
Rack Indicator, Rack #14	8205	E6B	4664
Rack Indicator, Rack #15	8205	E6B	4665
Rack Indicator, Rack #16	8205	E6B	4666
PCI-X Cryptographic Coprocessor (FIPS 4)	8205	E6B	4764
Power Active Memory Expansion Enablement	8205	E6B	4794
PCIe Crypto Coprocessor No BSC 4765-001	8205	E6B	4807

PCIe Crypto Coprocessor Gen3 BSC 4765-001	8205	E6B	4808
One Processor of 5250 Enterprise Enablement	8205	E6B	4970
Power 740 Solution Edition for IBM i	8205	E6B	4972
One Processor of 5250 Enterprise Enablement for Solution Edition	8205	E6B	4973
Full 5250 Enterprise Enablement	8205	E6B	4974
Software Preload Required	8205	E6B	5000
Power Dist Unit 1 Phase NEMA	8205	E6B	5160
Power Dist Unit 1 Phase IEC	8205	E6B	5161
Power Dist Unit 2 of 3 Phase	8205	E6B	5162
Power Dist Unit - 3 Phase	8205	E6B	5163
PowerVM Express Edition	8205	E6B	5225
PowerVM Standard Edition	8205	E6B	5227
PowerVM Enterprise Edition	8205	E6B	5228
PCIe LP POWER GXT145 Graphics Accelerator	8205	E6B	5269
PCIe LP 10Gb FCoE 2-port Adapter	8205	E6B	5270
PCIe LP 4-Port 10/100/1000 Base-TX Ethernet Adapter	8205	E6B	5271
PCIe LP 10GbE CX4 1-port Adapter	8205	E6B	5272
PCIe LP 8Gb 2-Port Fibre Channel Adapter	8205	E6B	5273
PCIe LP 2-Port 1GbE SX Adapter	8205	E6B	5274
PCIe LP 10GbE SR 1-port Adapter	8205	E6B	5275
PCIe LP 4Gb 2-Port Fibre Channel Adapter	8205	E6B	5276
PCIe LP 4-Port Async EIA-232 Adapter	8205	E6B	5277
PCIe LP 2-x4-port SAS Adapter 3Gb	8205	E6B	5278
RFID TAGS FOR SERVERS, BLADES, BLADECENTERS, RACKS, AND HMCS	8205	E6B	5524
Sys Console On HMC	8205	E6B	5550
Sys Console-Ethernet No IOP	8205	E6B	5553
System AC Power Supply, 1725 W	8205	E6B	5603
Memory Riser Card	8205	E6B	5604
PCIe Riser Card (Gen1)	8205	E6B	5610
GX++ Dual-port 12x Channel Attach	8205	E6B	5615
Storage Backplane -- 6 SFF Bays/ SATA DVD/HH Tape 80/160GB DAT160 SAS Tape Drive	8205	E6B	5618
Storage Backplane -- 8 SFF Bays/175MB RAID/Dual IOA	8205	E6B	5630
Split Drive Bay Capability for #5618	8205	E6B	5631
1.5TB/3.0TB LTO-5 SAS Tape Drive	8205	E6B	5638
DAT320 160/320 GB Tape Drive	8205	E6B	5661
DAT320 160 GB USB Tape Drive	8205	E6B	5673
DAT160 Data Cartridge	8205	E6B	5689
IBM Gigabit Ethernet-SX PCI-X Adapter	8205	E6B	5700
IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	8205	E6B	5701
IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	8205	E6B	5706
10Gb FCoE PCIe Dual Port Adapter	8205	E6B	5708
1 Gigabit iSCSI TOE PCI-X on Copper Media Adapter	8205	E6B	5713
1 Gigabit iSCSI TOE PCI-X on Optical Media Adapter	8205	E6B	5714
2 Gigabit Fibre Channel PCI-X Adapter	8205	E6B	5716
4-Port 10/100/1000 Base-TX PCI Express Adapter	8205	E6B	5717
10 Gb Ethernet-SR PCI-X 2.0 DDR Adapter	8205	E6B	5721
10 Gb Ethernet-LR PCI-X 2.0 DDR Adapter	8205	E6B	5722
2-Port Asynchronous EIA-232 PCI Adapter	8205	E6B	5723
10 Gigabit Ethernet-CX4 PCI Express Adapter	8205	E6B	5732
8 Gigabit PCI Express Dual Port Fibre Channel Adapter	8205	E6B	5735
PCI-X DDR Dual Channel Ultra320 SCSI Adapter	8205	E6B	5736
4-Port 10/100/1000 Base-TX PCI-X Adapter	8205	E6B	5740
IBM Single Bus Ultra 320 SCSI Repeater Card	8205	E6B	5741
IBM Dual Bus Ultra 320 SCSI Repeater Card	8205	E6B	5742
Half High 800GB/1.6TB LTO4 SAS Tape Drive	8205	E6B	5746
IBM LTO Ultrium 4 800 GB Data Cartridge	8205	E6B	5747
POWER GXT145 PCI Express Graphics Accelerator	8205	E6B	5748
4Gbps Fibre Channel (2-Port)	8205	E6B	5749
4 GB Single-Port Fibre Channel PCI-X 2.0 DDR Adapter	8205	E6B	5758
4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter	8205	E6B	5759
SATA Slimline DVD-RAM Drive	8205	E6B	5762
2-Port 10/100/1000 Base-TX Ethernet PCI Express Adapter	8205	E6B	5767

2-Port Gigabit Ethernet-SX PCI Express Adapter	8205	E6B	5768
10 Gigabit Ethernet-SR PCI Express Adapter	8205	E6B	5769
10 Gigabit Ethernet-LR PCI Express Adapter	8205	E6B	5772
4 Gigabit PCI Express Single Port Fibre Channel Adapter	8205	E6B	5773
4 Gigabit PCI Express Dual Port Fibre Channel Adapter	8205	E6B	5774
PCI-X EXP24 Ctl-1.5GB No IOP	8205	E6B	5782
4 Port Async EIA-232 PCIE Adapter	8205	E6B	5785
TotalStorage EXP24 Disk Dwr	8205	E6B	5786
TotalStorage EXP24 Disk Twr	8205	E6B	5787
PCI-DDR 12X Expansion Drawer	8205	E6B	5796
12X I/O Drawer PCIE, SFF disk	8205	E6B	5802
PCIE 380MB Cache Dual - x4 3Gb SAS RAID Adapter	8205	E6B	5805
12X I/O Drawer PCIE, No Disk	8205	E6B	5877
EXP 12S Expansion Drawer	8205	E6B	5886
PCI-X DDR Dual -x4 SAS Adapter	8205	E6B	5900
PCIE Dual-x4 SAS Adapter	8205	E6B	5901
PCI-X DDR Dual - x4 3Gb SAS RAID Adapter	8205	E6B	5902
PCI-X DDR 1.5GB Cache SAS RAID Adapter (BSC)	8205	E6B	5908
PCI-X DDR Dual - x4 SAS Adapter	8205	E6B	5912
Non-paired SAS RAID indicator	8205	E6B	5922
Non-paired PCIE SAS RAID Indicator	8205	E6B	5923
Full width Keyboard -- USB, US English, #103P	8205	E6B	5951
Full width Keyboard -- USB, French, #189	8205	E6B	5952
Full width Keyboard -- USB, Italian, #142	8205	E6B	5953
Full width Keyboard -- USB, German/Austrian, #129	8205	E6B	5954
Full width Keyboard -- USB, UK English, #166P	8205	E6B	5955
Full width Keyboard -- USB, Spanish, #172	8205	E6B	5956
Full width Keyboard -- USB, Japanese, #194	8205	E6B	5957
Full width Keyboard -- USB, Brazilian Portuguese, #275	8205	E6B	5958
Full width Keyboard -- USB, Hungarian, #208	8205	E6B	5959
Full width Keyboard -- USB, Korean, #413	8205	E6B	5960
Full width Keyboard -- USB, Chinese, #467	8205	E6B	5961
Full width Keyboard -- USB, French Canadian, #445	8205	E6B	5962
Full width Keyboard -- USB, Belgian/UK, #120	8205	E6B	5964
Full width Keyboard -- USB, Swedish/Finnish, #153	8205	E6B	5965
Full width Keyboard -- USB, Danish, #159	8205	E6B	5966
Full width Keyboard -- USB, Bulgarian, #442	8205	E6B	5967
Full width Keyboard -- USB, Swiss/French/German, #150	8205	E6B	5968
Full width Keyboard -- USB, Norwegian, #155	8205	E6B	5969
Full width Keyboard -- USB, Dutch, #143	8205	E6B	5970
Full width Keyboard -- USB, Portuguese, #163	8205	E6B	5971
Full width Keyboard -- USB, Greek, #319	8205	E6B	5972
Full width Keyboard -- USB, Hebrew, #212	8205	E6B	5973
Full width Keyboard -- USB, Polish, #214	8205	E6B	5974
Full width Keyboard -- USB, Slovakian, #245	8205	E6B	5975
Full width Keyboard -- USB, Czech, #243	8205	E6B	5976
Full width Keyboard -- USB, Turkish, #179	8205	E6B	5977
Full width Keyboard -- USB, LA Spanish, #171	8205	E6B	5978
Full width Keyboard -- USB, Arabic, #253	8205	E6B	5979
Full width Keyboard -- USB, Thai, #191	8205	E6B	5980
Full width Keyboard -- USB, Russian, #443	8205	E6B	5981
Full width Keyboard -- USB, Slovenian, #234	8205	E6B	5982
Full width Keyboard -- USB, US English Euro, #103P	8205	E6B	5983
Power Control Cable (SPCN) - 2 meter	8205	E6B	6001
Power Control Cable (SPCN) - 3 meter	8205	E6B	6006
Power Control Cable (SPCN) - 15 meter	8205	E6B	6007
Power Control Cable (SPCN) - 6 meter	8205	E6B	6008
Power Control Cable (SPCN) - 30 meter	8205	E6B	6029
Opt Front Door for 1.8m Rack	8205	E6B	6068
Opt Front Door for 2.0m Rack	8205	E6B	6069
1.8m Rack Acoustic Doors	8205	E6B	6248
2.0m Rack Acoustic Doors	8205	E6B	6249
1.8m Rack Trim Kit	8205	E6B	6263
2.0m Rack Trim Kit	8205	E6B	6272
Dual-port 12X Channel Interface Attach - Short Run	8205	E6B	6446
Dual-port 12X Channel Interface Attach- Long Run	8205	E6B	6457
Power Cable -- Drawer to IBM PDU, 14-foot, 250V/10A	8205	E6B	6458

Power Cord 4.3m (14-ft), Drawer To OEM PDU (125V, 15A)	8205	E6B	6460
Power Cord 4.3m (14-foot), Drawer to OEM PDU, (250V, 15A), U. S.	8205	E6B	6469
Power Cord 1.8m(6-foot), To wall (125V, 15A)	8205	E6B	6470
Power Cord 2.7m (9-foot), To wall/OEM PDU, (125V, 15A)	8205	E6B	6471
Power Cord 2.7m (9-foot), To wall/OEM PDU, (250V, 16A)	8205	E6B	6472
Power Cord 2.7m (9-foot), To wall/OEM PDU, (250V, 10A)	8205	E6B	6473
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 13A)	8205	E6B	6474
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 16A)	8205	E6B	6475
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 10A)	8205	E6B	6476
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 16A)	8205	E6B	6477
Power Cord 2.7 M(9-foot), To wall/OEM PDU, (250V, 16A)	8205	E6B	6478
Power Cord (9-foot) , To wall/OEM PDU, (250V, 10A)	8205	E6B	6479
Power Cord 1.8M (6-foot),To wall, (250V, 15A), United States	8205	E6B	6487
Power Cord 2.7M (9-foot), To wall/OEM PDU, (125V, 15A or 250V, 10A)	8205	E6B	6488
4.3m (14-Ft) 3PH/24A Power Cord	8205	E6B	6489
4.3m (14-Ft) 1PH/48A Pwr Cord	8205	E6B	6491
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 10A)	8205	E6B	6493
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 10A)	8205	E6B	6494
Power Cord (9-foot), To wall/OEM PDU, (250V, 10A)	8205	E6B	6495
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 10A)	8205	E6B	6496
Power Cord (6-foot), To wall/OEM PDU, (250V, 10A)	8205	E6B	6497
Power Cord (6-foot), To wall/OEM PDU, (250V, 15A)	8205	E6B	6498
Power Cable - Drawer to IBM PDU, 200-240V/10A	8205	E6B	6577
Optional Rack Security Kit	8205	E6B	6580
Modem Tray for 19-Inch Rack	8205	E6B	6586
Power Cord 2.7M (9-foot), To wall/OEM PDU, (125V, 15A)	8205	E6B	6651
4.3m (14-Ft) 1PH/24-30A WR Pwr Cord	8205	E6B	6655
4.3m (14-Ft)1PH/24A Power Cord	8205	E6B	6656
4.3m (14-Ft) 1PH/24A Power Cord	8205	E6B	6657
4.3m (14-Ft) 1PH/24A Pwr Cd-Korea	8205	E6B	6658
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 15A)	8205	E6B	6659
Power Cord (14-foot), Drawer To OEM PDU (125V, 15A)	8205	E6B	6660
4.3m (14-Ft) 240V/15A Power Cord	8205	E6B	6662
4.3m (14-Ft) 240V/15A Power Cord	8205	E6B	6663
Power Cord 3 M (10 ft), Drawer to IBM PDU, 250V/10A	8205	E6B	6665
Power Cord 4.3M (14-foot), Drawer to OEM PDU, (250V, 15A)	8205	E6B	6669
Power Cord (6-foot), To wall (125V, 15A),	8205	E6B	6670
Power Cord 2.7M (9-foot), Drawer to IBM PDU, 250V/10A	8205	E6B	6671
Power Cord 1.5M (5-foot), Drawer to IBM PDU, 250V/10A	8205	E6B	6672
Power Cord 2.7M (9-foot), To wall/OEM PDU, (250V, 10A)	8205	E6B	6680
4.3m (14-Ft) 200-240V/10A Pwr Cord	8205	E6B	6681

Power Cord (6-foot), To Wall, (250V, 15A)	8205	E6B	6687
4.3m (14-Ft) 200-240V/12A Pwr Cord	8205	E6B	6691
4.3m (14-Ft) 200-240V/10A Pwr Cord	8205	E6B	6692
PCI 2-Line WAN IOA No IOP	8205	E6B	6805
PCI 4-Modem WAN IOA No IOP	8205	E6B	6808
PCI 4-Modm WAN IOA NoIOP CIM	8205	E6B	6809
PCI 2-Line WAN w/Modem NoIOP	8205	E6B	6833
PCI 2-Ln WAN w/Mod NoIOP CIM	8205	E6B	6834
Intelligent PDU+, 1 EIA Unit, Universal UTG0247 Connector	8205	E6B	7109
Environmental Monitoring Probe	8205	E6B	7118
IBM Rack-mount Drawer Bezel and Hardware	8205	E6B	7131
OEM Rack-mount Drawer Bezel and Hardware	8205	E6B	7132
IBM/OEM Rack-mount Drawer Rail Kit	8205	E6B	7145
Power Distribution Unit	8205	E6B	7188
Quantity 150 of #2124	8205	E6B	7204
Quantity 150 of #2125	8205	E6B	7205
Quantity 150 of #2126	8205	E6B	7206
Quantity 150 of #2127	8205	E6B	7207
Quantity 150 of #2128	8205	E6B	7208
Quantity 150 of #2138	8205	E6B	7213
Dual I/O Unit Enclosure	8205	E6B	7311
I/O Drawer Mounting Enclosure	8205	E6B	7314
Quantity 150 of #4327	8205	E6B	7509
Quantity 150 of #4328	8205	E6B	7510
Quantity 150 of #4329	8205	E6B	7511
Quantity 150 of #3676	8205	E6B	7517
Quantity 150 of #3677	8205	E6B	7518
Quantity 150 of #3678	8205	E6B	7519
Quantity 150 of #3586	8205	E6B	7535
Quantity 150 of #3587	8205	E6B	7536
Quantity 150 of #3658	8205	E6B	7538
Quantity 150 of #1884	8205	E6B	7543
Quantity 150 of #3647	8205	E6B	7549
Quantity 150 of #3648	8205	E6B	7564
Quantity 150 of #3649	8205	E6B	7565
IBM Tower Cover Set (with door)	8205	E6B	7572
OEM Tower Cover Set (with door)	8205	E6B	7573
2.0m Rack Side Attach Kit	8205	E6B	7780
Ethernet Cable, 6M, Hardware Management Console to System Unit	8205	E6B	7801
Ethernet Cable, 15m, Hardware Management Console to System Unit	8205	E6B	7802
Side-by-Side for 1.8m Racks	8205	E6B	7840
Ruggedize Rack Kit	8205	E6B	7841
Linux Software Preinstall	8205	E6B	8143
Linux Software Preinstall (Business Partners)	8205	E6B	8144
4-core 3.7 GHZ POWER7 Processor Module	8205	E6B	8347
4-core 3.3 GHZ POWER7 Processor Module	8205	E6B	8353
6-core 3.7 GHZ POWER7 Processor Module	8205	E6B	8354
8-core 3.55 GHZ POWER7 Processor Module	8205	E6B	8355
One Processor Activation for Processor Feature #8353	8205	E6B	8366
One Processor Activation for Processor Feature #8354	8205	E6B	8367
One Processor Activation for Processor Feature #8355	8205	E6B	8368
Zero-priced Processor Activation for #8353	8205	E6B	8369
Zero-priced Processor Activation for #8354	8205	E6B	8370
Zero-priced Processor Activation for #8355	8205	E6B	8371
One Processor Activation for Processor Feature #8347	8205	E6B	8373
Zero-priced Processor Activation for #8347	8205	E6B	8374

Mouse - USB, with Keyboard Attachment Cable	8205	E6B	8841
USB Mouse	8205	E6B	8845
Order Routing Indicator- System Plant	8205	E6B	9169
Language Group Specify - US English	8205	E6B	9300
New AIX License Core Counter	8205	E6B	9440
New IBM i License Core Counter	8205	E6B	9441
New Red Hat License Core Counter	8205	E6B	9442
New SUSE License Core Counter	8205	E6B	9443
Other AIX License Core Counter	8205	E6B	9444
Other Linux License Core Counter	8205	E6B	9445
3rd Party Linux License Core Counter	8205	E6B	9446
VIOS Core Counter	8205	E6B	9447
Month Indicator	8205	E6B	9461
Day Indicator	8205	E6B	9462
Hour Indicator	8205	E6B	9463
Minute Indicator	8205	E6B	9464
Qty Indicator	8205	E6B	9465
Countable Member Indicator	8205	E6B	9466
Language Group Specify - Dutch	8205	E6B	9700
Language Group Specify - French	8205	E6B	9703
Language Group Specify - German	8205	E6B	9704
Language Group Specify - Polish	8205	E6B	9705
Language Group Specify - Norwegian	8205	E6B	9706
Language Group Specify - Portuguese	8205	E6B	9707
Language Group Specify - Spanish	8205	E6B	9708
Language Group Specify - Italian	8205	E6B	9711
Language Group Specify - Canadian French	8205	E6B	9712
Language Group Specify - Japanese	8205	E6B	9714
Language Group Specify - Traditional Chinese (Taiwan)	8205	E6B	9715
Language Group Specify - Korean	8205	E6B	9716
Language Group Specify - Turkish	8205	E6B	9718
Language Group Specify - Hungarian	8205	E6B	9719
Language Group Specify - Slovakian	8205	E6B	9720
Language Group Specify - Russian	8205	E6B	9721
Language Group Specify - Simplified Chinese (PRC)	8205	E6B	9722
Language Group Specify - Czech	8205	E6B	9724
Language Group Specify -- Romanian	8205	E6B	9725
Language Group Specify - Croatian	8205	E6B	9726
Language Group Specify -- Slovenian	8205	E6B	9727
Language Group Specify - Brazilian Portuguese	8205	E6B	9728
Language Group Specify - Thai	8205	E6B	9729

The following are newly announced features on the specific models of the IBM Power Systems 7014 machine type:

Description	MT	Model	Feature
Rack Content Specify: 8205-E6B -- 4U	7014	B42 S25 T00 T42	0299
Rack Content Specify, Juniper EX4500 Switch	7014	T42	0388
Rack Content Specify, Switch Network			
Documentation Drawer	7014	T42	0389
Rack Content Specify, DS3500 Storage Drawer	7014	T42	0390

### Feature Conversions

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 8205-E6B adapters features**

Return

From feature:	To feature:	parts
4807 - PCIe Crypto Coprocessor No BSC 4765-001	4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	No

### **Feature conversions for 8205-E6B virtualization engine features**

From feature:	To feature:	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

---

## **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 at

<http://publib.boulder.ibm.com/infocenter/systems/scope/hw/index.jsp>

Product documentation is also available on DVD, SK5T-7087.

The following information is shipped with the 8205-E6B.

8205-E6B Service DVD	SK5T-7087-04
Installation Road Map	
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>

Visit the IBM System Support Site, which contains the documentation for the hardware

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

The IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. The IBM Systems Information Center

<http://publib14.boulder.ibm.com/infocenter/systems>

### **IBM Publications Center Portal**



---

<http://www.ibm.com/shop/publications/order>

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.

---

## Services

---

### Global Technology Services

---

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.

---

## Technical information

---

### Specified operating environment

---

#### *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)

#### *Operating environment*

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

- Temperature (operating): 10 to 35 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 feature #5638 1.5TB/3.0TB LTO-5 SAS Tape Drive

- 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: 200 to 240 V ac
- Operating frequency: 47/63 Hz
- Maximum measured power consumption: 1400 watts (maximum)
- Power factor: 0.98
- Thermal output: 4,778 Btu/hour (maximum)
- Power-source loading
  - 1.428 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: 6.3 bels
- Rack-mount system: 6.5 bels

**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.

- U.S.: 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 U.K. Telecom regulatory authority.

#### **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).

### **Systems**

- Product category: C
- Power consumption in active mode: 291 watts
- Base processor configuration Composite Theoretical Performance (CTP): 146,300 MTOPs (4-core 3.3 GHz processor)
- WT:
  - 0.0317 4-core POWER7 3.3 GHz
  - 0.0358 4-core POWER7 3.7 GHz
  - 0.0544 6-core POWER7 3.7 GHz
  - 0.0634 8-core POWER7 3.3 GHz
  - 0.0716 8-core POWER7 3.7 GHz
  - 0.1088 12-core POWER7 3.7 GHz
  - 0.1365 16-core POWER7 3.55 GHz

WT is Weighted Teraflops, which is based on the number of floating point operations the processor can perform in a cycle.

### **Hardware requirements**

**Power 740 minimum system configuration:** The Power 740 offers 4-, 6-, 8-, 12-, and 16-core configurations with one processor module. The system can contain up to 256 GB of system memory (64 GB maximum per memory riser card), four 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 740.

Each Power 740 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, #6487-#6494, #6496, #6577, #6580, #6651, #6653-#6660, #6665, #6669, #6671, #6672, #6680)
  - One Language Group Specify (#9300 or #97xx)
- Choose one or two processor modules from:
  - 1 or 2 x 4-core 3.3 GHz POWER7 processor module (#8353)
  - 1 or 2 x 4-core 3.7 GHz POWER7 processor module (#8347)
  - 1 or 2 x 6-core 3.7 GHz POWER7 processor module (#8354)
  - 2 x 8-core 3.55 GHz POWER7 processor module (#8355)

**Note:** If two processor modules are ordered they must be the same feature number.

- Choose processor activations from:
  - 4 x #8366, or 2 x #8366 and 2 x #8369 with each processor module #8353
  - 4 x #8373, or 2 x #8373 and 2 x #8374 with each processor module #8347
  - 6 x #8367, or 3 x #8367 and 3 x #8370 with each processor module #8354
  - 8 x #8368, or 4 x #8368 and 4 x #8371 with each processor module #8355

### **Notes:**

- Features 8369, 8370, 8371, and 8374 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 (#4526)
  - 16 GB (2 x 8 GB) Memory DIMMs, 1066 MHz, DDR3 (#4529)
- 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 (#5630)
- Choose HEA daughter card from:
  - Quad-port RJ45 1 Gb HEA (Copper) (#1824)
  - Dual-port SFP+ 10 Gb HEA (Fiber SR) (#1825)
  - Dual-port SFP+ 10 Gb HEA (Copper TwinAx) (#1826)
- Choose HDD/SSD from:
  - 73.4 GB SAS SFF HDD 15,000 RPM (#1883) (AIX/Linux/VIOS)
  - 146.8 GB SAS SFF HDD 15,000 RPM (#1886) (AIX/Linux/VIOS)
  - 300 GB SAS SFF HDD 15,000 RPM (#1885) (AIX/Linux/VIOS)
  - 69.7 GB SAS SFF HDD 15,000 RPM (#1884) (IBM i)
  - 139.5 GB SAS SFF HDD 15,000 RPM (#1888) (IBM i)
  - 283 GB SAS SFF HDD 10,000 RPM (#1911) (IBM i)
  - 69 GB SAS SFF Solid State Drive (#1890) (AIX/Linux/VIOS)
  - 69 GB SAS SFF Solid State Drive (#1909) (IBM i)
  - 177 GB SAS 1.8" Solid State Drive (#1995) (AIX/Linux/VIOS)
  - 177 GB SAS 1.8" Solid State Drive (#1996) (IBM i)

**Note:** #1995 and #1996 require feature #2053, #2054, or #2055.

**Notes:**

- When feature 2145, IBM i, is selected, a minimum of two HDD/SSD are required.
- No internal HDD/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.
- Two 1725 watt AC Power Supplies (2 x #5603)
- Choose Cover Set from:
  - IBM Tower cover set (#7572)
  - OEM Tower cover set (#7573)
  - IBM Rack-mount Drawer Bezel and Hardware (#7131)
  - OEM Rack-mount Drawer Bezel and Hardware (#7132)
- 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. Three additional memory riser card features (#5604) can be ordered.

**RAID:**

There are multiple protection options for HDD/SSD drives in the SAS SFF bays in the Power 740 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 740 system unit and is indicated by feature 5618 and provides support for JBOD and RAID 0. Feature 5618 is optionally augmented by RAID 10 when feature 5631 is added to the configuration. For even more function, feature 5630 can be used instead of feature 5618 or 5618+5631. Feature 5630 provides JBOD, 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 & 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 Version 7.1, or later
- AIX Version 6.1 with the 6100-06 Technology Level, or later
- AIX Version 5.3 with the 5300-12 Technology Level and Service Pack 1, or later
- AIX Version 5.3 with the 5300-11 Technology Level and Service Pack 5, or later (planned availability: September 30, 2010)
- AIX Version 5.3 with the 5300-10 Technology Level and Service Pack 5, or later (planned availability: September 30, 2010)

**Note:** VIOS support requires VIOS 2.2 or later.

If installing IBM i:

- IBM i 6.1 with i 6.1.1 machine code, or later
- IBM i 7.1, or later

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

- SUSE Linux Enterprise Server 11 Service Pack 1 for the Power 740 Express Server, or later, with current maintenance updates available from Novell to enable all planned functionality
- SUSE Linux Enterprise Server 10 Service Pack 3 for the Power 740 Express Server, or later, with current maintenance updates available from Novell to enable all planned functionality
- Red Hat Enterprise Linux Version 5.5 for Power, or later

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

<http://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/home.html>

If installing VIOS:

- VIOS 2.2, or later

If installing IBM Systems Director:

- IBM Systems Director Editions for Power Servers 6.2.0.1 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, IBM recommends upgrading Java-based applications to 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 Web site 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 POWER7 processor-based servers implementing partitioning. Multiple POWER7 processor-based servers can be supported by a single HMC.

If an HMC is used to manage any POWER7 processor-based server, the HMC must be a CR3, or later model rack-mount HMC or C05, or later deskside HMC.

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.

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 a CR3 model, or later rack-mount or C06, or later deskside.

## 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:
  - #0724 -- #1996 (177 GB 1.8" SSD) Load Source Specify
  - #0726 -- Remote Load Source Specify in #5886
  - #0727 -- Remote Load Source Specify in #5802/#5803
  - #0835 -- #4327 (70.56 GB 15K RPM HDD) Load Source Specify
  - #0836 -- #4328 (141.12 GB 15K RPM HDD) Load Source Specify
  - #0838 -- #3676 (69.7 GB 15K RPM HDD) Load Source Specify
  - #0839 -- #3677 (139.5 GB 15K RPM HDD) Load Source Specify
  - #0840 -- #3678 (283.7 GB 15K RPM HDD) Load Source Specify
  - #0841 -- #4329 (282.25 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 (138 GB 15K RPM SFF HDD) Load Source Specify
  - #0854 -- #1909 (69 GB SFF SSD) Load Source Specify
  - #0855 -- #3586 (69 GB SSD) Load Source Specify
  - #0856 -- #1911 (283 GB 10K RPM SFF HDD) 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:
  - #0725 -- Remote Load Source in #5786 or #5787 TotalStorage EXP24 Expansion Drawer/Tower
  - #0726 -- Remote Load Source in #5802 12X I/O Drawer PCIe, SFF Disk
  - #0727 -- Remote Load Source in #5886 EXP 12S Expansion 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
  - #5553 -- System Console - Internal LAN

## Processor modules

- A minimum of one processor module is required on an order with 4, 6, or 8 processor cores on the processor module. A maximum of two processor modules is allowed on an order. A quantity of one or two of processor module feature #8347, #8353, or #8354 can be ordered. Two of processor module feature #8355 can be ordered.
- Processor module features may not be mixed in the system.
- All processors must be fully activated.
  - The 4-core 3.3 GHz processor module (#8353) requires that four processor activation codes be ordered. A maximum of four processor activation code features (4 x #8366, or 2 x #8366 and 2 x #8369) is allowed per processor module.
  - The 4-core 3.7 GHz processor module (#8347) requires that four processor activation codes be ordered. A maximum of four processor activation code features (4 x #8373, or 2 x #8373 and 2 x #8374) is allowed per processor module.
  - The 6-core 3.7 GHz processor module (#8354) requires that six processor activation codes be ordered. A maximum of six processor activation code features (6 x #8367, or 3 x #8367 and 3 x #8370) is allowed per processor module.

- The 8-core 3.55 GHz processor module (#8355) requires that eight processor activation codes be ordered. A maximum of eight processor activation code features (8 x #8368, or 4 x #8368 and 4 x #8371) is allowed per processor module.

## Power supply

The base machine contains two 1725 watt AC power supplies (2 x #5603).

## Redundant fans

Redundant fans are standard

## Power cords

Two power cords are required.

The Power 740 requires 200-240 V for all configurations.

## System memory

- A minimum 8 GB or two DIMMs of memory is required on the Power 740 system.
- The base machine contains one nonfeaturized memory riser card with eight DIMM sockets. Memory features consume two memory DIMM sockets.
- One additional memory riser card feature (1 x #5604) with an additional eight DIMM sockets is available when one processor module is installed in the system (1 x #8353/#8347/#8354). Three optional memory riser card features (3 x #5604) with an additional eight DIMM sockets per feature are available when two processor modules are installed in the system (2 x #8353/#8347/#8354/#8355). Maximum system memory is 64 GB without feature #5604 and 256 GB with 3 x #5604.
- A system can be ordered with a single memory feature #4526. When adding additional memory to a system with 1 x #4526, a second 1 x #4526 must be ordered, and then all memory must be ordered in increments of 2 x #4526.
- A system can not be ordered with a single memory feature #4529. All #4529 memory must be ordered in quantity of 2 x #4529.
- Feature #4526 and feature #4529 are allowed on the same memory riser card as long as memory DIMMs are installed in quads (2 x #4526 or 2 x #4529).
- 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)	4526	0	16
16 GB 1066 MHz (2 x 8 GB RDIMMs)	4529	0	16

## Drawer/Tower attachment

- 7314-G30 (#5796) PCIX Expansion Drawer
  - A maximum of four drawers per GX++ adapter (#5615 or follow-ons) or per 12X loop is allowed.
  - A maximum of two GX++ adapters on the Power 740 is allowed.



- The system maximum is eight.
- 7031-D24/T24 (#5786/#5787) EXP4 SCSI DASD Drawer/Tower
  - EXP24 drawers/towers are attached to a PCI-X SCSI adapter via one or more SCSI cables.
  - The system maximum is 14.
- Feature number 5886 EXP 12S SAS DASD Expansion Drawer
  - Feature number 5630 supports one feature number 5886 drawer directly off the system unit's SAS port.
  - EXP 12S drawers are attached to a PCI-X or PCIe SAS adapter via SAS cables.
  - The system maximum is 28.
- 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 four is supported on the Power 740.
  - No mixing of features 5802 and 5877 is allowed with other drawers on the same loop.

The following list shows I/O drawers that are supported or available on the 8205 machine type and the correct interface to use for each of the drawers.

Feature	Description	Order status	Interface
5786	EXP24 SCSI Disk Drawer	Supported	SCSI
5787	EXP24 SCSI Disk Tower	Supported	SCSI
5796	PCI-X DDR 12X Exp Drawer	Available	12X
5802	PCIe 12X I/O Drawer (w/Disk Bays)	Available	12X
5877	PCIe 12X I/O Drawer (No Disk Bays)	Available	12X
5886	Exp 12S SAS Disk Drawer	Available	SAS
7031-D24/T24	EXP24 SCSI Disk Drawer/Tower	Supported	SCSI
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 740 (16-core)			
	O/S	AIX	Linux	IBM i
5786	14	14	14	14
5787	14	14	14	14
5796	8	8	8	8
5802	4	4	4	4
5877	4	4	4	4
5886	28	28	28	28
7031-D24	14	14	14	14
7031-T24	14	14	14	14
7214-1U2	6	6	6	6
7314-G30	8	8	8	8

I/O drawers are connected to the adapters in the CEC with the following cables:

- Data transfer cables:
  - 12X DDR cables for the feature 5802 and 5877 I/O drawers
  - 12X SDR or DDR cables for the feature 5796 and 7314-G30 I/O drawers
- Power control cables

12X I/O drawer cable connections are always made in loops to help protect against a single point-of-failure resulting from an open, missing, or disconnected cable. A system with nonlooped configurations could experience degraded performance and serviceability. If a nonloop connection is detected, a problem is reported.

The first 12X I/O drawer attached in any I/O drawer loop requires two data transfer cables. Each additional drawer in the loop (up to the maximum allowed) requires one additional data transfer cable.

The first 12X I/O drawer attached to a system unit requires two power control cables. Each additional I/O drawer added to a system requires one additional power control cable. Each system has one power control loop. All I/O drawers attached to a system are included in the same power control loop. Power control cable loops are different in this regard from data transfer cable loops.

### Dual-Port 12X Adapter options

Dual-Port 12X Channel Attach Adapter (#6446): Use the short run adapter for feature 5796 or 7314-G30 expansion I/O drawers located in close proximity to the host system or to other drawers in the I/O expansion loop. This adapter does not include signal repeaters.

Dual-Port 12X Channel Attach Adapter (#6457): Use the long run adapter for feature 5796 or 7314-G30 expansion I/O drawers located farther from the host system or other I/O drawers in the I/O expansion loop. This adapter includes signal repeaters to accommodate the longer cable lengths.

### 12X cable choice

Each feature 5796 or 7314-G30 12X drawer requires one Dual-Port 12X Channel Adapter, either Short Run (#6446) or Long Run (#6457). The choice of adapters is dependent on the distance to the next 12X Channel connection in the loop, to either another I/O drawer or the system unit. The following table identifies the supported cable lengths for each 12X Channel adapter. I/O drawers containing the Short Run adapter can be mixed in a single loop with I/O drawers containing the Long Run adapter. In this table, a "Yes" indicates that the 12X cable identified in that column can be used to connect the drawer configuration identified to the left. A "No" means it cannot be used. The 12X DDR or SDR cables can be used with the feature 5796 or 7314-G30.

	12X cable options			
	0.6 M	1.5 M	3.0 M	8.0 M
	(#1829) (1)	(#1830) (1)	(#1840) (2)	(#1834) (3)
12X DDR	(#1861) (1)	(#1862) (1)	(#1865) (2)	(#1864) (3)
5796 to 5796 w/12X Short Run adapter (#6446) in both drawers	Yes	Yes	No	No
5796 w/ 12X Short Run adapter (#6446) to 5796 w/ 12X Long Run adapter (#6457)	Yes	Yes	Yes	No
5796 to 5796 w/12X Long Run adapter (#6457) in both drawers	Yes	Yes	Yes	Yes
5796 w/12X short Run adapter (#6446) to system unit	No	Yes	Yes	No
5796 w/12X Long Run adapter (#6457) to system unit	No	Yes	Yes	Yes

**Note 1:** The 0.6M and 1.5M 12X cables (#1829/#1830 or #1861/#1862) have very limited use due to their short length. They cannot be used to connect to a system

drawer because of the short length. They are intended for use between two feature 5796 or 7314-G30 drawers mounted side by side in the same enclosure (#7314). They can also be used to connect two modules located one beneath the other in a 19-inch rack.

**Note 2:** It is possible in some limited configurations to use the 3.0 Meter 12X cable (#1840 or #1865) to locate 5796 modules in adjacent racks. The cable length requires careful management of each drawer location within the rack. The best choice for connecting a feature 5796 or G30 I/O Drawer in an adjacent rack is the 8.0 Meter 12X cable (#1834 or #1864).

**Note 3:** The 8.0 Meter 12X cable (#1834 or #1864) is intended for use when connecting between two modules that are located in adjacent racks. This cable may not be connected to the 12X Short Run adapter (#6446).

## PCI card slots

The Power 740 contains four full-height, short, 8x, PCIe slots. An optional PCIe Adapter Riser Card feature #5610 adds four short, 8x, PCIe Low Profile slots.

- Two GX++ slots are available. When #5610 is installed in the system, one GX++ slot is unavailable. Feature #5615 can be installed in the GX++ slots.

**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 740 CEC is four. Not supported under IBM i.

## I/O adapters

- Host Ethernet Adapter features (#1824, #1825, and #1826) are not plugged into a slot, leaving the slots available for PCIe adapters and GX++ adapters.
- All Low Profile adapters can be installed in PCIe Adapter Riser Card feature #5610.
- 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	LP
PCIe RAID & SSD SAS	2054		2	2	Short
PCIe RAID & SSD SAS w/ BSC	2055		0	20	Short
4-port USB PCIe	2728		4	44	Short
2-port USB PCI		2738	0	48	Short
8-port Asynchronous EIA-232		2943	0	32	Short
4-port ARTIC960HX		2947	0	48	Long
2-port Multiprotocol		2962	0	48	Short
GXT135P Graphics Accelerator		2849/1980	0	8	Short
PCIe 2-Line WAN w/Modem	2893		4	44	Short
PCIe 2-Line WAN w/Modem CIM	2894		4	44	Short
PCI-X Cryptographic Coprocessor	4764		0	48	Long
PCIe Crypto Coprocessor No BSC	4807		2	2	Short
PCIe Crypto Coprocessor Gen3 BSC	4808		0	8	Short
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
GX++ Dual-port 12x Channel Attach	5615		2	2	GX++
Gigabit Ethernet		5700/1978	0	48	Short
10/100/1000 Ethernet		5701/1979	0	48	Short
2-port 10/100/1000 Ethernet	5706	1983	0	48	Short
10 Gigabit FCoE PCIe Dual Port	5708		4	44	Short
ISCI TOE Gb Ethernet (Copper)	5713	1986	0	48	Short
ISCI TOE Gb Ethernet (Fiber)		5714/1987	0	48	Short
2 Gb Fibre Channel PCI-X		5716/1977	0	48	Short
4-port 1 Gb Ethernet PCI-e 4x	5717		4	44	Short
10 Gb Ethernet - Short Reach		5721	0	48	Short
10 Gb Ethernet - Long Reach		5722	0	48	Short
2-port Asynchronous EIA-232		5723	0	48	Short
10 Gigabit Ethernet-CX4 PCI Exp.	5732		4	44	Short
8 Gb Dual-port Fibre Channel	5735		4	44	Short
PCI-X Ultra320 SCSI DDR	5736	1912	0	48	Short
4-port 10/100/1000 Ethernet		5740/1954	0	48	Short
GXT145 PCIe Graphics Accelerator	5748		4	8	Short
2-port 4 Gbps Fibre Channel	5749		0	48	Short
1-port 4 Gb Fibre Channel		5758/1905	0	48	Short
2-port 4 Gb Fibre Channel	5759	1910	0	48	Short
2-port 1 Gb Ethernet (UTP) PCIe	5767		4	44	Short
2-port 1 Gb Ethernet (Fiber) PCIe	5768		4	44	Short
10 Gb Ethernet-SR	5769		4	44	Short
10 Gb Ethernet-LR	5772		4	44	Short
1-port 4 Gb Fibre Channel		5773	4	44	Short
2-port 4 Gb Fibre Channel	5774		4	44	Short
PCI-X EXP24 Ctl-1.5GB No IOP		5782	0	16	Short
4-port Async EIA-232 PCIe	5785		4	44	Short
PCIe 380MB Cache Dual SAS RAID	5805		4	44	Short
SAS Controller PCI-X 2.0		5900	0	48	Short
PCIe Dual-x4 SAS	5901		4	44	Short
PCI-X DDR Dual-x4 SAS RAID		5902	0	48	Long
PCI-X DDR SAS RAID Adapter (BSC)	5908		0	16	Long
PCI-X DDR Dual-x4 SAS		5912	0	48	Short
PCI 2-line WAN IOA, no IOP		6805	0	48	Short
PCI 4-Modem WAN IOA, no IOP		6808	0	48	Short
PCI 4-Modem WAN IOA, no IOP, CIM		6809	0	48	Short
PCI 2-line WAN w/Modem, no IOP		6833	0	48	Short
PCI 2-line WAN w/Modem, no IOP, CIM		6834	0	48	Short

**Note:** All Low Profile (LP) Adapter cards require feature number 5610.

### Storage devices/bays

- The Power 740 has a slim media bay that can contain an optional DVD-RAM (#5762 or follow-on) and a half-high bay that can contain a tape drive or removable disk drive.
- Either feature number 5618 or 5630 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 #5631. No RAID 5/6 support. No IBM i support.
  - Feature number 5630 supports eight SFF disk units, either HDD or SSD. RAID 5/6 support. No split backplane.
  - One of feature number 1882, 1883, 1884, 1885, 1886, 1888, 1890, 1909, or 1911 must be selected (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 5631 supports 3 x 3 split drive bays.
- SAS-bay-based Solid State Drive (SSDs) (#1890, #1909, #3586, #3587) support restrictions:
  - SFF features 1890 and 1909 are supported in the Power 740 CEC.
  - 3.5-inch features 3586 and 3587 are not supported in the Power 740 CEC.
  - SSDs and disk drives (HDDs) are not allowed to mirror each other.
  - SSDs are not supported by features 5278, 5900, 5901, 5902, and 5912.
  - 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 EXP 12S 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 5886s. A feature 5886 containing SSD drives cannot be attached to the CEC external SAS port on the Power 740.
  - In a Power 740 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 740 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 5630
  - Mixed Data Protection (#0296)

#### Storage device features

Device	Maximum quantity	Bay	Orderable feature number	Supported feature number
DVD-RAM (SATA)	1	Slim	5762	
80/160GB 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	
DAT320 160 GB Tape-USB	1	Half high	5673	
Internal Docking Station for Removable Disk Drive	1	Half high	1103	
External Docking Station for Removable Disk Drive	1	USB Port	1104	

Device	Maximum quantity	Bay	Orderable feature number	Supported feature number
AIX IBM i Linux				
146.8 GB 15K, SAS, SFF	80 0	80 SFF 1-8, 72 in 4 x	#5802	1882
73.4 GB 15K, SAS, SFF	80 0	80 SFF 1-8, 72 in 4 x	#5802	1883
69.7 GB 15K, SAS, SFF	0 80	0 SFF 1-8, 72 in 4 x	#5802	1884
300 GB 10K, SAS, SFF	80 0	80 SFF 1-8, 72 in 4 x	#5802	1885
146.8 GB 15K, SAS, SFF	80 0	80 SFF 1-8, 72 in 4 x	#5802	1886
139.5 GB 15K, SAS, SFF	0 80	0 SFF 1-8, 72 in 4 x	#5802	1888
283 GB 10K,	0 80	0 SFF 1-8,	1911	

SAS, SFF				72 in 4 x #5802
69 GB SAS, SFF, Solid-state	80	0	80	SFF 1-8, 1890 72 in 4 x #5802
69 GB SAS, SFF, Solid-state	0	80	0	SFF 1-8, 1909 72 in 4 x #5802
69 GB SAS, SFF, Solid-state	224	0	224	3586 224 in 28 x #5886
69 GB SAS, SFF, Solid-state	0	224	0	3587 224 in 28 x #5886

**Note:** Eight disks or solid-state drives maximum can be installed internally; 72 disks or solid-state drives maximum can be installed in 4 x #5802. #3586 and #3587 cannot be installed internally. 8 x #3586 or #3587 can be placed in each #5886.

Device	Maximum quantity		Bay	Orderable feature number	Supported feature number
		AIX IBM i Linux			
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	
428.4 GB 15K RPM, SAS	0	336	0 28 x #5886	3658	

**Note:** 3.5-inch DASD are not supported in the 8205-E6B CEC.

Device	Maximum quantity		Bay	Orderable feature number	Supported feature number
		AIX IBM i Linux			
73.4 GB 15K RPM, SCSI	336	0	336 See note		3278/1971
146.8 GB 15K RPM, SCSI	336	0	336 See note		3279/1972
300 GB 15K RPM, SCSI	336	0	336 See note		3585
70.56 GB 15K RPM, SCSI	0	336	0 See note		4327
141.14 GB 15K RPM, SCSI	0	336	0 See note		4328
282.25 GB 15K RPM, SCSI	0	336	0 See note		4329
TotalStorage EXP24 Disk Drawer	14	14	14 See note		5786
TotalStorage EXP24 Disk Tower	14	14	14 See note		5787

**Note:** SCSI disks are not supported in the 8205-E6B CEC. The 336 system maximum is achieved with a maximum of 24 disks in a maximum of 14 TotalStorage EXP2 Disk Drawers (#5786) or 14 TotalStorage EXP2 Disk Towers (#5787).

## Planning information

### Cable orders

No cables are required.

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

---

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.

---

## **IBM Electronic Services**

---

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 5.3, 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**

---

**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 your 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, you are able to see search results that apply specifically to your 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>

---

## Terms and conditions

---

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

### **Warranty period**

Three years.

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

### **Warranty service**

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. An IBM technician will attempt to resolve your problem over the telephone, or electronically via an IBM Web site. 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. 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 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- and location-specific information. This product is covered by the following types of service: Customer Replaceable Unit Service and On-site for other selected parts.

**Customer Replaceable Unit 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 or a Tier 2 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. For machines with on-



site same-day response service, IBM will replace a Tier 1 CRU at your request, at no additional charge.

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 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.

The following parts have been designated as Tier 1 CRU parts:

- DASD Drive
- DVD Drive
- Dedicated Ethernet
- 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
- USB Tape Drive/Cable
- USB Table Drive
- Interlock Switch
- RAID Aux. Cache Battery Card
- RAID Aux. Cache Card
- Op Panel /USB Cable
- Op Panel
- Memory VRMs
- Tape Drive

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.

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response

### **Non-IBM parts support**

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. Service levels are response-time objectives and are not guaranteed. See the [Warranty service](#) section for additional details.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. 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.

## **Maintenance service options**

---

### ***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 service selections are available as warranty upgrades for your machine. Available offers are:

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

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 one of the On-site Service levels specified above. For additional information on the CRU Service, see warranty information.

### **Maintenance Services**

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 Web site. 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- 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

- 24 hours per day, 7 days a week, 4-hour average response
- 24 hours per day, 7 days a week, 2-hour average response

### ***Customer Replaceable Unit 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 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 may be provided as part of the machine's standard maintenance service except that you may install a CRU yourself or request IBM installation, at no additional charge, under any of the On-site Service levels specified above.

### ***Machine Exchange Service***

---

IBM will initiate shipment of a replacement machine to your location. You are responsible for its installation and verification of operation. You must pack the failed machine into the shipping container that contained the replacement machine and return the failed machine to IBM. Transportation charges, both ways, are paid by IBM. You may be charged for the replacement machine if IBM does not receive the failed machine within 15 days of your receipt of the replacement.

### ***Non-IBM parts support***

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

IBM Service provides hardware problem determination on non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within IBM machines covered under warranty service upgrades or maintenance services 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.

### ***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**

No

**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 8205-E6B

IBM may release changes to the machine code. IBM plans to make the machine code changes available for download from the IBM pSeries® technical support Web site

<http://techsupport.services.ibm.com/server/mdownload>

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 for that service.

**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.

---

**Pricing**

---

For all local charges, contact your IBM representative.

**IBM Global Financing**

---

IBM Global Financing offers competitive financing to credit-qualified customers to assist them in acquiring IT solutions. Offerings include financing for IT acquisition, including hardware, software, and services, from both IBM and other manufacturers or vendors. Offerings (for all customer segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or visit

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

IBM Global Financing offerings are provided through IBM Credit LLC in the United States, and other IBM subsidiaries and divisions worldwide to qualified commercial

and government customers. Rates are based on a customer's credit rating, financing terms, offering type, equipment type, and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension, or withdrawal without notice.

IBM Global Financing offers competitive financing of hardware, software, and services, from both IBM and other manufacturers or vendors.

Financing Power Systems solutions from IBM Global Financing can help customers acquire more from existing budgets while helping them conserve cash, and provides a comprehensive end to end multi vendor IT financing solution. This end-to-end approach helps form the foundation of a cohesive technology management strategy that can be superior to ownership. We can help reduce costs compared to purchase, increase ROI, lower Total Cost of Ownership, minimize risk, improve accountability, and enable customers to focus on their core business strategies while giving customers the ability to make flexible equipment decisions throughout the entire technology life cycle.

Through our IBM Project Financing™ program, credit qualified customers can obtain funding to design and build their entire IT infrastructure, aligning up-front costs to expected project benefits. This could include financing for select facility design and construction, building and structural upgrades, infrastructure equipment, IT hardware, software, services and consulting. Through our Global Asset Recovery Services' buyback program customers can obtain cash for marketable IT assets and dispose of non-marketable assets in a way that complies with environmental laws and regulations.

IBM Global Financing offerings are provided through IBM Credit LLC in the United States, and other IBM subsidiaries and divisions worldwide to qualified commercial and government customers. For all customer segments offerings, rates, financing terms, offering type, equipment type, and options, may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension, or withdrawal without notice.

For more information contact your local IBM Global Financing organization or visit the Web site

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

---

## AP distribution

---

Country/Region	Announced
AP IOT	
ASEAN*	Yes
India/South Asia**	Yes
Australia	Yes
People's Republic of China	Yes
Hong Kong S.A.R of the PRC	Yes
Macao S.A.R of the PRC	Yes
Taiwan	Yes
Korea	Yes
New Zealand	Yes
Japan IOT	
Japan	Yes

\* Brunei Darussalam, Indonesia, Cambodia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, and Vietnam

\*\* Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal, and Afghanistan

### Trademarks

POWER7, PowerVM, Active Memory, EnergyScale, Micro-Partitioning, POWER6, Power Systems, Hypervisor, POWER5, Focal Point, Electronic Service Agent, HACMP and

IBM Project Financing are trademarks of IBM Corporation in the United States, other countries, or both.

Power, Express, AIX, IBM, TotalStorage, BladeCenter and pSeries are registered trademarks of IBM Corporation in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

ThinkVision is a registered trademark of Lenovo Corporation in the United States, other countries, or both.

Other company, product, and service names may be trademarks or service marks of others.

### ***Terms of use***

IBM products and services which are announced and available in your country can be ordered under the applicable standard agreements, terms, conditions, and prices in effect at the time. IBM reserves the right to modify or withdraw this announcement at any time without notice. This announcement is provided for your information only. Reference to other products in this announcement does not necessarily imply those products are announced, or intend to be announced, in your country. Additional terms of use are located at

<http://www.ibm.com/legal/us/en/>

For the most current information regarding IBM products, consult your IBM representative or reseller, or visit the IBM worldwide contacts page

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