



IBM System p 570 with new POWER6 processor increases bandwidth and capacity

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At a glance

The System p 570 mid-range server is designed to deliver outstanding price/performance, mainframe-inspired reliability and availability features, flexible capacity upgrades, and innovative virtualization technologies. The System p 570 features:

- Powerful new IBM POWER6 processors
- 2-, 4-, 8-, 12-, and 16-core configurations
- Three processor frequency choices: 3.5 GHz, 4.2 GHz, and 4.7 GHz
- Up to 768 GB of DDR2 memory
- Memory frequencies of up to 667 MHz
- Six Serial Attached SCSI (SAS) DASD drives per enclosure (24 max per system)
- Up to 7.2 TB of internal disk storage
- Modular rack-mount design with one to four CEC enclosures
- Seven I/O expansion slots per enclosure (28 max per system)
- Dynamic logical partitions — up to 160 per system (optional)
- Innovative on demand features for both processors and memory
- Integrated Virtual Ethernet ports — select from 1 Gb and 10 Gb options

For ordering, contact:

Your IBM representative or the Americas Call Centers at

800-IBM-CALL Reference: YE001

Overview

The innovative System p™ 570 with POWER6™ dual-core processors is a 2- to 16-core SMP, rack-mounted server. The new POWER6 processors in this server are 64-bit, dual cores on a single chip module, with 32 MB of L3 cache, 8 MB of L2 cache, and 12 DDR2 memory DIMM slots. The new POWER6 processor is available at frequencies of 3.5 GHz, 4.2 GHz, and 4.7 GHz. The unique POWER6 DDR2 memory uses a new memory architecture to provide greater bandwidth and capacity. This enables operating at a higher data rate for large memory configurations. Each new POWER6 processor card can support up to 12 DDR2 DIMMs running at speeds up to 667 MHz. A full system can contain up to 768 GB of memory in a 16-core system. This new model server is available in 2-, 4-, 8-, 12-, and 16-core configurations.

This modular-built system uses one to four enclosures, each enclosure is four EIA units tall, and is housed in a 19-inch rack. Each of the four

system enclosures has two processor sockets and can contain two powerful POWER6 dual-core processor card features. A POWER6 processor card (#5621) is available for customers upgrading from an System p5™ 570 who want to migrate their existing DDR2 memory features.

New in this model is a choice of 1 Gb or 10 Gb integrated host Ethernet adapters (HEA). These native ports can be selected at the time of initial order. The model MMA supports virtualization of these integrated Ethernet adapters.

Also available is the POWER™ GXT145 graphics accelerator (#5748), a low-priced 2D adapter that can be configured to operate in either 8-bit or 24-bit color modes. This adapter supports both analog and digital monitors. The adapter requires a PCI Express slot.

Key prerequisites

Refer to the Hardware requirements and Software requirements sections.

Planned availability dates

June 8, 2007, except for:

- Feature numbers 5621, 7893, 7894, and 4495, which are planned to be available November 16, 2007
- Feature numbers 5404, 5640, and 5641, which are planned to be available September 14, 2007

Support for 9117-MMA systems operating without an attached Hardware Management Console (HMC) is planned to be available November 16, 2007. Prior to that time, 9117-MMA systems are only supported with an attached HMC. HMC machine type 7310 must have Machine Code level V7, or later. HMC machine type 7315 is not supported for use with the 9117-MMA.

Description

Summary of available features:

- 4U 19-inch rack-mount CEC enclosure
- One to four CEC enclosures; 16U maximum system size
- Two processor sockets per enclosure
- Six hot-swappable 3.5-inch SAS disk bays per enclosure up to 7.2 TB of internal SAS DASD disk storage per system
- One hot-plug, slim-line media bay per enclosure (optional)
- Redundant hot-swap ac power supplies (N+1) in each enclosure
- Choice of integrated (HEA) I/O options — one per enclosure
 - 2-port 1 Gigabit Virtual Ethernet with two system ports
 - 4-port 1 Gigabit Virtual Ethernet with one system port
 - 2-port 10 Gigabit Virtual Ethernet (SR) with one system port
- Two USB ports per enclosure
- Two HMC ports per system
- POWER6, 64-bit, 3.5 GHz, Dual Core Processor (#5620)
 - 12 DDR2 POWER6 Memory DIMM sockets per processor card
 - Two-, four-, eight-, twelve-, or sixteen-core configurations
 - L2 cache: 4 MB per core, 8 MB per dual core
 - L3 cache: 32 MB per dual core
 - 2 GB to 384 GB of POWER6 DDR2 memory

- POWER6, 64-bit, 4.2 GHz, Dual Core Processor (#5622)
 - 12 DDR2 POWER6 Memory DIMM sockets per processor card
 - Two-, four-, eight-, twelve-, or sixteen-core configurations
 - L2 cache: 4 MB per core, 8 MB per dual core
 - L3 cache: 32 MB per dual core
 - 2 GB to 768 GB of POWER6 DDR2 memory
- POWER6, 64-bit, 4.2 GHz, Dual Core Processor (#5621) (available for upgrade systems only)
 - Eight DDR2 DIMM sockets per processor card
 - Two-, four-, eight-, twelve-, or sixteen-core configurations
 - L2 cache: 4 MB per core, 8 MB per dual core
 - L3 cache: 32 MB per dual core
 - 2 GB to 256 GB DDR2 memory (same memory features as 9117-570)
- POWER6, 64-bit, 4.7 GHz, Dual Core Processor (#7380)
 - 12 DDR2 POWER6 Memory DIMM sockets per processor card
 - Two, four, eight, twelve or sixteen core configurations.
 - L2 cache: 4 MB per core, 8 MB per dual core
 - L3 cache: 32 MB per dual core
 - 2 GB to 768 GB of POWER6 DDR2 memory
- POWER6 DDR2 Memory DIMMs
 - 0/2 GB (4 x 0.5 GB) POWER6 DDR2 Memory, 667 MHz
 - 0/4 GB (4 x 1 GB) POWER6 DDR2 Memory, 667 MHz
 - 0/8 GB (4 x 2 GB) POWER6 DDR2 Memory, 667 MHz
 - 0/16 GB (4 x 4 GB) POWER6 DDR2 Memory, 533 MHz
 - 0/32 GB (4 x 8 GB) POWER6 DDR2 Memory, 400 MHz
- Carry-over DDR2 Memory DIMMs (requires processor #5621)
 - 2 GB (4 x 0.5 GB) DDR2 Memory, 533 MHz (#7892) (planned to be available 1H08)
 - 4 GB (4 x 1 GB) DDR2 Memory, 533 MHz (#7893)
 - 8 GB (4 x 2 GB) DDR2 Memory, 533 MHz (#7894)
 - 16 GB (4 x 4 GB) DDR2 Memory, 533 MHz (#4497) (planned to be available 1H08)
 - 16 GB (4 x 4 GB) DDR2 Memory, 400 MHz (#4499) (planned to be available 1H08)
 - 4/8 GB (4 x 2 GB) DDR2 Memory, 533 MHz (#4495)
 - 8/16 GB (4 x 4 GB) DDR2 Memory, 533 MHz (#4496) (planned to be available 1H08)
- Seven I/O expansion slots per enclosure (28 max per system)

Slot ID	Adapter Type	Slot Size
P1-C1	PCIe 8X	FULL LENGTH
P1-C2	PCIe 8X	FULL LENGTH
P1-C3	PCIe 8X	FULL LENGTH
P1-C4	PCI-X 2.0 DDR	FULL LENGTH
P1-C5	PCI-X 2.0 DDR	FULL LENGTH
P1-C6/P1-C8	PCIe 8X / GX+	SHORT FORM FACTOR
P1-C9	GX+	SHORT FORM FACTOR

up to 16 PCIe 8X adapters
 up to 8 GX+ Adapters
 up to 8 PCI-X DDR Adapters

- Remote I/O drawer support

- Up to 20 I/O drawers on a RIO-2 interface (7311-D11 or 7311-D20)
- Up to 32 I/O drawers on a 12X Channel interface (7314-G30)
- Dynamic LPAR support
- Advanced POWER Virtualization (optional)
 - Micro-Partitioning™ (up to 10 partitions per processor, 160 per system)
 - VIOS V1.4
 - Automated CPU and memory reconfiguration
 - Real-time partition configuration
 - Support for dedicated and shared processor LPAR groups
 - Support for manual provisioning of resources
- Optional HACMP™ for AIX 5L™ support for nearly continuous operation
- Optional Cluster 1600 support with Cluster Systems Management software

Capacity on Demand (CoD)

Several types of CoD are optionally available on the p570 server to help meet changing resource requirements in an on demand environment by using resources installed on the system but not activated:

- **Capacity Upgrade on Demand (CUoD)** allows you to purchase additional permanent processor or memory capacity and dynamically activate them when needed.
- **Trial CoD** offers a one-time, no-additional-charge 30-day trial that allows you to explore the uses of all inactive processor and memory capacity on your server and to benchmark the performance benefits of the additional resources. This function is delivered with all System p servers with inactive CoD processors or memory.
- **On/Off CoD** enables processors or memory to be temporarily activated in full-day increments as needed. Charges are based on usage reporting collected monthly. Processors and memory may be activated and turned off an unlimited number of times, whenever you want additional processing resources. This offering provides a system administrator an interface at the HMC to manage the activation and deactivation of resources. A monitor that resides on the server logs the usage activity. You must send this usage data to IBM monthly. A bill is then generated based on the total amount of processor and memory resources utilized, in increments of Processor and Memory (1 GB) Days. Before using temporary capacity on your server, you must enable your server. To do this, order an enablement feature (MES only) and sign the required contracts. For more information regarding registration, enablement, and usage of On/Off CoD, visit

<http://www-912.ibm.com/supporthome.nsf/document/28640809>

- **Utility CoD** autonomously provides additional processor performance on a temporary basis within the shared processor pool. Utility CoD enables you to place a quantity of inactive processors into the server's Shared Processor Pool, which then become available to the pool's resource manager. When the server recognizes that the combined processor utilization within the shared pool exceeds 100% of the level of base (purchased/active) processors assigned across uncapped partitions, then a Utility CoD Processor Minute is charged and this level of performance is available for the next minute of use. If additional workload requires a higher level of performance, the system will automatically allow the additional Utility CoD processors to be used and the system automatically and continuously monitors and charges for the performance needed above the base (permanent) level. Registration and usage reporting for Utility CoD is made using a public Web site and payment is based on reported usage. This capability is planned to be available during third quarter 2007. Utility CoD requires Advanced POWER Virtualization (#7942) to be active and Utility CoD is only available on Model MMA of machine type 9117.
- **Permanent CUoD for Processors and Permanent CUoD for Memory** are activations that permanently enable inactive processors or memory for future use.

Each system with CoD resources also allows a standard trial period of 30 days, which is limited to two processors and 4 GB of memory. The Standard Trial can be used, for example, to provide a performance increase needed while processing an order for a CoD activation.

Trial periods are made possible with activation codes that can be requested at

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

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

Services

The IBM Server Product Services for System p servers offers implementation and migration services to help you put your System p server quickly into your production environment in order to support your business applications. These services include in-depth planning sessions to help ensure the end result is in-line with your requirements. A variety of System p product services are available to suit your needs. Our goal is to continually enhance these offers to provide you with a comprehensive selection of services.

Some of the services offered to help you get started with your System p servers are:

- Effective use of System p virtualization capabilities:
 - IBM Implementation Services for System p and LPAR
 - IBM Implementation Services for System p — Advanced POWER Virtualization
- Get started with High Availability Clustering:
 - IBM Implementation Services for System p — HACMP
- Basic services to put pieces together:
 - IBM Implementation Services for System p — AIX 5L
 - IBM Implementation Services for System p — Hardware Installation
- Migrate to System p LPAR environment:
 - IBM Migration Services for System p and LPAR
- Perform regular health checks on your System p server
 - IBM Server Optimization and Integration Services — server technology assessment for System p Healthcheck

The listed fee-based services support the implementation process from beginning to end, including planning, installation, configuration, testing, and skills transfer activities. These services can be customized to meet your individual requirements.

To see what IBM can do for you, visit

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

Model upgrades

System p5 570 systems with IBM POWER5™ or POWER5+™ processors can be upgraded to the System p 570 with POWER6 processors. IBM will install new CEC enclosures to replace the enclosures the customer currently has. The customer's current CEC enclosures will be returned to IBM in exchange for the financial considerations that are identified under the applicable feature conversions for each upgrade. Several of the parts in the customer's current system can be moved to the new system after it is installed.

- 9117-570 systems with POWER5 processor feature numbers 7830, 7832, 7833, or 7834 can be upgraded to a 9117-MMA with processor feature number 5622.
- 9117-570 systems with POWER5+ processor feature numbers 7782 or 8338 can be upgraded to a 9117-MMA with processor feature numbers 5621 or 5622.

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

- Operator Panel.
- PCI adapters with cables: A maximum of two adapters internal to the model MMA per CEC enclosure. Remaining PCI adapters must be moved to attached remote I/O drawers or replaced with PCIe adapters available for the 9117-MMA. Recommended I/O drawers are the 7314-G30, 7311-D11, or the 7311-D20.

- Line cords, keyboards, and displays.
- Advanced POWER Virtualization (#7942).
- SCSI DASD cannot be used in the MMA but can be used in a remote I/O drawer attached to the model MMA. Recommended I/O drawers are the 7031-D24, 7031-T24, or 7311-D20.
- DDR2 memory, if upgrading to the feature number 5621 processor.
- Power supplies, if upgrading to the feature number 5621 processor.

Upgrade considerations

The following should be considered when planning an upgrade from a 9117-570 to a 9117-MMA:

- Each model 570 has six PCI-X adapter slots in each CEC enclosure. The model MMA has two PCI-X and four PCIe adapter slots for each CEC enclosure. When upgrading, PCIe adapters can be purchased to provide the function of the excess PCI-X adapters, or the excess PCI-X adapters can be migrated to a remote I/O drawer attached to the model MMA.
- The model MMA can support the 7413-G30 PCI-X (12X Channel) I/O Drawer with six PCI-X DDR slots, or the 7311-D11 or 7311-D20 (RIO-2) I/O drawers.
- The model 570 has two native RIO ports on each CEC enclosure that support one RIO-2 loop per enclosure. The model MMA does not have native RIO ports but adds a second GX+ slot to each CEC enclosure and can support two GX+ adapters per enclosure.
- The model MMA supports only the new SAS DASD hard disks internally. The older SCSI DASD hard disks can be attached to the model MMA but must be located in a remote I/O drawer. Either the 7031-D24 or the 7311-D20 is compatible with the DASD carriers used on the model 570 DASD files. The DASD files from the model 570 can be moved directly into these I/O drawers.
- If there is a Machine Type 7310 HMC attached to the model 570, it can be moved to the model MMA, but the HMC firmware must be updated to licensed machine code Version 7, or later, to accommodate the model MMA improvements. The firmware upgrade must be completed before attaching the 7310 HMC to the 9117-MMA.
- For processor feature number 5621, different memory size or frequency features may not be mixed on the same processor card. All of the memory features on a single processor card must be the same size in gigabytes when fully active and have the same frequency. Feature numbers 7894 and 4495 can be mixed on the same processor card because feature 4495 is 8 GB when fully active. Feature numbers 4497 and 4496 can be mixed on the same processor card because feature 4496 is 16 GB when fully active. The two processor cards in a single CEC enclosure may have different memory features installed. Processor cards in different enclosures in the same system may have different memory features installed.
- For p5-570 systems that have the On/Off CoD function active, customers must reorder the On/Off activation feature (#7951) when placing the Upgrade MES order for the new p570 system to keep the On/Off CoD function active. Any temporary use of processors or memory owed to IBM on the p5-570 system must be paid before installing the new p570 model MMA.
- Reserve CoD features are applicable only to the processor feature for which they are purchased. Any Reserve CoD credit remaining on the model 570 POWER5 or POWER5+ processor will not migrate to the model MMA.
- Feature number 8017 is available to support migration of Memory activation code 7663 during the initial order and build of the Upgrade MES MMA order. Customers ordering an upgrade with processor feature 5621 and migrating memory from the p5-570 to the p570 should order feature number 8017 in a quantity equal to the quantity of feature 7663 that is currently active on their p5-570 system.
- Feature number 8018 is available to support migration of the Advanced Power Virtualization feature (#7942) during the initial order and build of the Upgrade MES MMA order. Customers may add feature 8018 to their upgrade orders in a quantity not to exceed the quantity of feature 7942 purchased for the p5-570 being upgraded.

Reliability, availability, and serviceability (RAS)

The reliability of the System p 570 starts with components, devices, and subsystems that are designed to be fault-tolerant. 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 high product quality levels.

The p570 L3 cache and system memory offers 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 is substantially reduced. ECC also provides double-bit memory error detection that helps protect data integrity in the event of a double-bit memory failure.

The AIX® operating system provides disk mirroring and disk controller duplexing while Linux™ supports DASD mirroring (RAID 1) through software. Additionally, some hardware RAID adapters are supported on Linux.

The Journaled 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 Linux. This feature is designed to substantially 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 maximum file size of 16 TB, JFS2 is highly recommended for systems running the AIX operating system.

Memory error-correction extensions: POWER6 memory has single-error-correct and double-error-detect ECC circuitry designed to correct single-bit memory failures. Double-bit detection is designed to help maintain data integrity by detecting and reporting multiple errors beyond what the ECC circuitry can correct. The memory chips are organized such that the failure of any specific memory module is designed to only affect a single bit within an ECC word (bit scattering), thus allowing for error correction and continued operation in the presence of a complete DRAM chip failure (Chipkill™ recovery).

POWER6 memory also utilizes memory scrubbing and dynamic bit steering, which uses correctable error thresholding to determine when available spare memory modules on each DIMM should be used to replace ones that have exceeded their threshold value.

Redundancy for array self-healing: Although the most likely failure event in a processor is a soft single-bit error in one of its caches, other events can occur, and they need to be distinguished from one another. For the L1, L2, and L3 caches and their directories, hardware and firmware keep track of whether permanent errors are being corrected beyond a set threshold. If exceeded, a deferred repair error log is created. Additional run-time availability actions, such as CPU vary off or L3 cache line delete, are also initiated.

L1 and L2 caches and L2 and L3 directories on the POWER6 chip are manufactured with spare bits in their arrays that can be accessed via programmable steering logic to replace faulty bits in the respective arrays. This is analogous to the redundant bit steering employed in main storage as a mechanism that is designed to help avoid physical repair; it is also implemented in systems using the POWER6 processor. The steering logic is activated during processor initialization and is initiated by the built-in system-test (BIST) at power-on time.

When correctable error thresholds in the L3 cache exceed a set threshold, systems using the POWER6 processor invoke a dynamic L3 cache line delete function, which enables them to stop using bad cache and eliminates exposure to greater problems.

Fault monitoring functions: When a system using the POWER6 processor is powered on, BIST and POST (power-on self-test) check processors, L3 cache, memory, and associated hardware required for proper booting of the operating system. If a noncritical error is detected or if errors occur in resources that can be removed from the system configuration, the booting process is designed to proceed to completion. The errors are subsequently logged in the system nonvolatile RAM (NVRAM).

Disk drive fault tracking can alert the system administrator of an impending disk failure before it impacts customer operation.

On POWER6 processor-based servers running the AIX or Linux operating systems, hardware and software failures are recorded in the system log. An Error Log Analysis (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 and 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 engineering data related to the failure are sent to IBM service.

The call home feature enables IBM service representatives to preemptively bring the most-probable replacement parts when a service call is placed, reducing repair time.

Mutual surveillance: The Service Processor monitors the operation of 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 doesn't correct the problem with the Service Processor, the Hypervisor will notify the operating system and the operating system can take appropriate action, including calling for service.

Environmental monitoring functions: POWER6 processor-based servers include a range of environmental monitoring functions.

- Temperature monitoring increases the fan speed rotation when ambient temperature is above the normal operating range, or when a redundant fan fails.
- Temperature monitoring warns the system administrator of potential environmental-related problems (for example, air conditioning and air circulation around the system) so that appropriate corrective actions can be taken before a critical failure threshold is reached. It also performs an orderly system shutdown when the operating temperature exceeds the critical level.
- Fan speed monitoring provides a warning and increases fan speeds on the redundant fans to compensate for a detected fan failure. It can also initiate an orderly system shutdown if there is an additional cooling failure when the fans are in high-speed mode.
- Voltage monitoring provides warning and an orderly system shutdown when the voltages are out of operational specification.

Availability enhancement functions

The POWER6 line of systems continues to offer and introduce significant enhancements designed to increase system availability.

POWER6 processor availability enhancements: One of the significant mainframe-inspired availability enhancements in systems with the POWER6 processor is the ability to do processor instruction retry and alternate processor recovery. This significantly reduces 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 POWER6 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 predecessor IBM systems, 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 because the instruction will continue to fail. Systems with POWER6 processors introduce the ability to extract the failing instruction from the faulty core and retry it elsewhere in the system, after which the failing core is dynamically deconfigured and called out for replacement. The entire process is transparent to the partition owning the failing instruction. Systems with POWER6 processors are designed to avoid what would have been a full system outage on earlier models.

POWER6 single processor checkstopping: Another major advancement in POWER6 processors is single processor checkstopping. Prior to POWER6 processors, a processor checkstop would result in a system checkstop. A new feature in System p 570 is the ability to contain most processor checkstops to the partition that was using the processor at the time. This significantly reduces the probability of any one processor affecting total system availability.

POWER6 cache availability: The POWER line of servers continues to be at the forefront of cache availability enhancements. While L3 cache line delete (also called "Pellston" healing) was introduced with POWER4™ processors, the POWER6 processor line pioneers L2 cache line delete. In the event that an uncorrectable error occurs in L2 or L3 cache, the system will be able to dynamically remove the offending line of cache without requiring a reboot. In addition POWER6 utilizes an inclusive L1/L2 cache design and a write-through cache policy on all levels, helping to ensure that data is written to main memory as soon as possible. POWER6 processors also continue to offer hardware-assisted memory scrubbing.

Special uncorrectable error handling: Uncorrectable errors are difficult for any system to tolerate, although there are some situations where they can be shown to be irrelevant. For example, if an uncorrectable error occurs in cached data that will never again be read or where a fresh write of the data is imminent, it would be unwise to "protect" the user by forcing an immediate reboot.

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: Prior to POWER5 processors, PCI bus parity errors caused a global machine check interrupt, which eventually required a system reboot to continue. In systems using POWER6 processors, I/O drawer hardware, system firmware, and AIX interaction have been designed to allow transparent recovery of intermittent PCI bus parity errors and graceful transition to the I/O device available state in the case of a permanent parity error in the PCI bus. This mechanism is called PCI extended error handling (EEH).

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. Currently, there is limited support for Linux, depending upon driver availability.

Predictive Failure Analysis® 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 symptoms that would indicate a failure is imminent, the system can dynamically deallocate and call home about the failing part before the error becomes systematic. In many cases this is transparent, especially if the system contains CUoD components. If no CUoD resources are available, 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: The auto-restart (reboot) option, when enabled, can reboot the system automatically following an unrecoverable software error, software hang, hardware failure, or environmentally induced (ac power) failure.

Serviceability

The System p 570 server has been designed with both IBM and customer serviceability in mind.

Advancements such as Guiding Light LED architecture are used to control a system of integrated LEDs that lead the individual servicing the machine to the correct part as quickly as possible.

The p570 allows customers to replace service parts (customer-replaceable unit). To do this, the p570 uses Guiding Light LEDs to indicate the parts needing to be replaced.

An HMC attached to the p570 allows support personnel (with client authorization) to remotely log in to review error logs and perform remote maintenance if required.

- The I/O device and adapter diagnostics consist of Stand-alone Diagnostics, which are loaded from the DVD-ROM drive, and Online Diagnostics.

Online Diagnostics, when installed, are resident with the AIX operating system on the disk or system. They can be booted in single-user mode (service mode), run in maintenance mode, or run concurrently (concurrent mode) with other applications. They have access to the AIX Error Log and the AIX Configuration Data.

Service mode allows checking of system devices and features.

Concurrent mode allows the normal system functions to continue while selected resources are being checked.

Maintenance mode allows checking of devices and adapters.

Note: Because the 9117-MMA system has an optional DVD-ROM (#5756) and DVD-RAM (#5757), alternate methods for maintaining and servicing the system need to be available if the DVD-ROM or DVD-RAM is not ordered; an external Internet connection must be available to maintain or update system microcode to the latest required level.

Concurrent maintenance guided service procedures will continue to be supported by the Repair and Verify (R&V) component of the Service Focal Point application running on the HMC. Repair procedures that are not covered by the guided R&V component will be documented and available for display on any Web browser-enabled system as well as on the HMC. Instead of using the InfoCenter like the p5-570, the p570 service procedures will be released through the System Support Site. You can subscribe to the System Support Site to obtain the latest service procedure updates as they are released from IBM.

Error handling and reporting: In the unlikely event of system hardware or environmentally induced failure, the system run-time error capture capability systematically analyzes the hardware error signature to determine the cause of failure. CEC and power and cooling subsystem events are analyzed concurrently with system operation by the Processor Runtime Diagnostics (PRD) or by Hypervisor code. Results of these analyses are logged on the service processor and forwarded to both the operating system partitions and the SFP application on the HMC.

The SFP application contains logs of all detected and analyzed errors detected either by the device drivers on the operating system for I/O-based events or by PRD or Hypervisor for runtime detected errors in the remainder of the system.

With the call home function on the HMC, the system has the ability to automatically send out an alert via phone line to a pager or initiate a call for service when a service action point has been reached.

A hardware fault will also turn on the two Attention Indicators (one located on the front of the system unit and the other on the rear) to alert the user of an internal hardware problem. The indicator may also be turned on by the operator as a tool to allow system identification. For identification, the indicators will flash, whereas the indicator will be on solid when an error condition occurs.

Service Processor: The p570 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 (but only critical errors are supported under Linux), reset and boot features, and remote maintenance and diagnostic functions, including console mirroring. The Service Processor menus (ASMI) can be accessed concurrently with system operation allowing nondisruptive abilities to change system default parameters.

Call home: The call home application is available at no additional charge and is installed on every HMC. When the call home application is properly configured by the client, it can enhance IBM's ability to provide the system with maintenance service.

Concurrent maintenance: The p570 will continue to support concurrent repair of power, cooling, PCI adapters, media devices, and the operator panel. In addition, the p570 will continue to support concurrent firmware update when possible. The determination of whether a firmware release can be updated concurrently is identified in the read me information file released with the firmware.

IBM Electronic Services

Electronic Service Agent™ and the IBM Electronic Services Web portal comprise the IBM Electronic Services solution — dedicated to providing fast, exceptional support to System p 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 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 in AIX 5.3 TL6 in addition to the HMC, 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 Electronic Service Agent also can be viewed on the secure Electronic Services Web portal and used to improve problem determination and resolution by you and the IBM support team. As part of an increased focus to provide even better service to IBM customers, Electronic Service Agent tool configuration and activation comes standard with your System p 9117-MMA. Your IBM Systems Support Representative will configure Service Agent at system installation time. 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 of

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

Alternatively, visit

<http://www14.software.ibm.com/w ebapp/set2/sas/f/best/home.html>

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 customers to track system inventory and find pertinent fixes.

Benefits

Increased uptime: Electronic Service Agent 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 means no more dependence on human intervention or off-hours customer personnel when errors are encountered in the middle of the night.

Security: Electronic Service Agent is secure in monitoring, reporting, and storing the data at IBM. Electronic Service Agent securely transmits 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 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. 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 Services 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 IBM Electronic Service Agent. Reports are available for any system associated with the customer's IBM ID. Premium Search combines the function of search and the value of Electronic Service Agent information, providing advanced search of the technical support knowledgebase. Using Premium Search and the Service Agent information that has been collected from your system, customers are able to see search results that apply specifically to their systems.

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

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

Advanced POWER Virtualization

Advanced POWER Virtualization is an optional System p hardware feature that includes the following elements:

- Partition Mobility⁶ will allow you to move a running LPAR from one physical server to another with no downtime if both servers are using POWER6 processors. This is a significant advancement in System p virtualization technology and will assist you with performing the following common business needs while keeping the business up and running. Examples of such uses include evacuating a system before performing scheduled maintenance, moving workloads across a pool of different physical resources as business needs shift, and moving workloads off of under-utilized machines so that they can be powered off to save on energy and cooling costs.
- Micro-Partitioning support for a single processor being shared by up to 10 logical partitions.
- VIOS V1.4 is a single-function appliance that resides in a POWER5 processor-based or POWER6 processor-based partition. It facilitates the sharing of physical I/O resources between client partitions (AIX 5L V5.3, or later, or Linux) within the server. VIOS provides

virtual SCSI targets and Shared Ethernet Adapter (SEA) virtual I/O to client LPARs.

- Virtual SCSI (VSCSI) enables the sharing of physical storage adapters (SCSI and Fibre Channel) and storage devices (disk and optical) between LPARs.
- Virtual networking: A Shared Ethernet Adapter enables connectivity between internal and external virtual LANs (VLANs); Virtual Ethernet provides high-speed connections between partitions.
- Integrated Virtualization Manager (IVM) is a browser-based system management interface that you can use to manage a single system without an HMC. With IVM, you can more cost-effectively consolidate multiple partitions onto a single server. With its intuitive interface, the IVM is easy to use and is designed to reduce significantly the time and effort required to manage virtual devices and partitions. Specific tasks that you can perform using IVM include:
 - Creating LPARs on a single managed system
 - Managing the virtual storage and Virtual Ethernet on the managed system
 - Viewing service information related to the managed system
- Automated CPU and memory reconfiguration.
- Real-time partition configuration and load statistics.
- Support for dedicated and shared processor LPAR groups.
- Support for manual provisioning of resources.

VIOS V1.4 content: New in this release:

- POWER6 processor: VIOS enablement for the POWER6 processor in the System p platform
- LDAP (Lightweight Directory Access Protocol): Centralized user management
- SNMP (Simple Network Management Protocol): Standard interface used for monitoring and management
- LPAR simplification: Tool that simplifies the process of planning and deploying System p LPARs and virtual I/O.
- New storage subsystems: nSeries and NetApp subsystems and Fibre Channel attach
- New interconnects: SAS (for disk attach), SATA (optical controller): Tool that simplifies the process of planning and deploying System p LPARs and virtual I/O.
- HEA (Host Ethernet Adapters)
 - VIOS's SEA supports bridging Virtual Ethernet to HEA

⁶ Partition Mobility is planned for general availability in late 2007.

Statement of general direction

IBM is committed to enhancing its clients' investments in System p servers. Based on this commitment, IBM plans to provide future enhancements as identified here.

It is IBM's intention to support a future version of Red Hat Enterprise Linux 5 for POWER starting in second half 2007 on POWER6 processor-based servers.

IBM plans to provide redundant service processor capability to existing POWER6 processor-based p570 systems with two or more CEC enclosures. This capability is planned to be provided via a firmware upgrade at no additional charge by the end of 2007. Once this upgrade is applied, the appropriate HMC connections made, and the system rebooted, service processor functions can maintain operational status in the unlikely event that one of the service processors fails.

IBM plans to provide the capability for POWER6 processor-based p570 systems to add an additional CEC enclosure (node) to a p570 system, without powering down the system (hot-node add).

The additional p570 enclosure would be ordered as a system upgrade and added to the original system while operations continued. The additional resources of the new additional enclosure could then be assigned to existing applications or new applications as required. This capability is

planned to be provided at no additional charge to existing POWER6 processor-based p570 users via a system firmware upgrade by the end of 2007. (Additional CEC enclosures are ordered and charged as per normal business practices.)

In addition, in certain cases, IBM plans to provide the capability for POWER6 processor-based p570 systems that have experienced a failure and rebooted without one of the CEC enclosures active, to be able to have the de-activated enclosure repaired and reintegrated into the active system without powering down the system (cold-node repair). The additional resources of the repaired CEC enclosure, could then be assigned to existing applications or new applications as required. This capability is planned to be provided at no additional charge to existing POWER6 processor-based p570 users via a system firmware upgrade by the end of 2007.

IBM plans to provide a new feature, entitled "Live Partition Mobility" as part of System p Advanced POWER Virtualization for IBM's POWER6 processor-based servers in late 2007. Live Partition Mobility will allow clients to move a running partition from one physical System p POWER6 processor-based server to another System p POWER6 processor-based server without application downtime, helping clients to avoid application interruption for planned system maintenance, provisioning, and workload management.

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice. Any reliance on these statements of general direction is at the relying party's sole risk and will not create liability or obligation for IBM.

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld ID and password are required (use IBM ID).

BP Attachment for Announcement Letter 107-288

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=107-288>

Trademarks

POWER6, System p, System p5, POWER, Micro-Partitioning, AIX 5L, HACMP, Perform, POWER5, POWER5+, Chipkill, POWER4, Electronic Service Agent, i5/OS, and SP are trademarks of International Business Machines Corporation in the United States or other countries or both.

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

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

POWER GXT145 Graphics Accelerator

Hardware description

- 8-bit indexed, 8-bit true color, or 24-bit true color
- 32 MB SDRAM frame buffer
- x1 PCI Express interface
- 2 DVI connectors

Features supported

- Up to approximately 16.7 million colors
- Rectangular clipping
- 1 monitor connected analog at up to 2048 x 1536 resolution
- 1 monitor connected digital at up to 1280 x 1024 resolution

- Second monitor supported on secondary connector at up to 1600 x 1200 analog or 1280 x 1024 digital
- For AIX®, when running with two monitors, both monitors must have an analog connection with the same resolution, up to 1600 x 1200. The image on the primary monitor will also be displayed on the secondary monitor.

Display power management

- Video Electronics Standards Association (VESA)
- Display Power Management Signaling (DPMS)

APIs supported

- X-Windows and Motif
- Soft OpenGL
- Soft graPHIGS

Minimum operating system levels required

- AIX V5.2 with the 5200-10 Technology Level, or later
- AIX V5.3 with the 5300-06 Technology Level, or later
- SUSE Linux™ Enterprise Server 10 SP1 for POWER™, or later
- Red Hat Enterprise Linux AS 4.5 for POWER, or later
 - IBM support for Red Hat 4.5 on the p570 is planned to be available on or before August 31, 2007.

Publications

The following information is shipped with the 9117-MMA. Additional copies are available. To order, contact your IBM representative.

Title	Order number
Safety Notices	G229-9054
Safety Inspection Guide	SA76-0122
System p(TM) Statement of Limited Warranty	SA76-0125
License Agreement for Machine Code	Z125-5468
Customer-Installable Features for the IBM System p 570 (9117-MMA)	SA76-0104
Introducing Improved Information Delivery for IBM System p Hardware	SA76-0105
Verify FW Level Notification	SA76-0119

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 System p and AIX Information Center

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

The publications listed on the notification can be ordered by calling the Publication Support Group in Raleigh at 800-879-2755, option 1. The 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. Furthermore, a large number of publications are available online in various file formats, which can currently be downloaded free of charge.

Language support — HMC

For HMCs attached to the 9117-MMA, the text shown on the HMC monitor will be available only in English at the time of announce. IBM plans to support all specified languages supported on the HMC beginning third quarter 2007. IBM will make the following services available to clients who order an HMC with a Language Specify code other than English at no additional charge until the HMC machine code with support for the specified languages (see the following list) is available for download or orderable on CD in the specified language ordered. The documents IBM makes available to support installation and operation of the HMC are available in the supported languages at the time of announce. Only the HMC user interface screens on the HMC display are affected. This limited time offer is intended to support clients that lack the administrative skills to use the English language screens to set up their systems and will not extend past second quarter 2008.

- Contact the IBM Hardware Support Center (using the method you would normally use to obtain support for your hardware) and ask for Hardware Support. Be sure to have your HMC machine type and serial number available. Indicate that you have problems with installing the HMC using the English screens.
- An IBM SSR may be dispatched to your site and perform the following tasks (estimated total duration: 3 hours):
 - a. Install the HMC.
 - b. Configure the HMC.
 - c. Ensure the HMC is operational.
- The HMC and attached servers will not be accessible to you while the SSR is working.
- After installation, you can contact your IBM Software Support Center for best-effort remote assistance with any English-language messages displayed on the HMC. If an onsite visit is required to further interpret the English text on the HMC screen, IBM may dispatch an IBM SSR to assist on site.

The HMC display menus and control information will be translated into the following HMC specify languages:

- Brazilian Portuguese
- Catalan
- Czech Republic
- Dutch
- English
- French
- German
- Hungarian
- Italian
- Japanese
- Korean
- Polish
- Portuguese
- Russian
- Simplified Chinese
- Slovakian
- Spanish

- Traditional Chinese

HMC Machine Code is available for download at

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

Services

Integrated 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: System p 570 model MMA CEC enclosure

Width: 483 mm (19.0 in)
Depth: 824 mm (32.4 in) from front of Bezel to rear of Power Supply
674 mm (25.6 in) from front rack rail mounting surface to I/O Adapter Bulkhead
793 mm (31.2 in) from front rack rail mounting surface to rear of Power Supply
Height: 174 mm (6.85 in) 4 EIA units
Weight: 63.6 kg (140 lb)

Dimensions and specifications shown are for a single drawer. Model MMA systems can have one to four CEC enclosures.

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

Operating environment specifications

- Temperature:
 - 5° to 45°C (41° to 113°F) nonoperating
 - 5° to 35°C (41° to 95°F) operating

- Relative humidity: (noncondensing)
 - 8% to 80% operating
 - 5% to 100% nonoperating
- Maximum wet bulb:
 - 27°C (80°F) (nonoperating)
 - 23°C (73°F) operating
- Operating voltage:
 - 200 to 240 V ac
- Operating frequency:
 - 50/60 Hz
- Power consumption:
 - 1400 watts maximum (per enclosure with four cores active)
- Power source loading:
 - 1.428 kVA max.(per enclosure with four cores active)
- Thermal output:
 - 4778 BTU/hr maximum (per enclosure with four cores active)
- Noise level: (one enclosure with four active cores)
 - With 3.5 GHz processors #5620: 7.1 bels (operating/idle)
 - With 3.5 GHz processors #5620 and acoustic rack doors: 6.7 bels (operating/idle)
 - With 4.2 GHz processors #5622: 7.1 bels (operating/idle)
 - With 4.2 GHz processors #5622 and acoustic rack doors: 6.7 bels (operating/idle)
 - With 4.7 GHz processors #7380: 7.4 bels (operating/idle)
 - With 4.7 GHz processors #7380 and acoustic rack doors: 6.9 bels (operating/idle)
- Maximum altitude: 3,048 m (10,000 ft)

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 CFR47 Part 15 Class A
- Europe: CISPR 22 Class A; "CE" Mark of Conformity
- Japan: VCCI-A
- Korea: Korean Requirement Class A
- China: People's Republic of China commodity inspection law
- Taiwan: BSMI CNS 13438 (Taiwan EMC Standard)
- Australia\New Zealand: ACA C-Tick

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 System p 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 60950-1 1st Edition Underwriters Laboratory, Safety Information
- CAN/CSA22.2 No. 60950-1 1st Edition

- EN60950-1:2001 European Norm
- GS Mark (Safety, TUV, EN60950)- Germany, Europe
- IEC 60950-1 1st Edition, 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).

Hardware requirements: The 9117-MMA should be installed in a new or existing 7014-T00 or -T42 rack. This provides:

- Proper dimensions
- Mounting surfaces
- Power distribution
- Ventilation
- Stability
- Other functional requirements

The design of the p570 is optimized for use in an IBM 7014-T00 or -T42 rack. Both the front cover and the external processor fabric cables occupy space on the front left side of an IBM 7014 rack that may not be available in non-IBM racks.

Minimum system configuration: Each new model MMA system must include a minimum of the following items:

- One CEC enclosure (4U) with the following:
 - 1X — System Enclosure w/Bezel (#5626)
 - 2X — Power Cords (#6671) or similar power cord
 - 1X — IBM/OEM Rack-Mount Rail Kit - Adjustable Depth (#7164)
 - 1X — Processor Enclosure and Backplane (#5663)
 - 1X — I/O Backplane (#5666)
 - 1X — System Midplane (#5667)
 - 1X — SAS DASD Backplane (#5668)
 - 1X — Power Distribution Backplane (#7870)
 - 1X — System Port riser card (one of #5636, #5637, or #5639)
 - 1X — Service Interface Card (#5648)
 - 2X — Power Supplies (#5628) (not required on model upgrade with Processor #5621)
- 2X — Processor Power Regulator (#5625)
- 1X — Operator Panel (#1845) (not required on model upgrade or systems with an attached HMC)
- 1X — Processor Card (one of these):
 - 3.5 GHz POWER6™, 2-Core Processor Card, 0-core active (#5620)
 - 4.2 GHz POWER6, 2-Core Processor Card, 0-core active (#5621) (available for model upgrade only)
 - 4.2 GHz POWER6, 2-Core Processor Card, 0-core active (#5622)
 - 4.7 GHz POWER6, 2-Core Processor Card, 0-core active (#7380)
- 2X — Processor Activations (two each of one of these):
 - One Processor Activation for Processor Feature #7380 (#5403)

- One Processor Activation for Processor Feature #5620 (#5670)
- One Processor Activation for Processor Feature #5621 (#5671)
- One Processor Activation for Processor Feature #5622 (#5672)
- 2 GB Memory: 1X — 0/2GB (4X0.5GB) DIMMs, 667 MHz, DDR2, POWER6 CoD Memory (#5692) (or larger memory feature)
- 2X — Activation of 1GB DDR2 — POWER6 Memory (#5680)
- Disk Drive: 1X — 73 GB 15K RPM SAS Disk Drive (#3646)
- #9XXX Language Group Specify
- 1X — System Ship Group (#5699)
- For Service Support the p570 must have access to a device capable of reading a CD-ROM or must be attached to a network with an AIX NIM server available.

Additional optional features can be added, as desired.

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

- AIX 5L™ for POWER V5.2 with Technology Level 5200-10, or later
- AIX 5L for POWER V5.3 with Technology Level 5300-06, or later

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

- SUSE LINUX Enterprise Server 10 SP1 for POWER, or later
- Red Hat Enterprise Linux 4.5 for POWER
 - IBM support for Red Hat 4.5 on the p570 is planned to be available on or before August 31, 2007.

Note: The Advanced POWER Virtualization feature (#7942) is not supported on AIX 5L for POWER V5.2.

Note: Not all system features available under the AIX operating system are available under the Linux operating system.

Information on features and external devices supported by Linux can be found at

<http://www-03.ibm.com/systems/p/linux/>

If installing the p570 server within the Cluster 1600:

- CSM V1.4 (AIX or Linux)

Processors

The external processor fabric bus in this system is modular. Cable features are available for connecting pairs of drawers, three drawer stacks and four drawer stacks. With this modular approach, a separate cable is required to connect each drawer to each other drawer in a multi-enclosure stack.

- Feature number 3660 is used to connect adjacent drawers in the stack: drawer 1 to drawer 2; a second feature is required to connect drawer 2 to drawer 3, and yet another feature to connect drawer 3 to drawer 4.
- Feature number 3664 is used to connect three-drawer combinations: drawer 1 to drawer 3; a second feature is required to connect drawer 2 to drawer 4.
- Feature number 3665 is used to connect four-drawer combinations: drawer 1 to drawer 4.

To create the external processor fabric bus required for a full four-CEC enclosure system, three of feature number 3660, two of feature number 3664, and one of feature number 3665 are required.

Each system must have a minimum of two active processors.

A system can have from one to four CEC enclosures. Each enclosure has two sockets; each socket will accept a processor card feature. A system with one enclosure may have one or two processor cards installed. A system with two, three, or four enclosures must have two processor cards in each enclosure.

When two or more processor cards are installed in a system, all cards must have the same feature number. The one exception to this is that 9117-570 systems that were upgraded to 9117-MMA system using processor card feature number 5621 may increase these systems to a maximum of 16 cores using processor feature card number 5621 or 5622. Once feature number 5622 has been added to the system, all additional processors added must be feature number 5622. Features 5621 and 5622 may not be mixed in the same CEC enclosure.

Processor card feature numbers 7380, 5620, and 5622 have 12 memory DIMM slots and must be populated with POWER6 DDR2 Memory DIMMs.

Processor card feature number 5621 has eight DIMM slots. These slots will not accept POWER6 memory DIMMs.

Processor card feature number 5621 is only available to systems that were upgraded from POWER5™ or POWER5+™ processor systems. Once upgraded, they become POWER6 systems.

All processor cards require two working Processor Power Regulators per CEC enclosure. Enclosures with two Processor Power Regulators do not provide redundancy for any processor configuration. A third Processor Power Regulator is required to provide redundant power support to either one or two processor cards in an enclosure.

All CEC enclosures must ship with three Processor Power Regulators (#5625) except for system configurations that contain one or two of processor feature number 5620 in a single CEC enclosure system.

A system configuration with one or two of processor feature number 5620 in a single enclosure may ship with two Processor Power Regulators (#5625) and one Virtual Power Regulator (#5686). In these configurations, the Processor Power Regulators do not provide redundant support to the processors.

Processor CoD activations will activate processor hardware only in the system serial number they are purchased for. If you move processor hardware to another system, the processor may not be functional in that system until arrangements are made to move the processor activations or purchase additional processor activations. Contact your IBM representative or IBM Business Partner for more information.

Memory

Each processor card feature must have a minimum of four DIMMs installed. This includes inactive processor card features present in the system.

Most memory features include a total of four DIMMs. A minimum of four DIMMs from any memory feature must be placed on the same processor card. There is a required plug location for every memory feature attached to a process or card.

- The first four memory DIMMs must be plugged in DIMM sockets J0A, J0B, J0C, and J0D.
- The second four memory DIMMs must be plugged in DIMM sockets J1A, J1B, J1C, and J1D.
- The third four memory DIMMs (for processor cards able to accept 12 DIMMs) must be plugged in DIMM sockets J2A, J2B, J2C, and J2D.

When configuring the memory in a p570, placing 2 memory features (8 DIMMs) on a single processor card will provide the maximum available memory bandwidth. Adding the third memory feature will provide additional memory capacity but will not increase memory bandwidth. System performance that is dependent on memory bandwidth can be improved by purchasing two smaller features per processor card as opposed to one large feature per processor card. To achieve this, when placing an order, ensure the order has 2X memory features for every processor card feature on the order.

All POWER6 memory features must be purchased with sufficient permanent memory activation features so that each memory feature is at least 50% active, except memory feature 8129, which must be purchased with Activation feature 5681 for 100% activation.

Memory features 5692, 5693, 5694, and 5695 can be mixed on the same POWER6 processor card.

Memory features 5696 and 8129 may not be mixed with any other memory feature on a single

processor card. A processor card with memory feature 5696 or 8129 can be mixed in the same CEC enclosure with a processor card containing other POWER6 memory features.

Memory features 5696 and 8129 cannot be used on processor card feature 5620.

For processor feature number 5621, different memory size or frequency features may not be mixed on the same processor card. All of the memory features on a single processor card must be the same size in gigabytes when fully active and have the same frequency. Feature numbers 7894 and 4495 can be mixed on the same processor card because 4495 is 8 GB when fully active. Feature numbers 4497 and 4496 can be mixed on the same processor card because 4496 is 16 GB when fully active. The two processor cards in a single CEC enclosure may have different memory features installed. Processor cards in different enclosures in the same system may have different memory features installed.

For all processors and all system configurations, if memory features in a single system have different frequencies, all memory in the system will function according to the lowest frequency present.

Each system must contain a minimum of 2 GB of active system memory.

Processor card feature numbers 7380, 5620, and 5622 have 12 memory DIMM slots and must be populated with POWER6 DDR2 Memory DIMMs.

Processor card feature number 5621 has eight DIMM slots. These slots will not accept POWER6 DDR2 Memory DIMMs.

Memory CoD activations will activate memory hardware only in the system serial number they are purchased for. If you move memory hardware to another system, the memory may not be functional in that system until arrangements are made to move the memory activations or purchase additional memory activations. Contact your IBM representative or IBM Business Partner for more information.

It is recommended that memory be installed evenly across all processor cards in the system. Balancing memory across the installed processor cards allows memory access in a consistent manner and typically results in the best possible performance for your configuration.

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.

Power

Each p570 system with two or more CEC enclosures (eight or more processor cores) that includes the attachment of remote I/O drawers must have one Power Control Cable (#6006 or similar) to connect the Service Interface Card in the first enclosure to the Service Interface Card in the second enclosure. In these configurations both Service Interface Cards must be included in the Power Control Cable loop.

There are two ac power supplies in each CEC enclosure; the second is required to provide redundant power for enhanced system availability. A CEC enclosure will continue to function with one working power supply. A failed power supply can be hot-swapped but must remain in the system until the replacement power supply is available for exchange.

There are three Processor Power Regulators in each CEC enclosure; the third is required to provide redundant power to the processors for enhanced system availability. The processors will continue to function if there are at least two working Power Regulators in the enclosure. A failed (third) Power Regulator can be hot-swapped but must remain in the system until the replacement power regulator is available for exchange.

Two Processor Power Regulators in a single enclosure do not provide redundancy for any processor configuration. A third Processor Power Regulator is required to provide redundant power support to either one or two processor cards in the enclosure.

All CEC enclosures must ship with three Processor Power Regulators (#5625) except for the system configurations with one or two feature 5620 processors in a single CEC enclosure.

A system with one or two of processor feature number 5620 in a single enclosure may ship with two Processor Power Regulators (#5625) and one Virtual Power Regulator (#5686). In these configurations, the Processor Power Regulators do not provide redundant support to the processors.

Power distribution units

For systems installed in IBM 7014 racks, the following Power Distribution Unit (PDU) rules apply (not all PDUs are available in all models of the 7014):

- For PDU features 9176, 9177, 7176, and 7177: Each pair of PDUs can power up to three p570 CEC enclosures (three drawers per two PDUs). (These features are no longer available for purchase.)
- For PDU features 9178 and 7178: Each pair of PDUs can power up to six p570 CEC enclosures (six drawers per two PDUs). (These features are no longer available for purchase.)
- For PDU features 9188 and 7188, when using power cord 6654, 6655, 6656, 6657, or 6658: Each pair of PDUs can power up to three p570 CEC enclosures (three drawers per two PDUs).
- For PDU features 9188 and 7188, when using power cord feature numbers 6489, 6491, 6492, or 6653: Each pair of PDUs can power up to six p570 CEC enclosures (six drawers per two PDUs).
- Each server drawer has two power supplies, which must be connected to separate PDUs to provide full redundancy.
- Server power cords should be evenly spread across the available PDU power outlets to distribute the current across multiple circuit breakers.

Racks

The p570 consists of one to four CEC enclosures. Each enclosure occupies 4U of vertical rack space. The p570 is designed to be installed in a 7014-T00 or -T42 rack. An existing -T00 or -T42 rack can be used for the p570 if sufficient space and power are available. The p570 is not supported in the 7014-S25 or the -S11.

For p570 configurations with two, three, or four drawers, all drawers must be installed together in the same rack, in a contiguous space of 8U, 12U, or 16U within the rack. The uppermost enclosure in the system is the base enclosure. This enclosure will contain the active Service Processor and the Operator Panel, if an Operator Panel is present in the system.

When a p570 system is installed in an 7014-T00 or -T42 rack that has no front door, a Thin Profile Front Trim Kit must be ordered for the rack. The required trim kit for the 7014-T00 rack is feature number 6246. The required trim kit for the 7014-T42 rack is feature number 6247.

The IBM 7014-T42 rack is constructed with a small flange at the bottom of EIA location 37. This requires special placement rules when a p570 system is installed near the top of a 7014-T42 rack to avoid interference with the front bezel or with the front flex cable, depending on the system configuration. No system drawer can be installed in EIA positions 34, 35, or 36. A two-drawer system cannot be installed above position 29. A three-drawer system cannot be installed above position 25. A four-drawer system cannot be installed above position 21. (The position number refers to the bottom of the lowest drawer.)

The design of the p570 is optimized for use in a 7014-T00 or -T42 rack. Both the front cover and the processor flex cables occupy space on the front left side of an IBM 7014 rack that may not be available in typical non-IBM racks.

Acoustic Door features are available with the 7014-T00 and 7014-T42 racks to meet the lower acoustic levels identified in the specification section of this document. The Acoustic Door feature can be ordered on new T00 and T42 racks or ordered for the T00 and T42 racks that clients already own.

I/O drawers

Remote I/O drawers 7314-G30, 7311-D11, and 7311-D20 I/O can be attached to the 9117-MMA. The 7314-G30 attaches to a 12X Channel Adapter installed in one of the two GX slots available in each enclosure. The 7311 drawers attach to a RIO-2 Adapter installed in one of the two GX slots available in each enclosure.

7311-D20 I/O drawers with RIO Ports to I/O Planer Riser Card (#6413) must be upgraded to RIO-2 Ports to I/O Planer Riser Card (#6417) before it can be attached to a System p server with POWER6 processors.

Some I/O adapters supported in the 7311-D11 and the 7311-D20 I/O drawers when attached to an eServer® or System p5™ server will not be supported when attached to a System p server with POWER6 processors. See the Sales Manual for the I/O drawer on IBM.com for a complete listing.

The maximum number of attached remote I/O drawers depends on the number of CEC enclosures in the system and the I/O attachment type, as follows:

- For RIO-2 attached I/O drawers:
 - Systems with one CEC enclosure:
 - With two processors the enclosure supports up to four I/O drawers.
 - With four processors the enclosure supports up to eight I/O drawers.
 - Systems with two CEC enclosures support up to 12 I/O drawers.
 - Systems with three CEC enclosures support up to 16 I/O drawers.
 - Systems with four CEC enclosures support up to 20 I/O drawers.
- For 12X Host Channel attached I/O drawers:
 - Systems with one CEC enclosure
 - With two processors the enclosure supports up to four I/O drawers.
 - With four processors the enclosure supports up to eight I/O drawers.
 - Systems with two CEC enclosures support up to 16 I/O drawers.
 - Systems with three CEC enclosures support up to 24 I/O drawers.
 - Systems with four CEC enclosures support up to 32 I/O drawers.

It is recommended that any attached remote I/O drawers be located in the same rack as the p570 server for ease of service, but they can be installed in separate racks if the application or other rack content requires it.

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

- Data transfer cables
 - RIO-2 attach cables for RIO-2 I/O Drawers
 - 12X cables for 12X Channel I/O Drawers
- Power Control Cables

RIO-2 I/O Drawers and 12X Channel I/O Drawers may not be mixed in the same remote I/O loop.

Remote 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 p570 system with nonlooped configurations could experience degraded performance and serviceability. If a nonloop connection is detected, a problem is reported.

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

The first I/O drawer attached to a host system requires two Power Control Cables. Each additional I/O drawer added to a host system requires one additional Power Control Cable. Each host 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.

Integrated I/O

Although each CEC enclosure is equipped with integrated system port (serial) external connectors, only the two system ports in the base enclosure are active. If an HMC is attached to the p570, the two integrated system ports will no longer function.

Each CEC enclosure must contain one Virtual Ethernet (HEA) Integrated I/O port card (#5636, #5637, or #5639). This selection is available only when a CEC enclosure is first ordered from the factory.

Each system has two HMC ports on each CEC enclosure. The HMC, however, must be attached to the base CEC enclosure.

The integrated system ports are supported for modem and async terminal connections. Other applications requiring a serial port attachment will need a separate serial port adapter feature to be purchased and installed in a PCI slot. The integrated system ports (serial) do not support HACMP™ configurations.

Disks, media, and boot devices

A device capable of reading a CD-ROM must be attached to the system and available to perform operating system installation, maintenance, problem determination, and service actions such as maintaining system firmware and I/O microcode at their latest levels. Alternatively, the system must be attached to a network with an AIX NIM server configured to perform these functions.

System boot is supported via DASD in a remote DASD drawer attached to a PCI adapter or an I/O drawer attached to GX adapter, or from a network via LAN adapters.

The minimum system configuration requires at least one SAS disk drive in one of the CEC enclosures.

Each CEC enclosure can support one media device when the optional Media Enclosure and Backplane feature (#5629) is ordered. Any supported DVD-ROM or DVD-RAM drive can be installed. Each system can support up to four media devices.

The model MMA supports only the new SAS DASD hard disks internally. The older SCSI DASD hard files can be attached to the model MMA but must be located in a remote I/O drawer. Either the 7031-D24 or the 7311-D20 are compatible with the DASD carriers used on the model 570 DASD files. The DASD files from the model 570 can be moved directly into these I/O drawers.

I/O slots and adapters

Each p570 CEC enclosure has two PCI-X slots, four PCIe slots, and two GX+ slots. One of the PCIe slots shares physical space with one of the GX+ slots such that a maximum of seven adapters can be used in a single CEC enclosure. The two PCI-X 2.0 DDR slots are full-length, 64-bit, 266 MHz slots. There are three full-length PCIe 8X slots and one short form factor PCIe 8X slot. The 2 GX+ slots support short form factor GX adapters.

The slots are identified on the back side of the CEC enclosure as follows:

Slot ID	Adapter type	Slot size
P1-C1	PCIe 8X	Full length
P1-C2	PCIe 8X	Full length
P1-C3	PCIe 8X	Full length
P1-C4	PCI-X 2.0 DDR	Full length
P1-C5	PCI-X 2.0 DDR	Full length
P1-C6/P1-C8	PCIe 8X / GX+	Short form factor
P1-C9	GX+	Short form factor

Adapter slots P1-C6 and P1-C8 share the same physical space in a CEC enclosure. When a GX+ adapter is installed in GX slot P1-C8, PCIe slot P1-C6 cannot be used.

The p570 I/O slot population rules are complex. Extensive configuration rules and checking procedures are incorporated into the marketing configurator ECFGPWR to help ensure a valid system configuration. Configurations generated without using the ECFGPWR configurator may create orders that cannot be built, resulting in possible order rejection or delayed delivery.

Feature maximum limits in the feature descriptions of this document for adapters and devices may not provide optimal system performance. These limits are given to assist with connectivity and functional assurance. The maximum values shown here apply to the features installed in the system CEC enclosures. Adding remote I/O drawers will increase these limits.

Hot-plug options

The following options are hot-plug capable:

- System ac power supplies: One functional power supply must remain installed at all times while the system is operating.
- Disk drives.
- Most PCI adapters.
- Processor power regulators: Two functional power regulators must remain installed at all times while the system is operating.

Hot-plug procedures are contained in the Customer Information Center on IBM.com.

If the system boot device or system console is attached using an I/O adapter feature, that adapter may not be hot-plugged.

The following adapters are not hot-plug capable:

- POWER GXT135P Graphics Accelerator with Digital Support (#2849)
- 2-Port Multiprotocol PCI Adapter (#2962)

Logical partitioning

Dynamic LPAR allows one partition per processor.

Up to 10 partitions per processor are supported when Advanced POWER Virtualization (#7942) is ordered. This function is not supported on AIX 5L V5.2.

An HMC is recommended for all LPAR configurations.

For Linux partitions, a DVD-ROM or DVD-RAM and a Media Enclosure and Backplane (#5629) are required.

Planning information

Customer responsibilities

Customer setup: The 9117-MMA is a service representative-installed system. Features of the model MMA are predominately customer-installable. This is a list of the exceptions; features listed here are to be installed by an IBM service representative.

Function	Feature number
Internal Electronic Cards	5636, 5637, 5639, 5648, 5663, 5666, 5667, 5668, 7870
Memory	4495, 4496, 4497, 4498, 4499, 5692, 5693, 5694, 5695, 5696, 7892, 7893, 7894
Processors	5620, 5621, 5622, 7380
Chassis	5626

Cable orders: No additional cables are required.

Security, auditability, and control

This product uses the security and auditability features of the operating system 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

IBM has transformed its delivery of hardware and software support services to put you on the road to higher system availability. Electronic Services is a Web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems.

To learn how Electronic Services can work for you, visit

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

Volume orders: Contact your IBM representative.

IBM credit corporation financing: Yes

Warranty period: One year

Warranty service: If required, IBM provides repair or exchange service. An IBM technician will attempt to resolve your problem over the telephone. You must follow IBM's problem determination and resolution procedures. 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 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.

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

- Tier 1 CRUs

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 part at your request, at no additional charge.

- Tier 2 CRUs

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

Based upon availability, CRUs will be shipped for next-business-day (NBD) delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU. You may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 days of receipt of the replacement.

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

- Keyboard
- Mouse
- Display
- Mounting hardware
- Fans
- HDDs
- DVD Slimline drive
- Line/power cord
- External cables
- Operator panel
- Power supply
- All PCI adapters
- Service Processor
- External Flex cables
- Media Enclosure and Backplane
- Processor Power Regulator

On-site service: IBM will repair the failing machine at your location and verify its operation. You must provide 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, NBD response

Non-IBM parts support

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 and maintenance service options: For ServiceElect (Z125-5510) and ServiceSuite™ (Z125-5745) Statements of Work:

Warranty service upgrades: 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 type.

For machines with on-site same-day response service, IBM will replace a Tier 1 CRU part at your request, at no additional charge. For additional information on the CRU service, refer to warranty information.

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

Maintenance services: If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM 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 CRUs will be provided as part of the machine's standard maintenance 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.

CRU service and On-site service for other selected parts

CRU service

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

- Tier 1 CRUs

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 part at your request, at no additional charge.

- Tier 2 CRUs

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 NBD delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container is shipped with the replacement CRU,

and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 days of your receipt of the replacement.

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

- Keyboard
- Mouse
- Display
- Mounting Hardware
- Fans
- HDDs
- DVD Slimline Drive
- Line/power cord
- External cables
- Operator panel
- Power supply
- All PCI adapters
- Service Processor
- External Flex cables
- Media Enclosure and Backplane
- Processor Power Regulator

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 type.

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

Non-IBM parts support

Under certain conditions, IBM Integrated Technology Services 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 (adapter cards, PCMCIA cards, disk drives, memory, and so forth) installed within IBM systems 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: Yes

Machine installation: Installation is performed by IBM. IBM will install the machine in accordance with the IBM installation procedures for the machine. In the United States, contact IBM at 800-IBM-SERV (426-7378), and in other countries contact the local IBM office.

The Machine Installation Guide specifies site preparation, physical requirements, and installation (operating) environment and any cabling included in the installation along with the approximate installation time in hours. Customer requests for installation of items not covered in the installation guide may be performed at IBM's hourly service rate designated for the machine.

Graduated program license charges apply: Yes

Group number: F5

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 for which the customer has acquired. You can obtain the agreement by contacting your IBM representative or at

http://www.ibm.com/servers/support/machine_warranties/machine_code.html

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://www14.software.ibm.com/webapp/set2/firmware/gjsn>

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

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

A 15% educational allowance is available to qualifying institutions in accordance with the Attachment for Educational Allowance. The educational allowance may not be added to any other discount or allowance.

Prices

The following are newly announced features on the specific models of the IBM System p 9117 machine type:

Model number MMA

Description	Price	Feature number	Initial /	RP	
			MES/	both/	CSU
			support		
IBM 9117- MMA	\$ 10, 195				No
Minimum monthly maintenance charge	146				
AIX Partition Specify	0	0265	Both	Yes	No
Linux Partition Specify	0	0266	Both	Yes	No
i5/OS(TM) Partition Specify	0	0267	Must Rem	N/A	No
Customer Specified Placement	1, 324	0453	Initial	N/A	No

i5/OS Version V5R3 Specify	NC	0530	Must Rem	N/A	No
i5/OS Version V5R3, V5R3M5 Machine Specify	NC	0531	Must Rem	N/A	No
V5R4 OS, V5R4M0 Machine Code Specify	NC	0532	Must Rem	N/A	No
Assembled in USA	NC	0983	Initial	N/A	No
CCS Customer Service Specify (U. S.)	0	0986	Must Rem	N/A	No
Decline Service Agent Install Indicator	NC	1120	Initial	N/A	No
GX Dual-Port - RI0-2 Attach	3,971	1800	Both	Yes	No
GX Dual-Port - 12X Channel Attach	1,499	1802	Both	Yes	No
GX Dual-Port 4x HCA	1,449	1810	Must Rem	N/A	No
3 meter 4x Cable	287	1835	Must Rem	Yes	No
8 meter 4x Cable	474	1836	Must Rem	Yes	No
1.5 meter 4x Cable	254	1839	Must Rem	Yes	No
Operator Panel	199	1845	Both	Yes	No
Operator Panel	199	1846	Support	Yes	No
Processor Cable, Two-Drawer System	2,647	1847	Must Rem	N/A	No
Processor Cable, Three-Drawer System	9,529	1848	Must Rem	N/A	No
Processor Cable, Four-Drawer System	17,868	1849	Must Rem	N/A	No
SP(TM) Flex Cable, Two-Drawer System	1,324	1857	Must Rem	N/A	No
SP Flex Cable, Three-Drawer System	3,971	1858	Must Rem	N/A	No
SP Flex Cable, Four-Drawer System	7,412	1859	Must Rem	N/A	No
PCI SCSI Adapter 16-Bit Differential External Y Cable	298	2114	Support	Yes	No
Converter Cable, VHDCI to P, Mini- 68-pin to 68-pin, 0.3M	66	2118	Support	Yes	No
0.6M 16-bit SCSI-2 System-to- System Cable	90	2424	Support	Yes	No
2.5M 16-bit SCSI-2 System-to- System Cable	143	2425	Support	Yes	No
LC-SC 50 Micron Fiber Converter Cable	110	2456	Both	Yes	No
LC-SC 62.5 Micron Fiber Converter Cable	110	2459	Both	Yes	No
PCI 4-Channel Ultra3 SCSI RAID Adapter	4,394	2498	Must Rem	N/A	No
External USB 1.44 MB Diskette Drive	110	2591	Support	Yes	No
IDE Slimline DVD-ROM Drive	274	2640	Must Rem	N/A	No
Keyboard/Mouse Attachment Card -- PCI	300	2737	Support	Yes	No
2-Port USB PCI Adapter	60	2738	Both	Yes	No
POWER GXT135P Graphics Accelerator	495	2848	Must Rem	N/A	No
POWER GXT135P Graphics Accelerator with Digital Support	449	2849	Both	Yes	No
ARTIC960Hx 4-Port EIA-232 Cable	469	2861	Support	Yes	No
ARTIC960Hx 4-Port X.21 Cable	552	2863	Support	Yes	No
ARTIC960Hx 4-Port V.35 (DTE) Cable	926	2864	Support	Yes	No
IBM ARTIC960RxD Quad DTA, H.100, 4-Drop Cable	33	2877	Must Rem	N/A	No
Asynchronous Terminal/Printer Cable EIA-232	49	2934	Both	Yes	No
Asynchronous Cable EIA-232/V.24	81	2936	Both	Yes	No
8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus	1,538	2943	Both	Yes	No
128-Port Asynchronous Controller, PCI bus	1,428	2944	Must Rem	N/A	No
TURBOWAYS(R) 622 Mbps PCI MMF ATM Adapter	1,403	2946	Must Rem	N/A	No
IBM ARTIC960Hx 4-Port Multi-protocol PCI Adapter	3,998	2947	Support	Yes	No

Cable, V. 24 / EIA-232	193	2951	Support	Yes	No
Cable, V. 35	353	2952	Support	Yes	No
Cable, V. 36 / EIA-499	281	2953	Support	Yes	No
Cable, X. 21	193	2954	Support	Yes	No
2-Port Multi-protocol PCI Adapter	2,205	2962	Support	Yes	No
Serial-to-Serial Port Cable for Drawer/Drawer	88	3124	Both	Yes	No
Serial-to-Serial Port Cable for Rack/Rack	88	3125	Both	Yes	No
RI0-2 (Remote I/O-2) Cbl, 1.2M	463	3146	Support	Yes	No
RI0-2 (Remote I/O-2) Cbl, 3.5M	728	3147	Support	Yes	No
RI0-2 (Remote I/O-2) Cable, 10M	1,125	3148	Support	Yes	No
RI0-2 (Remote I/O-2) Cable, 1.75M	529	3156	Support	Yes	No
RI0-2 (Remote I/O-2) Cbl, 2.5M	596	3168	Support	Yes	No
36.4 GB 10,000 rpm Ultra320 SCSI Disk Drive Assembly	750	3273	Must Rem	N/A	No
73.4 GB 10,000 rpm Ultra320 SCSI Disk Drive Assembly	599	3274	Must Rem	N/A	No
146.8 GB 10,000 rpm Ultra320 SCSI Disk Drive Assembly	699	3275	Must Rem	N/A	No
36.4 GB 15,000 rpm Ultra320 SCSI Disk Drive Assembly	599	3277	Must Rem	N/A	No
73.4 GB 15,000 rpm Ultra320 SCSI Disk Drive Assembly	659	3278	Must Rem	N/A	No
146.8 GB 15,000 rpm Ultra320 SCSI Disk Drive Assembly	1,299	3279	Must Rem	N/A	No
300 GB 10,000 rpm Ultra320 SCSI Disk Drive Assembly	1,599	3578	Must Rem	N/A	No
300 GB 15K rpm SCSI Disk Drive	1,999	3585	Must Rem	N/A	No

Note: These monitor features are subject to an \$8.00 Electronic Waste Recycling Fee (15-inch to 34-inch video device.)

IBM P76/P77 Color Monitor, Business Black, Captured Cable	575	3627	Must Rem	N/A	No
IBM P260/P275 Color Monitor, Business Black, and Cable	1,400	3628	Must Rem	N/A	No
T210 Flat-Panel Monitor	7,500	3635	Support	Yes	No
L200P Flat Panel Monitor	1,416	3636	Support	Yes	No
IBM T541H /L150p 15" TFT Color Monitor	538	3637	Support	Yes	No
IBM C220p 21-inch Color Monitor, Business Black, and Cable	829	3638	Must Rem	N/A	No
ThinkVision(R) L170p Flat Panel Monitor	829	3639	Support	Yes	No
ThinkVision L171p Flat Panel Monitor	768	3640	Support	Yes	No
IBM T115 Flat Panel Monitor	740	3641	Support	Yes	No
ThinkVision L191p Flat Panel Monitor	900	3642	Support	Yes	No
IBM T120 Flat Panel Monitor	1,754	3643	Both	Yes	No
IBM T119 Flat Panel Monitor	1,119	3644	Support	Yes	No
IBM T117 Flat Panel Monitor	926	3645	Both	Yes	No
73 GB 15K rpm SAS Disk Drive	659	3646	Both	Yes	No
146 GB 15K rpm SAS Disk Drive	1,299	3647	Both	Yes	No
300 GB 15K rpm SAS Disk Drive	1,999	3648	Both	Yes	No
Processor Fabric Cable, 2 enclosure	2,000	3660	Both	Yes	No
Processor Fabric Cable, 3 enclosure	4,000	3664	Both	Yes	No
Processor Fabric Cable, 4 enclosure	8,000	3665	Both	Yes	No
Serial Port Converter Cable, 9-Pin to 25-Pin	28	3925	Both	Yes	No
Asynch Printer/Terminal Cable, 9-pin to 25-pin, 4M	101	3926	Both	Yes	No
Serial Port Null Modem Cable, 9-pin to 9-pin, 3.7M	89	3927	Both	Yes	No
Serial Port Null Modem Cable, 9-pin to 9-pin, 10M	89	3928	Both	Yes	No
6-Foot Extender Cable for Displays (15-pin D-shell to 15-pin D-shell)	110	4242	Both	Yes	No

Extender Cable -- USB Keyboards, 2M	56	4256	Both	Yes	No
VGA to DVI Connection Converter	10	4276	Both	Yes	No
H-100 Bus 8-position Cable	83	4353	Must	Rem	N/A No
2GB (4x512MB) DIMMs, 208-pin, 266 MHz DDR1 SDRAM	3,441	4452	Must	Rem	N/A No
4GB (4x1GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	7,454	4453	Must	Rem	N/A No
8GB (4x2GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	19,517	4454	Must	Rem	N/A No
4GB (4x1GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	9,318	4490	Must	Rem	N/A No
16GB (4x4GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	67,918	4491	Must	Rem	N/A No
32GB (4x8GB) DIMMs, 208-pin, 200 MHz Stacked DDR1 SDRAM	136,324	4492	Must	Rem	N/A No
16GB (4x4GB) DIMMs, 208-pin, 200 MHz Stacked DDR1 SDRAM	42,353	4494	Must	Rem	N/A No
4/8GB (4X2GB) DIMMs, 276-pin 533 MHz, DDR2 SDRAM	9,095	4495	MES	No	No
8/16GB (4X4GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	18,190	4496	Must	Rem	N/A No
16GB (4X4GB) DIMMs, 276-pin, 533 MHz, DDR2 SDRAM	30,310	4497	Must	Rem	N/A No
32GB (4X8GB) DIMMs, 276-pin, 400MHz DDR2 SDRAM	98,304	4498	Must	Rem	N/A No
16GB (4X4GB) DIMMs, 276-pin, 400MHz DDR2 SDRAM	28,672	4499	Must	Rem	N/A No

One and only one rack indicator features is required on all orders (#4650 to #4666).

Rack Indicator- Not Factory Integrated	\$ 0	4650	Initial	N/A	No
Rack Indicator, Rack #1	0	4651	Initial	N/A	No
Rack Indicator, Rack #2	0	4652	Initial	N/A	No
Rack Indicator, Rack #3	0	4653	Initial	N/A	No
Rack Indicator, Rack #4	0	4654	Initial	N/A	No
Rack Indicator, Rack #5	0	4655	Initial	N/A	No
Rack Indicator, Rack #6	0	4656	Initial	N/A	No
Rack Indicator, Rack #7	0	4657	Initial	N/A	No
Rack Indicator, Rack #8	0	4658	Initial	N/A	No
Rack Indicator, Rack #9	0	4659	Initial	N/A	No
Rack Indicator, Rack #10	0	4660	Initial	N/A	No
Rack Indicator, Rack #11	0	4661	Initial	N/A	No
Rack Indicator, Rack #12	0	4662	Initial	N/A	No
Rack Indicator, Rack #13	0	4663	Initial	N/A	No
Rack Indicator, Rack #14	0	4664	Initial	N/A	No
Rack Indicator, Rack #15	0	4665	Initial	N/A	No
Rack Indicator, Rack #16	0	4666	Initial	N/A	No
Rack Status Beacon Cable, Junction Box to Drawer or Status Beacon	10	4691	Must	Rem	N/A No
Rack Status Beacon Cable, Junction Box Daisy Chain	10	4692	Must	Rem	N/A No
Rack Status Beacon Junction Box	292	4693	Must	Rem	N/A No
PCI-X Cryptographic Coprocessor (FIPS 4)	11,912	4764	Both	Yes	No
IBM 64bit/66MHz PCI ATM 155 UTP Adapter	1,495	4953	Must	Rem	N/A No
IBM 64bit/66MHz PCI ATM 155 MMF Adapter	1,595	4957	Must	Rem	N/A No
IBM Token-Ring PCI Adapter	876	4959	Must	Rem	N/A No
IBM e-business Cryptographic Accelerator	5,000	4960	Must	Rem	N/A No
IBM Universal 4-Port 10/100 Ethernet Adapter	1,500	4961	Must	Rem	N/A No
10/100 Mbps Ethernet PCI Adapter II	545	4962	Must	Rem	N/A No
PCI Cryptographic Coprocessor (FIPS-4)	7,000	4963	Must	Rem	N/A No
PCI Cryptographic Coprocessor	5,833	4964	Must	Rem	N/A No

Custom Service Specify	0	5001	Initial	N/A	No
Software Preinstall	0	5005	Initial	N/A	No
One Processor Activation for Processor Feature #7380	23,000	5403	Both	Yes	No
Minimum maintenance charge 24 x 7	189				
Utility Billing for FC# 7380-100 processor minutes	319	5404	MES	Yes	No
3.5 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	4,550	5620	Both	No	No
Minimum maintenance charge 24 x 7	136				
4.2 GHz Proc Card, 0/2 Core POWER6, 8 DDR2 Memory Slots	6,415	5621	MES	No	No
Minimum maintenance charge 24 x 7	167				
4.2 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	7,650	5622	Both	No	No
Minimum maintenance charge 24 x 7	167				
Proc Power Regulator	1,500	5625	Both	Yes	No
System CEC Enclosure with Bezel	500	5626	Both	No	No
Sys AC Power Supply, 1600 W	1,502	5628	Both	Yes	No
Media Enclosure and Backplane	185	5629	Both	Yes	No
Integrated, 2X- 1Gb Virtual Ethernet, I/O ports	399	5636	Both	N/A	No
Integrated, 2X- 10Gb (SR) Virtual Ethernet, I/O ports	5,600	5637	Both	N/A	No
Integrated, 4X- 1Gb Virtual Ethernet, I/O ports	699	5639	Both	N/A	No
Utility Billing for FC# 5620-100 processor minutes	126	5640	MES	Yes	No
Utility Billing for FC# 5621-100 processor minutes	213	5641	MES	Yes	No
Blind Swap Type III Cassette-PCI-X or PCIe, Short Slot	50	5646	MES	Yes	No
PCI-X or PCIe, Standard Slot	50	5647	MES	Yes	No
Service Interface Card	1,000	5648	Both	Yes	No
On/Off Processor Day Billing for Feature #5620	76	5650	MES	Yes	No
Feature #5621 or #5622	128	5653	MES	Yes	No
Feature #7380	192	5656	MES	Yes	No
Serv Interface Cable- 2 Enclosure	2,000	5657	Both	Yes	No
Serv Interface Cable- 3 Enclosure	4,000	5658	Both	Yes	No
Serv Interface Cable- 4 Enclosure	8,000	5660	Both	Yes	No
Proc Enclosure and Backplane I/O Backplane	2,000	5663	Both	No	No
I/O Backplane	4,500	5666	Both	No	No
System Midplane	1,000	5667	Both	No	No
SAS Disk Backplane -6 slot	1,051	5668	Both	No	No
One Processor Activation for Processor Feature #5620	9,100	5670	Both	Yes	No
Minimum maintenance charge 24 x 7	120				
Feature #5621	12,830	5671	Both	Yes	No
Minimum maintenance charge 24 x 7	151				
Feature #5622	15,300	5672	Both	Yes	No
Minimum maintenance charge 24 x 7	151				
Activation of 1GB DDR2 POWER6 Memory	1,515	5680	Both	Yes	No
Activation of 256 GB DDR2 POWER6 Memory	387,840	5681	Both	Yes	No
Virtual Processor Power Regulator ON/OFF, 1GB- 1Day, Memory Billing- POWER6 Memory	NC	5686	Initial	N/A	No
0/2GB DDR2 Memory (4X0.5GB) DIMMs- 667 MHz- POWER6 Memory	13	5691	MES	Yes	No
0/4GB DDR2 Memory (4X1GB) DIMMs- 667 MHz- POWER6 Memory	759	5692	Both	No	No
0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 Memory	1,518	5693	Both	No	No
0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 Memory	3,035	5694	Both	No	No

0/16GB DDR2 Memory (4X4GB) DIMMs-533 MHz- POWER6 Memory	6,070	5695	Both	No	No
0/32GB DDR2 Memory (4X8GB) DIMMs-400 MHz- POWER6 Memory	26,886	5696	Both	No	No
System Ship Group	20	5699	Both	N/A	No
IBM Gigabit Ethernet-SX PCI-X Adapter	1,142	5700	Both	Yes	No
IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	699	5701	Both	Yes	No
PCI-X Dual Channel Ultra320 SCSI RAID Adapter	2,646	5703	Must Rem	N/A	No
IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	999	5706	Both	Yes	No
IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter	1,750	5707	Both	Yes	No
Dual Channel SCSI RAID Enablement Card	2,175	5709	Must Rem	N/A	No
PCI-X Dual Channel Ultra320 SCSI Adapter	777	5712	Support	Yes	No
1 Gigabit iSCSI TOE PCI-X on Copper Media Adapter	1,191	5713	Must Rem	N/A	No
Optical Media Adapter	1,853	5714	Must Rem	N/A	No
2 Gigabit Fibre Channel PCI-X Adapter	1,999	5716	Support	Yes	No
10 Gigabit Ethernet -SR PCI-X Adapter	6,618	5718	Support	Yes	No
IBM 10 Gigabit Ethernet-LR PCI-X Adapter	13,041	5719	Support	Yes	No
10 Gb Ethernet-SR PCI-X 2.0 DDR Adapter	6,276	5721	Both	Yes	No
10 Gb Ethernet-LR PCI-X 2.0 DDR Adapter	10,587	5722	Both	Yes	No
2-Port Asynchronous IEA-232 PCI Adapter	171	5723	Both	Yes	No
Dual Channel SCSI RAID Enablement Card	2,879	5726	Must Rem	N/A	No
Dual Channel SCSI RAID Enablement Card	1,984	5728	Must Rem	N/A	No
PCI-X DDR Dual Channel Ultra320 SCSI Adapter	777	5736	Both	Yes	No
PCI-X DDR Dual Channel Ultra320 SCSI RAID Adapter	2,646	5737	Must Rem	N/A	No
4-Port 10/100/1000 Base-TX PCI-X Adapter	1,099	5740	Both	Yes	No
POWER GXT145 PCI Express Graphics Accelerator	500	5748	Both	Yes	No
IBM 4.7 GB IDE Slimline DVD-RAM Drive	660	5751	Must Rem	N/A	No
IDE Slimline DVD-ROM Drive	275	5756	Both	Yes	No
IBM 4.7 GB IDE Slimline DVD-RAM Drive	660	5757	Both	Yes	No
4 Gb Single-Port Fibre Channel PCI-X 2.0 DDR Adapter	1,999	5758	Both	Yes	No
4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter	3,308	5759	Both	Yes	No
2-Port 10/100/1000 Base-TX Ethernet PCI Express Adapter	699	5767	Both	Yes	No
2-Port Gigabit Ethernet-SX PCI Express Adapter	1,750	5768	Both	Yes	No
4 Gigabit PCI Express Single Port Fibre Channel Adapter	1,999	5773	Both	Yes	No
4 Gigabit PCI Express Dual Port Fibre Channel Adapter	3,308	5774	Both	Yes	No
Full Width Quiet Touch Keyboard -- USB					
U.S. English, #103P	110	5951	Both	Yes	No
French, #189	110	5952	Both	Yes	No
Italian, #142	110	5953	Both	Yes	No
German/Austrian, #129	110	5954	Both	Yes	No
UK English, #166P	110	5955	Both	Yes	No
Spanish, #172	110	5956	Both	Yes	No
Japanese, #194	110	5957	Both	Yes	No
Brazilian Portuguese, #275	110	5958	Both	Yes	No
Hungarian, #208	110	5959	Both	Yes	No

Korean, #413	110	5960	Both	Yes	No
Chinese, #467	110	5961	Both	Yes	No
French Canadian, #445	110	5962	Both	Yes	No
Canadian French, #058	110	5963	Both	Yes	No
Belgian/UK, #120	110	5964	Both	Yes	No
Swedish/Finnish, #153	110	5965	Both	Yes	No
Danish, #159	110	5966	Both	Yes	No
Bulgarian, #442	110	5967	Both	Yes	No
Swiss/French/German, #150	110	5968	Both	Yes	No
Norwegian, #155	110	5969	Both	Yes	No
Dutch, #143	110	5970	Both	Yes	No
Portuguese, #163	110	5971	Both	Yes	No
Greek, #319	110	5972	Both	Yes	No
Hebrew, #212	110	5973	Both	Yes	No
Polish, #214	110	5974	Both	Yes	No
Slovakian, #245	110	5975	Both	Yes	No
Czech, #243	110	5976	Both	Yes	No
Turkish, #179	110	5977	Both	Yes	No
LA Spanish, #171	110	5978	Both	Yes	No
Arabic, #253	110	5979	Both	Yes	No
Thai, #191	110	5980	Both	Yes	No
Russian, #443	110	5981	Both	Yes	No
Slovenian, #234	110	5982	Both	Yes	No
U.S. English Euro, #103P	110	5983	Both	Yes	No
Power Control Cable (SPCN) --					
2 meter	33	6001	Support	Yes	No
3 meter	53	6006	Both	Yes	No
15 meter	93	6007	Support	Yes	No
6 meter	66	6008	Support	Yes	No
30 meter	119	6029	Support	Yes	No
PCI Dual Channel Ultra3 SCSI Adapter	790	6203	Must Rem	N/A	No
PCI Universal Differential Ultra SCSI Adapter	716	6204	Must Rem	N/A	No
2 Gigabit Fibre Channel Adapter for 64-bit PCI Bus	2,100	6228	Must Rem	N/A	No
Advanced Serial RAID Plus Adapter	3,000	6230	Must Rem	N/A	No
128 MByte DRAM Option Card	960	6231	Must Rem	N/A	No
32 MByte Fast-Write Cache Option Card	575	6235	Must Rem	N/A	No
2 Gigabit Fibre Channel PCI-X Adapter	3,100	6239	Support	Yes	No
Power Cable -- Drawer to IBM PDU, 14-foot, 250V/10A	19	6458	Both	Yes	No
Power Cord (14-foot), Drawer to OEM PDU, (250V, 15A), United States, Plug Type #5	19	6469	Both	Yes	No
Power Cord (6-foot), To Wall (125V, 15A), Plug Type #4	19	6470	Must Rem	N/A	No
Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A), Plug Type #70	19	6471	Must Rem	N/A	No
(250V, 16A), Plug Type #18	19	6472	Both	Yes	No
(250V, 10A), Plug Type 19	19	6473	Both	Yes	No
(250V, 13A), Plug Type #23	19	6474	Both	Yes	No
(250V, 16A), Plug Type #32	19	6475	Both	Yes	No
(250V, 10A), Plug Type #24	19	6476	Both	Yes	No
(250V, 16A), Plug Type #22	19	6477	Both	Yes	No
(250V, 16A), Plug Type #25	19	6478	Both	Yes	No
(250V, 10A), Plug Type #6	14	6479	Support	Yes	No
Power Cord (6-foot), To Wall, (250V, 15A), United States, Plug Type #5	19	6487	Both	Yes	No
Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A or 250V, 10A), Plug Type #2	53	6488	Both	Yes	No
(250V, 10A), Plug Type #62	19	6493	Both	Yes	No
(250V, 10A), Plug Type #69	19	6494	Both	Yes	No
(250V, 10A), Plug Type #73	19	6495	Both	Yes	No
(250V, 10A), Plug Type #66	19	6496	Both	Yes	No
Disk Slot Fillers (Quantity 4)	60	6598	Must Rem	N/A	No
Power Cord (9-foot), To Wall/OEM PDU,					

(125V, 15A), Plug Type #75	19	6651	Both	Yes	No
(250V, 15A), Plug Type #76	19	6659	Both	Yes	No
Power Cord (14-foot), Drawer to OEM					
PDU, (250V, 15A), Plug Type #57 (DENAN marking)	19	6669	Both	Yes	No
Power Cord (6-foot), To Wall (125V, 15A), Plug Type #59 (DENAN marking)	19	6670	Both	Yes	No
Power Cord (9-foot), Drawer to IBM PDU, 250V/10A	19	6671	Both	Yes	No
Power Cord (5-foot), Drawer to IBM PDU, 250V/10A	19	6672	Both	Yes	No
Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #6, Insulated	19	6680	Both	Yes	No
Power Cord (6-foot), To Wall, (250V, 15A), Plug Type #57 (DENAN marking)	19	6687	Both	Yes	No
8/16GB (4x4GB) DIMMs, CUoD, 8GB Active, 200 MHz DDR1	26,735	7049	Must Rem	N/A	No
IBM/OEM Rack-mount Drawer Rail Kit - Adjustable Depth	222	7164	Both	Yes	No
OEM Rack-mount Drawer Rail Kit	168	7165	Support	Yes	No
System Drawer Enclosure w/ Bezel	463	7300	Must Rem	N/A	No
SDI Software Pre-Install Indicator	NC	7305	Initial	N/A	No
4.7 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots Minimum maintenance charge 24 x 7	11,500 205	7380	Both	No	No
One way Processor Activation for Processor FC 8338	13,700	7618	Must Rem	N/A	No
On/Off Processor Billing Day for FC 8338	114	7624	Must Rem	N/A	No
1GB DDR2 Memory Activation	1,515	7663	MES	Yes	No
One way Processor Activation for Processor FC 7782	5,600	7665	Must Rem	N/A	No
30 Days Prepaid Reserve Capacity for one 1.9GHz Processor on FC 7782	1,410	7666	Must Rem	N/A	No
On/Off Processor day billing for FC 7782	47	7718	Must Rem	N/A	No
30 Days Prepaid Reserve Capacity for one 2.2GHz Processor on FC 8338	3,420	7728	Must Rem	N/A	No
Processor Power Regulator	675	7768	Must Rem	N/A	No
2-Way 1.9 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	5,600	7782	Must Rem	N/A	No
Ethernet Cable, 6M, HMC to System Unit	16	7801	Both	Yes	No
15M, HMC to System Unit	34	7802	Both	Yes	No
2-Way 1.65 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	7,950	7830	Must Rem	N/A	No
2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	16,090	7832	Must Rem	N/A	No
2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR2 Memory DIMM Slots	17,699	7833	Must Rem	N/A	No
2-Way 1.5 GHz POWER5 Processor Card, 0-Way Entitled, 8 DDR1 Memory DIMM Slots	2,950	7834	Must Rem	N/A	No
PCI Blind Swap Cassette Kit, Single Wide Short Adapters, Type II	46	7861	Must Rem	N/A	No
Single Wide Adapters, Type II	46	7862	Support	Yes	No
Double Wide Adapters, Type II	66	7863	Must Rem	N/A	No

Processor Enclosure And Backplane	1, 588	7865	Must	Rem	N/A	No
I/O Backplane, 6 PCI-X Slots	5, 426	7866	Must	Rem	N/A	No
System Midplane	662	7867	Must	Rem	N/A	No
Ultra320 SCSI 6-pack Backplane	1, 588	7868	Must	Rem	N/A	No
Media Enclosure And Backplane	185	7869	Must	Rem	N/A	No
Power Distribution Backplane	265	7870	Both	No	No	No
Processor Power Regulator	675	7875	Must	Rem	N/A	No
System Port Riser Card	132	7878	Must	Rem	N/A	No
System Drawer Enclosure	463	7879	Must	Rem	N/A	No
Service Processor	860	7881	Must	Rem	N/A	No
AC Power Supply, 1400 W	1, 059	7888	Support	Yes	No	No
4/8GB (4x2GB) DIMMs, CUoD, 4GB Active, 266 MHz DDR1	11, 711	7890	Must	Rem	N/A	No
2GB (4x512MB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	3, 441	7892	Must	Rem	N/A	No
4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	7, 578	7893	MES	No	No	No
8GB (4x2GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	15, 155	7894	MES	No	No	No
One Processor Activation for CUoD						
Processor Feature #7830	11, 925	7897	Must	Rem	N/A	No
Processor Feature #7832	32, 180	7898	Must	Rem	N/A	No
Processor Feature #7833	35, 398	7899	Must	Rem	N/A	No
One Processor Entitlement for						
Processor Feature #7834	4, 425	7929	Must	Rem	N/A	No
Advanced POWER Virtualization	1, 310	7942	Both	Yes	No	No
1024MB Activation for DDR1 Memory	1, 952	7950	Must	Rem	N/A	No
On/Off Processor Enablement	0	7951	MES	Yes	No	No
On/Off Processor Day Billing for						
Feature 7830	133	7952	Must	Rem	N/A	No
Feature 7832	358	7953	Must	Rem	N/A	No
On/Off Memory Enablement	0	7954	MES	Yes	No	No
On/Off Processor Day Billing for						
Feature 7833	393	7955	Must	Rem	N/A	No
30 Days Prepaid Reserve Capacity for 1.65 GHz Processors	3, 975	7956	Must	Rem	N/A	No
On/Off Memory 1GB-Day Billing	13	7957	Must	Rem	N/A	No
30 Days Prepaid Reserve Capacity for 1.9 GHz Processors	10, 727	7959	Must	Rem	N/A	No
System Service Processor	860	7997	Must	Rem	N/A	No
570 to MMA CoD Memory Activation Carry Over Indicator	0	8017	MES	Yes	No	No
570 to MMA Advanced POWER Virtualization Carry Over Indicator	0	8018	MES	Yes	No	No
4096MB (4x1024MB) DIMMs, Express Configuration, Factory Only	0	8052	Must	Rem	N/A	No
0/256GB DDR2 Memory (32X8GB) DIMMs- 400 MHz- POWER6 Memory	97, 126	8129	Initial	No	No	No
128-Port Asynchronous Controller						
Cable, 4.5 Meter	66	8131	Must	Rem	N/A	No
Cable, 23cm (9-Inch)	44	8132	Must	Rem	N/A	No
RJ-45 to DB-25 Converter Cable	132	8133	Support	Yes	No	No
Rack Mountable Remote Asynchronous Node	2, 757	8136	Must	Rem	N/A	No
16-Port EIA-232						
Enhanced Remote Asynchronous Node	1, 759	8137	Must	Rem	N/A	No
16-Port EIA-232						
2-Way 2.2 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	6, 850	8338	Must	Rem	N/A	No
Power Cord Carry Over Indicator, #9800, Model Conversion Only	0	8430	Support	Yes	No	No
#9802, Model Conversion Only	0	8431	Support	Yes	No	No
#9820, Model Conversion Only	0	8432	Support	Yes	No	No
#9821, Model Conversion Only	0	8433	Support	Yes	No	No
#9825, Model Conversion Only	0	8434	Support	Yes	No	No
#9827, Model Conversion Only	0	8435	Support	Yes	No	No
#9828, Model Conversion Only	0	8436	Support	Yes	No	No
#9829, Model Conversion Only	0	8437	Support	Yes	No	No
#9830, Model Conversion Only	0	8438	Support	Yes	No	No
#9831, Model Conversion Only	0	8439	Support	Yes	No	No
#9833, Model Conversion Only	0	8440	Support	Yes	No	No
#9834, Model Conversion Only	0	8441	Support	Yes	No	No

Zero-priced Value Pak Processor					
Activation Code for #7830	0	8452	Must Rem	N/A	No
Activation Code for #7832	0	8454	Must Rem	N/A	No
Activation Code for #7833	0	8455	Must Rem	N/A	No
Entitlement for #7834	0	8456	Must Rem	N/A	No
Quiet Touch Keyboard -- USB,					
Business Black,					
U. S. English, #103P	110	8800	Support	Yes	No
Business Black, French, #189	110	8801	Support	Yes	No
Italian, #142	110	8802	Support	Yes	No
German/Austrian, #129	110	8803	Support	Yes	No
UK English, #166	110	8804	Support	Yes	No
Spanish, #172	110	8805	Support	Yes	No
Japanese, #194	110	8806	Support	Yes	No
Brazilian/Portuguese, #275	110	8807	Support	Yes	No
Canadian French, #058	110	8808	Support	Yes	No
Belgium/UK, #120	110	8810	Support	Yes	No
Swedish/Finnish, #153	110	8811	Support	Yes	No
Danish, #159	110	8812	Support	Yes	No
Bulgarian, #442	110	8813	Support	Yes	No
Swiss/French/German, #150F/G	110	8814	Support	Yes	No
Norwegian, #155	110	8816	Support	Yes	No
Dutch, #143	110	8817	Support	Yes	No
Portuguese, #163	110	8818	Support	Yes	No
Greek, #319	110	8819	Support	Yes	No
Hebrew, #212	110	8820	Support	Yes	No
Hungarian, #208	110	8821	Support	Yes	No
Polish, #214	110	8823	Support	Yes	No
Slovakian, #245	110	8825	Support	Yes	No
Czech, #243	110	8826	Support	Yes	No
Turkish, #179	110	8827	Support	Yes	No
LA Spanish, #171	110	8829	Support	Yes	No
Arabic, #253	110	8830	Support	Yes	No
Korean, #413	110	8833	Support	Yes	No
Chinese/US, #467	110	8834	Support	Yes	No
French Canadian, #445	110	8835	Support	Yes	No
Thai, #191	110	8836	Support	Yes	No
Russian, #443	110	8838	Support	Yes	No
Yugoslavian/Latin, #105	110	8839	Support	Yes	No
U. S. English (EMEA), #103P	110	8840	Support	Yes	No
Mouse -- USB, Business Black with Keyboard Attachment Cable	82	8841	Both	Yes	No
Southern Hemisphere Designator for Monitors	0	9004	Must Rem	N/A	No
Order Routing Indicator-- System Plant	NC	9169	Initial	N/A	No
Reserved Rack Space Indicator -- 4U	NC	9570	Initial	N/A	No
Language Group Specify --					
U. S. English	NC	9300	Initial	N/A	No
Dutch	NC	9700	Initial	N/A	No
French	NC	9703	Initial	N/A	No
German	NC	9704	Initial	N/A	No
Polish	NC	9705	Initial	N/A	No
Norwegian	NC	9706	Initial	N/A	No
Portuguese	NC	9707	Initial	N/A	No
Spanish	NC	9708	Initial	N/A	No
Italian	NC	9711	Initial	N/A	No
Canadian French	NC	9712	Initial	N/A	No
Japanese	NC	9714	Initial	N/A	No
Traditional Chinese (Taiwan)	NC	9715	Initial	N/A	No
Korean	NC	9716	Initial	N/A	No
Turkish	NC	9718	Initial	N/A	No
Hungarian	NC	9719	Initial	N/A	No
Slovakian	NC	9720	Initial	N/A	No
Russian	NC	9721	Initial	N/A	No
Simplified Chinese (PRC)	NC	9722	Initial	N/A	No
Czech	NC	9724	Initial	N/A	No
Romanian	NC	9725	Initial	N/A	No
Croatian	NC	9726	Initial	N/A	No
Slovenian	NC	9727	Initial	N/A	No
Brazilian Portuguese	NC	9728	Initial	N/A	No
Thai	NC	9729	Initial	N/A	No

Type/model conversions

From Type	From Model	To Type	To Model	Parts returned	Price
9117	570	9117	MMA	Yes	\$8,067

Feature conversions

Feature conversions for 9117-570 to 9117-MMA adapter features

From FC:	To FC:	Price
Parts returned: Yes		
7878 -- System Port Riser Card	5639 -- Integrated, 4X- 1Gb Virtual Ethernet, I/O ports	\$633
7997 -- System Service Processor	5648 -- Service Interface Card	570

Feature conversions for 9117-570 to 9117-MMA cable features

From FC:	To FC:	Price
Parts returned: Yes		
1847 -- Processor Cable, Two-Drawer System	3660 -- Processor Fabric Cable, 2 enclosure	\$1,338
1848 -- Processor Cable, Three-Drawer System	3664 -- Processor Fabric Cable, 3 enclosure	1,618
1849 -- Processor Cable, Four-Drawer System	3665 -- Processor Fabric Cable, 4 enclosure	3,533
1857 -- SP Flex Cable, Two-Drawer System	5657 -- Serv Interface Cable- 2 Enclosure	1,338
1858 -- SP Flex Cable, Three-Drawer System	5658 -- Serv Interface Cable- 3 Enclosure	2,015
1859 -- SP Flex Cable, Four-Drawer System	5660 -- Serv Interface Cable- 4 Enclosure	4,294

Feature conversions for 9117-570 to 9117-MMA media devices features

From FC:	To FC:	Price
Parts returned: Yes		
7869 -- Media Enclosure And Backplane	5629 -- Media Enclosure and Backplane	\$ 93
2640 -- IDE Slimline DVD-ROM Drive	5756 -- IDE Slimline DVD-ROM Drive	138

Feature conversions for 9117-570 to 9117-MMA memory features

From FC:	To FC:	Price
Parts returned: No		
7663 -- 1GB DDR2 Memory Activation	5680 -- Activation of 1GB DDR2 POWER6 Memory	\$ 758
7950 -- 1024MB Activation for DDR1 Memory	5680 -- Activation of 1GB DDR2 POWER6 Memory	539
Parts returned: Yes		
4453 -- 4GB (4x1GB) DIMMs, 208-pin, 266MHz Stacked DDR1 SDRAM	5693 -- 0/4GB DDR2 Memory (4X1GB) DIMMs- 667 MHz- POWER6 Memory	383

4490 -- 4GB (4x1GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5693 -- 0/4GB DDR2 Memory (4X1GB) DIMMs- 667 MHz- POWER6 Memory	120
7893 -- 4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5693 -- 0/4GB DDR2 Memory (4X1GB) DIMMs- 667 MHz- POWER6 Memory	381
4453 -- 4GB (4x1GB) DIMMs, 208-pin, 266MHz Stacked DDR1 SDRAM	5694 -- 0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 Memory	1,900
4454 -- 8GB (4x2GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5694 -- 0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 Memory	107
4490 -- 4GB (4x1GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5694 -- 0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 Memory	1,637
4495 -- 4/8GB (4X2GB) DIMMs, 276-pin 533 MHz, DDR2 SDRAM	5694 -- 0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 Memory	1,671
7893 -- 4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5694 -- 0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 Memory	1,898
7894 -- 8GB (4x2GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5694 -- 0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 Memory	762
4453 -- 4GB (4x1GB) DIMMs, 208-pin, 266MHz Stacked DDR1 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	5,314
4454 -- 8GB (4x2GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	4,118
4490 -- 4GB (4x1GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	5,138
4491 -- 16GB (4x4GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	2,674
4494 -- 16GB (4x4GB) DIMMs, 208-pin, 200 MHz Stacked DDR1 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	1,835
4495 -- 4/8GB (4X2GB) DIMMs, 276-pin 533 MHz, DDR2 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	4,251
4496 -- 8/16GB (4X4GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	2,432
4497 -- 16GB (4X4GB) DIMMs, 276-pin, 533 MHz, DDR2 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	3,039
7049 -- 8/16GB (4x4GB) DIMMs, CUoD, 8GB Active, 200 MHz DDR1	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	723
7893 -- 4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	4,554
7894 -- 8GB (4x2GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5695 -- 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 Memory	3,039
4453 -- 4GB (4x1GB) DIMMs, 208-pin, 266MHz Stacked DDR1 SDRAM	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 Memory	23,104
4454 -- 8GB (4x2GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 Memory	17,128
4490 -- 4GB (4x1GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 Memory	22,227
4491 -- 16GB (4x4GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 Memory	3,115
4494 -- 16GB (4x4GB) DIMMs, 208-pin, 200 MHz Stacked DDR1 SDRAM	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 Memory	5,710
4495 -- 4/8GB (4X2GB) DIMMs, 276-pin 533 MHz, DDR2	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz-	22,339

SDRAM	POWER6 Memory	
4496 -- 8/16GB (4X4GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz-	17, 791
4497 -- 16GB (4X4GB) DIMMs, 276-pin, 533 MHz, DDR2 SDRAM	POWER6 Memory	
7049 -- 8/16GB (4x4GB) DIMMs, CUoD, 8GB Active, 200 MHz DDR1	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz-	11, 731
7893 -- 4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	POWER6 Memory	
7894 -- 8GB (4x2GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz-	13, 519
	POWER6 Memory	
	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz-	23, 097
	POWER6 Memory	
	5696 -- 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz-	19, 309
	POWER6 Memory	

Feature conversions for 9117-570 to 9117-MMA miscellaneous features

From FC:	To FC:	Price
Parts returned: Yes		
7865 -- Processor Enclosure And Backplane	5663 -- Proc Enclosure and Backplane	\$1, 206
7866 -- I/O Backplane, 6 PCI-X Slots	5666 -- I/O Backplane	1, 787
7867 -- System Mi dplane	5667 -- System Mi dplane	669
7868 -- Ultra320 SCSI 6-pack Backplane	5668 -- SAS Di sk Backplane -6 slot	206

Feature conversions for 9117-570 to 9117-MMA power features

From FC:	To FC:	Price
Parts returned: Yes		
7768 -- Processor Power Regulator	5625 -- Proc Power Regulator	\$1, 163

Feature conversions for 9117-570 to 9117-MMA processor features

From FC:	To FC:	Price
Parts returned: Yes		
7782 -- 2-Way 1.9 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	5621 -- 4.2 GHz Proc Card, 2 Core POWER6, 8 DDR2 Memory Slots	0/ \$ 1, 375
8338 -- 2-Way 2.2 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	5621 -- 4.2 GHz Proc Card, 2 Core POWER6, 8 DDR2 Memory Slots	0/ 2, 990
7782 -- 2-Way 1.9 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	5622 -- 4.2 GHz Proc Card, 2 Core POWER6, 12 DDR2 Memory Slots	0/ 4, 850
7830 -- 2-Way 1.65 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	5622 -- 4.2 GHz Proc Card, 2 Core POWER6, 12 DDR2 Memory Slots	0/ 1, 688
7832 -- 2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	5622 -- 4.2 GHz Proc Card, 2 Core POWER6, 12 DDR2 Memory Slots	0/ 410
7833 -- 2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR2 Memory DIMM Slots	5622 -- 4.2 GHz Proc Card, 2 Core POWER6, 12 DDR2 Memory Slots	0/ 570

7834 -- 2-Way 1.5 GHz POWER5 Processor Card, 0-Way Entitled, 8 DDR1 Memory DIMM Slots	5622 -- 4.2 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	4,700
8338 -- 2-Way 2.2 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	5622 -- 4.2 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	4,225

Parts returned: No

7618 -- One way Processor Activation for Processor FC 8338	5671 -- One Processor Activation for Processor Feature #5621	4,610
7665 -- One way Processor Activation for Processor FC 7782	5671 -- One Processor Activation for Processor Feature #5621	7,790
7618 -- One way Processor Activation for Processor FC 8338	5672 -- One Processor Activation for Processor Feature #5622	7,080
7665 -- One way Processor Activation for Processor FC 7782	5672 -- One Processor Activation for Processor Feature #5622	10,260
7897 -- One Processor Activation for CUoD Processor Feature #7830	5672 -- One Processor Activation for Processor Feature #5622	6,356
7898 -- One Processor Activation for CUoD Processor Feature #7832	5672 -- One Processor Activation for Processor Feature #5622	819
7899 -- One Processor Activation for CUoD Processor Feature #7833	5672 -- One Processor Activation for Processor Feature #5622	1,141
7929 -- One Processor Entitlement for Processor Feature #7834	5672 -- One Processor Activation for Processor Feature #5622	10,875

Feature conversions for 9117-570 to 9117-MMA rack-related features

From FC:	To FC:	Price
Parts returned: Yes		
7300 -- System Drawer Enclosure w/ Bezel	5626 -- System CEC Enclosure with Bezel	\$269
7879 -- System Drawer Enclosure	5626 -- System CEC Enclosure with Bezel	269
7301 -- System Drawer Enclosure w/OEM Bezel	5627 -- OEM System CEC Enclosure with Bezel	269
7969 -- System Drawer Enclosure, OEM	5627 -- OEM System CEC Enclosure with Bezel	269

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