New IBM POWER6 processors for the Power 570 enable you to get more processing power with fewer processors

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At a glance

The IBM® Power 570 now is available in up to a 32-processor configuration:

- Three new IBM POWER6™ processors
  - 0/2 4.4 GHz POWER6 processor feature
  - 0/2 5.0 GHz POWER6 processor feature
  - 0/4 4.2 GHz POWER6 processor feature
- New RAS function- Hot-node Repair

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

Overview

The Power 570 now offers new POWER6 processors with two new two-core processor features at 4.4 GHz and 5.0 GHz and a new four-core processor feature, built with two dual-core modules on one processor card at 4.2 GHz. With the new-four core processor feature, the Power 570 now is available in a 32-processor core configuration.

The Power 570 now features Hot-node Repair. With Hot-node Repair, a CEC enclosure with a failed component can have the CEC enclosure with the failed component guarded out and then removed without an IPL of the system. When the enclosure is repaired, it can be reintegrated to the system using the concurrent node add feature previously announced. This new function can be used to upgrade memory on a system without powering the system down.

Key prerequisites

Refer to the Hardware requirements and Software requirements sections.

Planned availability date

November 21, 2008, except as noted below:

- October 14, 2008, for feature number 5922
- January 29, 2009, for feature number 2728
- January 30, 2009, for:

AIX 5.3 with 5300-07 Technology Level and Service Pack 7
AIX 5.3 with 5300-06 Technology Level and Service Pack 10
AIX 6.1 with 6100-00 Technology Level and Service Pack 7

Description

The POWER6 processors in this server are 64-bit processor cores, with 32 MB of L3 cache per dual-core module, 8 MB of L2 cache per dual-core module, and 12 DDR2 memory DIMM slots per feature. The POWER6 processor is available with two processors per feature at frequencies of 3.5, 4.2, 4.4, 4.7, and 5.0 GHz. The POWER6 processor is also available with four processors per feature at 4.2 GHz. The four core 4.2 processor is built with two dual-core modules. The 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 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.

Summary of available features in the system enclosure:

- 4U 19-inch rack-mount system enclosure
- One to four system enclosures; 16U maximum system size
- Two processor sockets per enclosure
- Six hot-swappable 3.5-inch SAS disk bays per enclosure
- One hot-plug, slim-line media bay per enclosure (optional)
- Redundant hot-swap ac power supplies (N+1) in each enclosure
- Redundant hot-swap processor power regulation (2N+1) in each enclosure (required in most configurations)

  Choice of integrated (HEA) I/O options -- one per enclosure

  – 2-port 1 Gigabit Virtual Ethernet
  – 4-port 1 Gigabit Virtual Ethernet
  – 2-port 10 Gigabit Virtual Ethernet (SR)
- Two USB ports per enclosure
- Four HMC ports per system (two per CEC enclosure) to support the attachment of two HMCs
- 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
  – 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, 64-bit, 4.2 GHz, Four Core Processor (#7540)
  - 12 DDR2 POWER6 Memory DIMM sockets per processor card
  - Four-, eight-, sixteen-, twenty-four-, or thirty-two-core configurations
  - L2 cache: 4 MB per core, 8 MB per dual core, 16 MB per feature
  - L3 cache: 32 MB per dual core, 64 MB per feature
  - 2 GB to 768 GB of POWER6 DDR2 memory
- POWER6, 64-bit, 4.4 GHz, Dual Core Processor (#7387)
  - 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, 5.0 GHz, Dual Core Processor (#7388)
  - 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
  - 0/4 GB (4 x 1 GB) POWER6 DDR2 Memory, 667 MHz (#5693)
  - 0/8 GB (4 x 2 GB) POWER6 DDR2 Memory, 667 MHz (#5694)
  - 0/16 GB (4 x 4 GB) POWER6 DDR2 Memory, 533 MHz (#5695)
  - 0/32 GB (4 x 8 GB) POWER6 DDR2 Memory, 400 MHz (#5696)
  - 0/32 GB (4 x 8 GB) POWER6 DDR2 Memory, 400 MHz (#5690)
- Carry-over DDR2 Memory DIMMs (requires processor feature number 5621)
  - 2 GB (4 x 0.5 GB) DDR2 Memory, 533 MHz (#7892)
  - 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)
  - 16 GB (4 x 4 GB) DDR2 Memory, 400 MHz (#4499)
  - 4/8 GB (4 x 2 GB) DDR2 Memory, 533 MHz (#4495)
  - 8/16 GB (4 x 4 GB) DDR2 Memory, 533 MHz (#4496)

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

- Dynamic LPAR support.
- PowerVM™ (optional):
  - Micro-Partitioning™ (up to 10 partitions per processor, 160 per system)
  - VIOS
  - Automated CPU and memory reconfiguration support for dedicated and shared processor logical partition (LPAR) groups
  - Support for manual provisioning of resources partition migration (PowerVM - Enterprise Edition)
  - Lx86
- Optional PowerHA for AIX®, i, and Linux® allows support for nearly continuous operation.
- Remote I/O drawer and tower support:
  - Up to 20 I/O drawers on a RIO-2 interface (7311-D11)
  - Up to 48 I/O drawers and towers on a RIO-2 interface (7311-D20 or #0595, #5790, #0588, #5088, #5094, #5096, #5294, or #5296)
  - Up to 32 I/O drawers on a 12X Channel interface (7314-G30 or #5796)
  - Up to 110 SAS DASD I/O drawers on SAS PCI controllers (#5886)
  - Up to 60 DASD Expansion drawers (7031-D24 or #5786)

Remote I/O drawer availability

The following I/O drawer features are available for order on the Power 570:

PCI/SCSI Disk Expansion Drawer (#0595) (IBM i partition only)

The PCI/SCSI Disk Expansion Drawer (#0595) is a 5 EIA unit drawer and mounts in a 19-inch rack. Feature 0595 is 24 inches long and can weigh up to 101 lbs. The high-density expansion drawer provides additional adapter slots and SCSI disk slots as remote I/O. There are seven hot-swap PCI-X 64-bit, 133MHz, 3.3 volt I/O slots and 12 optional hot-swap disk drive bays. Feature 0595 has redundant power and cooling. The fans, power supplies, and PCI adapters are top-accessible, while the disk drives are front-accessible for easy service and maintenance. Feature 0595 attaches to a host system CEC enclosure with a RIO-2 adapter in a GX slot.

TotalStorage® EXP24 Disk Drawer (#5786) (IBM i partition only)

The TotalStorage EXP24 (#5786) is a 4 EIA unit drawer and mounts in a 19-inch rack. The drawer is 27 inches long and can weigh up to 120 lbs. The front of the IBM TotalStorage EXP24 Ultra320 SCSI Expandable Storage Disk Enclosure has slots for up to 12 disk drives organized in two SCSI groups of up to six drives. The rear also has slots for up to 12 disk drives organized in two additional SCSI groups of up to six drives plus slots for the four SCSI interface cards. Each SCSI drive group can be connected by either a Single Bus Ultra320 SCSI Repeater Card (#5741) or a Dual Bus Ultra320 SCSI Repeater Card (#5742), allowing a maximum of eight SCSI connections per TotalStorage EXP24. Feature 5786 is delivered with three cooling fans and two power supplies to provide redundant power and cooling. Feature 5786 attaches to a host system CEC enclosure or to a remote I/O drawer with an Ultra320 SCSI adapter.

PCI Expansion Drawer (#5790) (IBM i partition only)

The PCI Expansion Drawer (#5790) is a 4 EIA unit tall drawer and mounts in a 19-inch rack. Feature 5790 is 8.6 inches wide and takes up half the width of the 4 EIA rack space. Feature 5790 requires the use of a feature 7307 or 7311 drawer mounting enclosure. The 4 EIA tall enclosure can hold up to two 5790 drawers mounted side by side in the enclosure. The drawer is 28 inches long and can weigh up to 37 lbs. The PCI Expansion Drawer has six 64-bit, 3.3 volt PCI-X slots that use blind-swap cassettes and support hot plugging of adapter cards. The drawer includes redundant hot-plug power and cooling. Feature 5790 attaches to a host system CEC enclosure with a RIO-2 adapter in a GX slot.

PCI DDR 12X Expansion Drawer (#5796)

The PCI-DDR 12X Expansion Drawer (#5796) is a 4 EIA unit tall drawer and mounts in a 19-inch rack. Feature 5796 is 8.8 inches wide and takes up half the width of the 4 EIA rack space. Feature 5796 requires the use of feature 7314 drawer mounting enclosure. The 4 EIA tall

enclosure can hold up to two 5796 drawers mounted side by side in the enclosure. The drawer is 31.5 inches deep and can weigh up to 44 lbs.

The PCI-DDR 12X Expansion Drawer has six 64-bit, 3.3V, PCI-X DDR slots running at 266 MHz that use blind-swap cassettes and support hot plugging of adapter cards. The drawer includes redundant hot-plug power and cooling. The client must select one of the two available interface adapters for use in the feature 5796 drawer: the Dual-Port 12X Channel Attach Adapter -- Long Run (#6457) or the Dual-Port 12X Channel Attach Adapter Short Run (#6446). The adapter selection is based on how close the host system or the next I/O drawer in the loop is physically located. Feature 5796 attaches to a host system CEC enclosure with a 12X adapter in a GX slot.

EXP 12S SAS Drawer (#5886)

The EXP 12S SAS Drawer (#5886) is a 2 EIA unit tall drawer and mounts in a 19-inch rack. The drawer is 20.12 inches long and can weigh up to 40 lbs, without SAS disks. The EXP 12S SAS drawer has twelve 3.5-inch SAS disk slots with redundant data paths to each slot. The drawer supports redundant hot-plug power and cooling and redundant hot-swap SAS expanders (Enclosure Services Manager-ESM). Each ESM has an independent SCSI Enclosure Services (SES) diagnostic processor. Feature 5886 attaches to a host system CEC enclosure or a remote I/O drawer with a SAS adapter in a PCI-X or PCIe slot.

7311-D20 Rack Mounted High Density Expansion Drawer (AIX/Linux Partitions only)

The 7311-D20 Expansion Drawer is a 4 EIA unit drawer and mounts in a 19-inch rack. It is 24 inches long and can weigh up to 101 lbs. The high-density expansion drawer provides additional adapter slots and SCSI disk slots as remote I/O. There are seven hot-swap PCI-X 64-bit, 133 MHz, 3.3 volt I/O slots and 12 optional hot-swap disk drive bays. The drawer includes redundant power and cooling. The fans, power supplies, and PCI adapters, are top-accessible while the disk drives are front-accessible for easy service and maintenance. The D20 attaches to a host system CEC enclosure with a RIO-2 adapter.

Hot-node Add / Cold-node Repair / Hot-node Repair

Power 570 systems support adding an additional CEC enclosure (node) to a system, without powering down the system (Hot-node Add). The additional Power 570 enclosure would be ordered as a system upgrade (MES order) and added to the original system while operations continued. The additional resources of the newly added enclosure can then be assigned to existing applications or new applications as required. This capability is available to existing 9117-MMA systems after upgrading to firmware level EM320_051, or later. To take advantage of this new feature, the system must have spare, unused connectors on the attached Service Interface Cable and space available in the rack immediately below the current system. If a new Service Interface Cable is required, the system will need to be powered down to install the new cable.

Power 570 systems that have experienced a failure and are at a firmware level EM320_051, or a later level of EM320 and auto recovered by rebooting after guarding out the failed CEC enclosures can have the deactivated enclosure removed so it can be repaired without powering down the system a second time. Once repaired, the enclosure can be integrated back into the active system without powering down the system (Cold-node Repair). The resources of the repaired CEC enclosure, can then be reassigned to existing applications or new applications as required. This capability is available to all 9117-MMA systems after upgrading to firmware level EM320_051, or a later level of EM320.

Power 570 systems that have experienced a failure and are at firmware level EM340, or later, can guard out the failed CEC enclosure without rebooting the system. Once the CEC enclosure is guarded, the enclosure can be serviced, after disconnecting the power source, processor fabric, and service interface cables as required to replace failed parts. Once repaired, the enclosure can be integrated back into the active system without powering down or IPLing the system. The resources of the repaired CEC enclosure can then be reassigned to existing applications or new applications as required. This function can also be used to add or change the memory features in a CEC enclosure that has not experienced a failure. With the upgrade to firmware level EM340 on an MMA system, the Hot-node Repair capability replaces the Cold-node Repair capability described above and can be added to any 9117-MMA systems.

The Power 570 CEC enclosure that contains the active system clock may not be repaired or modified with the Hot-node Repair process. The CEC enclosure with the active system clock may use the Cold-node Repair procedure if the system is at the appropriate firmware level.

Product numbers

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

Description	MT	Model	Feature
#3658 Load Source Specify	9117	MMA	0844
4 port USB PCIe Adapter	9117	MMA	2728
450GB 15K RPM SAS Disk Drive	9117	MMA	3649
428GB 15K RPM SAS Disk Drive	9117	MMA	3658
Processor Power Regulator	9117	MMA	5617
0/4 Core Processor Enclosure and Backplane	9117	MMA	5675
Power 570 System Bezel	9117	MMA	5682
System Chassis - 4 EIA	9117	MMA	5683
0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz-POWER6 CoD Memory	9117	MMA	5690
8 Gigabit PCI Express Dual Port Fibre Channel Adapter	9117	MMA	5735
Non-paired SAS RAID indicator	9117	MMA	5922
Power Cord 3 M (10 ft), Drawer to IBM PDU, 250V/10A	9117	MMA	6665
One Processor Activation for Processor Feature #7388	9117	MMA	7306
Utility Billing for Processor #7388- 100 processor minutes	9117	MMA	7332
On/Off Processor Day Billing for Processor #7388	9117	MMA	7333
Utility Billing for Processor #7388 with IBM i - 100 processor minutes	9117	MMA	7334
On/Off Processor Billing for Processor #7388 with IBM i - 1 processor day	9117	MMA	7346
4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots.	9117	MMA	7387
5.0 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	9117	MMA	7388
4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	9117	MMA	7540
One Processor Activation for Processor Feature #7540	9117	MMA	7700
Utility Billing for Processor #7540- 100 processor minutes	9117	MMA	7701
On/Off Processor Day Billing for Processor #7540	9117	MMA	7702
Utility Billing for Processor #7540 with IBM i - 100 processor minutes	9117	MMA	7706
On/Off Processor Billing for Processor #7540 with IBM i - 1 processor day	9117	MMA	7709
One Processor Activation for Processor Feature #7387	9117	MMA	7719
Utility Billing for Processor #7387 - 100 processor minutes	9117	MMA	7726
Utility Billing for Processor #7387 with IBM i - 100 processor minutes	9117	MMA	7743
On/Off Processor Billing for Processor #7387 with IBM i - 1 processor day	9117	MMA	7744
On/Off Processor Day Billing for Processor #7387	9117	MMA	7745

Feature conversions

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

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

The following conversions are available to customers:

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

From FC:	To FC:	RETURN PARTS
4453 - 4GB (4x1GB) DIMMs, 208-pin, 266MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4454 - 8GB (4x2GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4490 - 4GB (4x1GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4491 - 16GB (4x4GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4494 - 16GB (4x4GB) DIMMs, 208-pin, 200 MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4495 - 4/8GB (4X2GB) DIMMs, 276 PIN 533 MHz, DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4496 - 8/16GB (4X4GB) DIMMs, 276 PIN, 533 MHz DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4497 - 16GB (4X4GB) DIMMs, 276 PIN, 533 MHz, DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
7049 - 8/16GB (4x4GB) DIMMs, CUoD, 8GB Active, 200 MHz DDR1	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
7893 - 4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
7894 - 8GB (4x2GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes

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

From FC:	To FC:	RETURN PARTS
7865 - Processor Enclosure And Backplane	5675 - 0/4 Core Processor Enclosure and Backplane	Yes

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

From FC:	To FC:	RETURN PARTS
7768 - Processor Power Regulator	5617 - Processor Power Regulator	Yes

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

From FC:	To FC:	RETURN PARTS
7782 - 2-Way 1.9 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	7387 - 4.4GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7830 - 2-Way 1.65 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	7387 - 4.4GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7832 - 2-Way 1.9 GHz POWER5™ CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	7387 - 4.4GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7833 - 2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR2 Memory DIMM Slots	7387 - 4.4GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7834 - 2-Way 1.5 GHz POWER5	7387 - 4.4GHz Proc Card, 0/	Yes

Processor Card, 0-Way Entitled, 8 DDR1 Memory DIMM Slots	2 Core POWER6, 12 DDR2 Memory Slots.	
8338 - 2-Way 2.2 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	7387 - 4.4GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7782 - 2-Way 1.9 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
7830 - 2-Way 1.65 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
7832 - 2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
7833 - 2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR2 Memory DIMM Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
7834 - 2-Way 1.5 GHz POWER5 Processor Card, 0-Way Entitled, 8 DDR1 Memory DIMM Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
8338 - 2-Way 2.2 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
7618 - One way Processor Activation for Processor FC 8338	7700 - One Processor Activation for Processor Feature #7540	No
7665 - One way Processor Activation for Processor FC 7782	7700 - One Processor Activation for Processor Feature #7540	No
7897 - One Processor Activation for CUoD Processor Feature #7830	7700 - One Processor Activation for Processor Feature #7540	No
7898 - One Processor Activation for CUoD Processor Feature #7832	7700 - One Processor Activation for Processor Feature #7540	No
7899 - One Processor Activation for CUoD Processor Feature #7833	7700 - One Processor Activation for Processor Feature #7540	No
7929 - One Processor Entitlement for Processor Feature #7834	7700 - One Processor Activation for Processor Feature #7540	No
7618 - One way Processor Activation for Processor FC 8338	7719 - One Processor Activation for Processor Feature #7387	No
7665 - One way Processor Activation for Processor FC 7782	7719 - One Processor Activation for Processor Feature #7387	No
7897 - One Processor Activation for CUoD Processor Feature #7830	7719 - One Processor Activation for Processor Feature #7387	No
7898 - One Processor Activation for CUoD Processor Feature #7832	7719 - One Processor Activation for Processor Feature #7387	No
7899 - One Processor Activation for CUoD Processor Feature #7833	7719 - One Processor Activation for Processor Feature #7387	No
7929 - One Processor Entitlement for Processor Feature #7834	7719 - One Processor Activation for Processor Feature #7387	No

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

From FC:	To FC:	RETURN PARTS
7300 - System Drawer	5683 - System Chassis - 4	Yes

Enclosure w/ Bezel	EIA	
7879 - System Drawer Enclosure	5683 - System Chassis - 4 EIA	Yes

Feature conversions for 9117-MMA miscellaneous features

From FC:	To FC:	RETURN PARTS
5663 - Proc Enclosure and Backplane	5675 - 0/4 Core Processor Enclosure and Backplane	Yes

Feature conversions for 9117-MMA power features

From FC:	To FC:	RETURN PARTS
5625 - Proc Power Regulator	5617 - Processor Power Regulator	Yes

Feature conversions for 9117-MMA processor features

From FC:	To FC:	RETURN PARTS
5620 - 3.5 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
5622 - 4.2 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
7380 - 4.7 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
5403 - One Processor Activation for Processor Feature #7380	7700 - One Processor Activation for Processor Feature #7540	No
5670 - One Processor Activation for Processor Feature #5620	7700 - One Processor Activation for Processor Feature #7540	No
5672 - One Processor Activation for Processor Feature #5622	7700 - One Processor Activation for Processor Feature #7540	No

Feature conversions for 9406-570 to 9117-MMA administrative features

From FC:	To FC:	RETURN PARTS
1641 - 1.65 GHz Proc HW Upgr Feat	7388 - 5.0 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	Yes
1651 - 2.2 GHz Proc HW Upgr Feat	7388 - 5.0 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	Yes
1641 - 1.65 GHz Proc HW Upgr Feat	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes
1651 - 2.2 GHz Proc HW Upgr Feat	7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	Yes

Feature conversions for 9406-570 to 9117-MMA Capacity on Demand features

From FC:	To FC:	RETURN PARTS
7897 - 570 CUoD Proc Activation	7306 - One Processor Activation for Processor Feature #7388	No
7897 - 570 CUoD Proc Activation	7700 - One Processor Activation for Processor Feature #7540	No

Feature conversions for 9406-570 to 9117-MMA processor features

From FC:	To FC:	RETURN PARTS
7618 - 570 One Processor Activation	7306 - One Processor Activation for Processor Feature #7388	No

7618 - 570 One Processor Activation	7700 - One Processor Activation for Processor Feature #7540	No

Feature conversions for 9406-MMA to 9117-MMA administrative features

From FC:	To FC:	RETURN PARTS
1638 - 4.7 GHz Proc HW Upgr Feat	7380 - 4.7 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	No
1639 - 4.7 GHz Proc CBU HW Upgr Feat	7380 - 4.7 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	No

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).

https://www.ibm.com/partnerworld/mem/sla.jsp?num=108-722

Publications

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Technical information

Specified operating environment

Operating environment

Updates for POWER6

- Noise level: (one CEC enclosure with two processor features and all cores active, operating and idle)

Processor feature number	Frequency	With Standard Door	With Acoustic Door
5620	3.5 GHz	7.4 bels	6.9 bels
5622	4.2 GHz	7.4 bels	6.9 bels
7380	4.7 GHz	7.7 bels	7.2 bels
7387	4.4 GHz	7.4 bels	6.9 bels
7388	5.0 GHz	7.7 bels	7.2 bels
7540	4.2 GHz	8.0 bels	7.5 bels

The Standard and Acoustic doors are front door features on the rack.

- Maximum altitude:
  - 3,048 m (10,000 ft)

For system configurations with processor feature 7540 installing above 2400 meters, additional ambient room temperature limits are in effect. Refer to the Site and Hardware Planning Guide for details.

Hardware requirements

The 9117-MMA should be installed in a new or existing 7014-T00, -B42, or -T42 rack. This provides:

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

The 7014-T00, -T42, and -B42 racks offer both Standard and Acoustic front door features as options to accommodate a client's choice for their environment.

The design of the Power 570 is optimized for use in an IBM 7014-T00, -B42, 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 model MMA system must include a minimum of the following items:

- One CEC enclosure (4U) with the following:
  - 1X - System Enclosure w/Bezel (#5626 or #5683 and #5682)
  - 2X - Power Cords (#6671) or similar power cord
  - 1X - Rack-Mount Rail Kit (#7164)
  - 1X - Processor Enclosure and Backplane (#5663 or #5675)
  - 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) or 3X Processor Power Regulator (#5617)
  - 1X - HMC - machine type 7042 is preferred; machine type 7310 is acceptable if upgraded to HMC machine code V7. The HMC may be shared with other systems.
- 1X - Processor Card (one of these):

  - 3.5 GHz Processor Card, POWER6 0/2-Core (#5620)
  - 4.2 GHz Processor Card, POWER6 0/2-Core (#5621) (model upgrade only)
  - 4.2 GHz Processor Card, POWER6 0/2-Core (#5622)
  - 4.7 GHz Processor Card, POWER6 0/2-Core (#7380)
  - 4.4 GHz Processor Card, POWER6 0/2-Core (#7387)
  - 5.0 GHz Processor Card, POWER6 0/2-Core (#7388)
  - 4.2 GHz Processor Card, POWER6 0/4-Core (#7540)
- 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
  - One Processor Activation for Processor Feature #7388, #7306
  - One Processor Activation for Processor Feature #7540, #7700
  - One Processor Activation for Processor Feature #7387, #7719
- 2 GB active memory:
  - 1X - 0/4GB (4X 1GB) DIMMs, 667 MHz, DDR2, POWER6 CoD Memory, #5693 (or any memory feature that results in at least 2 GB of active memory)
  - 2X - Activation of 1 GB DDR2 - POWER6 Memory, #5680 or similar memory activation feature resulting in 2 GB of active memory
- Accessible Storage Device (one of these or similar Fibre Channel adapter):
  - 1X- Disk Drive- SAS (requires 2X with feature #2145)
  - 2X- SCSI Disk Drives (only with feature #2145)
  - One Fibre Channel I/O adapter that supports SAN attachment
  - 2 Port PCIe - 8 Gb Fibre Channel (#5735)
  - 2 Port PCI-X - 4 Gb Fibre Channel (#5749)
  - 1 Port PCI-X - 4 Gb Fibre Channel (#5758)
  - 2 Port PCI-X - 4 Gb Fibre Channel (#5759)
  - 1 Port PCIe - 4 Gb Fibre Channel (#5773)
  - 2 Port PCIe - 4 Gb Fibre Channel (#5774)
- #9XXX Language Group Specify
- 1X - Primary Operating System indicator (one of these:)
  - Primary OS - IBM i (#2145)
  - Primary OS - AIX (#2146)
  - Primary OS - Linux (#2147)
- 1X - Partition Specify (one of these:)
  - AIX Partition Specify (#0265)
  - IBM i Partition Specify (#0266)
  - Linux Partition Specify (#0267)
- 1X - System Ship Group (#5699)

For Service Support, the MMA 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:

For configurations with POWER6 processors #5620, #5621, #5622, or #7380:

- AIX 5.2 with Technology Level 5200-10, or later
- AIX 5.3 with Technology Level 5300-06, or later
- AIX 6 for POWER™ V6.1, or later

For configurations with POWER6 processors #7387, #7388, or #7540:

- AIX 5.3 with 5300-06 Technology Level and Service Pack 10, or later
- AIX 5.3 with 5300-07 Technology Level and Service Pack 7, or later
- AIX 5.3 with 5300-08 Technology Level and Service Pack 5, or later
- AIX 5.3 with 5300-09 Technology Level, or later
- AIX 6.1 with 6100-00 Technology Level and Service Pack 7, or later
- AIX 6.1 with 6100-01 Technology Level and Service Pack 3, or later
- AIX 6.1 with 6100-02 Technology Level, or later

If installing the IBM i operating system, one of these for all configurations:

- IBM i 5.4.5, or later
- IBM i 6.1, or later

If installing the Linux operating system, one of these for all configurations:

- SUSE Linux Enterprise Server 10 SP1 for POWER, or later
- Red Hat Enterprise Linux 4.5 for POWER, or later
- Red Hat Enterprise Linux 5.1 for POWER, or later

Notes:

- PowerVM features 7942 and 7995 are not supported on AIX 5.2.
- Not all features available with the Power 570 are supported with each available operating system.

Check the specific feature detail in the sales manual to identify which of the available operating systems are supported. For the most current information about required operating system and required firmware level for any feature, check on the IBM Pre-requisite site at

http://www-912.ibm.com/e_dir/eserverprereq.nsf/ UpgradeCategories/Hardware?opendocument

Limitations

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 the 9117-MMA system using processor card feature number 5621 may increase these systems to a maximum of 16 cores using processor feature card number 5622. When feature number 5622 is 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 5620, 5621, 5622, 7380, 7387, and 7388 must be used with Processor Enclosure and Backplane (#5663) and Processor Power Regulator (#5625).

Processor card feature number 7540 must be used with 0/4 Core Processor Enclosure and Backplane (#5675) and Processor Power Regulator #5617.

Processor card feature numbers 5620, 5622, 7380, 7387, 7388, and 7540 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 or 5617) 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). In these configurations, the Processor Power Regulators do not provide redundant power support to the processors.

Processor Capacity on Demand 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.

The upgrade processor feature 5621 will only be available for ordering when the initial MES upgrade order is placed. The minimum supported upgrade is to a four-core system when upgrading to the POWER6 processor feature 5621. If the POWER5+ system being upgraded has only two processor cores, an additional processor feature must be purchased to fill both processor sockets in the primary enclosure. A Power 570 with POWER6 processor feature 5621 can be expanded by purchasing additional enclosures with POWER6 processor feature 5622. Processor features 5621 and 5622 cannot be mixed within the same CEC enclosure but can be mixed in the same system. The 5622 processor card accepts only POWER6 memory and has 12 DIMM slots.

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 includes 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 processor 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 Power 570, placing two 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 5690, 5696, and 8129 may be mixed on a single processor card but may not be mixed with any other memory feature on a single processor card. A processor card with memory feature 5690, 5696 or 8129 can be mixed in the same CEC enclosure with a processor card containing other POWER6 memory features.

Memory features 5690, 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 number 7894 and 4495 can be mixed on the same processor card because 4495 is 8 GB when fully active. Feature number 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.

All processor cards, except processor feature 5621, 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 Capacity on Demand 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 you 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 Power 570 with two or more CEC enclosures (eight or more processor cores) 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.

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 or #5617) except for the system configurations with one or two feature number 5620 processors in a single CEC enclosure.

A system configuration with one or two of feature number 5620 processors in a single enclosure may ship with two Processor Power Regulators (#5625). In these configurations, the Processor Power Regulators do not provide redundant power 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 Power 570 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 Power 570 CEC enclosures (six drawers per two PDUs). (These features are no longer available for purchase.)

For PDU features 9188, 7188, 5889, and 7109 when using power cord 6654, 6655, 6656, 6657, or 6658: Each pair of PDUs can power up to three Power 570 CEC enclosures (three drawers per two PDUs).

For PDU features 9188, 7188, 7109, and 5889 when using power cord feature numbers 6489, 6491, 6492, or 6653: Each pair of PDUs can power up to seven Power 570 CEC enclosures (seven 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 Power 570 consists of one to four CEC enclosures. Each enclosure occupies 4U of vertical rack space. The Power 570 is designed to be installed in a 7014-T00, -B42, or -T42 rack. An existing -T00, -B42, or -T42 rack can be used for the Power 570 if sufficient space and power are available.

The 36 EIA unit (1.8 meter) rack (#0551) and the 42 EIA unit (2.0 meter) rack (#0553) are available for order on MES upgrade orders only. For initial system orders, the racks should be ordered as machine type 7014, models -T00, -B42, or -T42.

For Power 570 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. If a second CEC enclosure is part of the system, the backup service processor is contained in the second CEC enclosure. The service processor is a component of the Service Interface Card in these enclosures.

When a Power 570 system is installed in an 7014-T00, -B42, or -T42 rack or in a 0551 or 0553 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 or 0551 rack is feature number 6246. The required trim kit for the 7014-T42, -B42, or 0553 rack is feature number 6247.

The design of the Power 570 is optimized for use in a 7014-T00, -B42, 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, -B42, and -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, -B42, and -T42 racks or ordered for the -T00, -B42 and -T42 racks that clients already own.

I/O drawers

To further reduce possible single points of failure, POWER6 implements enhanced disk storage configuration rules. IBM configuration tools and IBM technical support personnel do not support integrated cached disk controller configurations unless they have a protected write cache. Disk controllers with write cache must protect the cache by either pairing the disk controllers (write cache replication or IOA-level mirroring) or by using an auxiliary write cache IOA. This is true for all partitions in the Power 570 using any operating systems.

The remote I/O Interfaces known on the 9406 machine type as HSL and HSL-2, are the same interfaces that are known as RIO and RIO-2 respectively on the new Power 570. There is no difference in the HSL and RIO interfaces and no difference in the HSL-2 and RIO-2 interfaces.

The following is a list of the Remote I/O drawers that are supported or available on the 9117 machine type and the correct interface to use for each of the drawers.

Feature	Description	Order status	Interface
0588	PCI-X Exp Unit in Rack	Supported	RIO-2 (formerly HSL-2)
0595	PCI/SCSI Disk Exp Drwr	Available	RIO-2 (formerly HSL-2)
5088	PCI-X Exp Unit	Supported	RIO-2 (formerly HSL-2)
5094	PCI-X Exp Twr	Supported	RIO-2 (formerly HSL-2)
5096	PCI-X Exp Twr (no disk)	Supported	RIO-2 (formerly HSL-2)
5294	1.8M I/O Twr	Supported	RIO-2 (formerly HSL-2)
5296	1.8M I/O Twr (no disk)	Supported	RIO-2 (formerly HSL-2)
5786	EXP24 Disk Drwr	Available	SCSI Ultra320
5790	PCI Exp Drwr	Available	RIO-2 (formerly HSL-2)
5796	PCI-DDR 12X Exp Drwr	Available	12X
5886	Exp 12S SAS Drwr	Available	SAS
7031-D24/T24		Supported	SCSI Ultra320
7311-D11		Supported	RIO-2
7311-D20		Available	RIO-2
7314-G30		Supported	12X

The 7311-D20 and feature 0595 I/O drawers with RIO Ports: I/O Planer Riser Card (#6413) must be upgraded to RIO-2 Ports, I/O Planer Riser Card (#6417) before they can be attached to a Power 570 server.

Some I/O adapters supported in the 7311-D11 and the 7311-D20 I/O drawers when attached to an IBM POWER5 or POWER5+ processor-based Power Systems server will not be supported when these same I/O drawers are attached to a Power 570 server with POWER6 processors. For a complete list of supported adapters, refer to the online sales manual for the 7311 I/O drawer.

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 the 7311-D11 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 the 7311-D20 and all feature number RIO-2 attached I/O drawers:

- Systems with one CEC enclosure:

  With two processors, the enclosure supports up to six I/O drawers.

  With four processors the enclosure supports up to 12 I/O drawers.
- Systems with two CEC enclosures support up to 24 I/O drawers.
- Systems with three CEC enclosures support up to 36 I/O drawers.
- Systems with four CEC enclosures support up to 48 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 Power 570 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 and 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 Power 570 system with nonlooped configurations could experience degraded performance and serviceability. If a nonlooped 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 allowed) 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.

Dual-Port 12X Channel Interface adapter options:

- Dual-Port 12X Channel Attach Adapter (#6446): Use the short run adapter for expansion I/O drawers located in close proximity to the host system or to other drawers in the I/O expansion loop. This adapter does not include signal repeaters.
- Dual-Port 12X Channel Attach Adapter (#6457): Use the long run adapter for expansion I/O drawers located farther from the host system or other I/O drawers in the I/O expansion loop. This adapter includes signal repeaters to accommodate the longer cable lengths.

12X Cable choice:

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

	12X Cable Options			
	0.6 M (#1829)(1)	1.5 M (#1830)	3.0 M (#1840)(2)	8.0 M (#1834)(3)
5796 to 5796 w/12X Short Run adapter (#6446)in both drawers	Yes	Yes	No	No
5796 w/ 12X Short Run adapter (#6446) to 5796 w/ 12X Long Run adapter (#6457)	Yes	Yes	Yes	No
5796 to 5796 w/12X Long Run adapter (#6457) in both drawers	Yes	Yes	Yes	Yes
5796 w/12X Short Run adapter (#6446) to host system	No	Yes	Yes	No
5796 w/12X Long Run adapter (#6457) to system	No	Yes	Yes	Yes

1
The 12X cable (#1829) has very limited use due to its short length. It cannot be used to connect to a system drawer because of the short length. It is intended for use between two 5796 drawers mounted side by side in the same enclosure (#7314). It can also be used to connect between two modules located one beneath the other in a 7014 rack.

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

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

Integrated I/O

Although each CEC enclosure is equipped with integrated system port (serial) external connectors, these ports do not function with the attachment of the required HMC.

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 the Service Interface Card in each CEC enclosure. The HMC, however, must be attached to the Service Interface Card in the base CEC enclosure or the base and second CEC enclosure if a second CEC enclosure is part of the Power 570 system.

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 or an adapter capable of attaching a remote DASD drawer or a LAN adapter.

Each CEC enclosure can support one media device when the optional Media Enclosure and Backplane feature (#5629) is ordered.

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 Power 570 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.

A system configuration with only two processor cores (2/2 W) does not support the use of GX slot P1-C9. In this configuration, only the P1-C8 GX slot will function (this slot is physically shared with PCIe slot P1-C6). Adding a second processor feature card to the enclosure will allow the P1-C9 slot to function. The processors on the second processor feature card do not have to be active. This single GX slot availability applies only to a 2/2W, single CEC enclosure system configuration.

The Power 570 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 and the system remote I/O drawer features.

Hot-plug options

The following options are hot-plug capable:

- GX Adapters
- System ac power supplies: One functional power supply must remain installed in each CEC enclosure at all times while the system is operating.
- Disk drives
- Most PCI adapters
- Processor power regulators: Two functional processor power regulators must remain installed in each CEC enclosure 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 PowerVM feature 7942 - Standard or 7995 - Enterprise is ordered. PowerVM function is not supported on AIX 5.2.

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

Security, auditability, and control

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

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

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve 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 are designed to 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. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

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

Terms and conditions

MES discount applicable

No. Equal to the volume commitment discount

Field-installable features

Yes

Warranty period

This feature assumes the same warranty or maintenance terms as the machine in which it is installed for the full warranty or maintenance period announced for such machine. from

Customer setup

Yes, for all features except 5675, 5683, 5690, 7387, 7388, and 7540.

Licensed Machine Code

Same license terms and conditions as designated machine.

Prices

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

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

Description Machine Type 9117	Model number	Feature number	Initial/ MES/ Both/ Support	CSU	RP MES
#3658 Load Source Specify	MMA	0844	Both	Yes	No
4 port USB PCIe Adapter	MMA	2728	Both	Yes	No
450GB 15K RPM SAS Disk Drive	MMA	3649	Both	Yes	No
428GB 15K RPM SAS Disk Drive	MMA	3658	Both	Yes	No
Processor Power Regulator	MMA	5617	Both	Yes	No
0/4 Core Processor Enclosure and Backplane	MMA	5675	Both	No	No
Power 570 System Bezel	MMA	5682	Both	Yes	No
System Chassis - 4 EIA	MMA	5683	Both	No	No
0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	MMA	5690	Both	No	No
8 Gigabit PCI Express Dual Port Fibre Channel Adapter	MMA	5735	Both	Yes	No
Non-paired SAS RAID indicator	MMA	5922	Both	Yes	No
Power Cord 3 M (10 ft), Drawer to IBM PDU, 250V/10A	MMA	6665	Both	Yes	No
One Processor Activation for Processor Feature #7388	MMA	7306	Both	Yes	No
Utility Billing for Processor #7388- 100 processor minutes	MMA	7332	MES	Yes	No
On/Off Processor Day Billing for Processor #7388	MMA	7333	MES	Yes	No
Utility Billing for Processor #7388 with IBM i - 100 processor minutes	MMA	7334	MES	Yes	No
On/Off Processor Billing for Processor #7388 with IBM i					

- 1 processor day	MMA	7346	MES	Yes	No
4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	MMA	7387	Both	No	No
5.0 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	MMA	7388	Both	No	No
4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	MMA	7540	Both	No	No
One Processor Activation for Processor Feature #7540	MMA	7700	Both	Yes	No
Utility Billing for Processor #7540- 100 processor minutes	MMA	7701	MES	Yes	No
On/Off Processor Day Billing for Processor #7540	MMA	7702	MES	Yes	No
Utility Billing for Processor #7540 with IBM i - 100 processor minutes	MMA	7706	MES	Yes	No
On/Off Processor Billing for Processor #7540 with IBM i - 1 processor day	MMA	7709	MES	Yes	No
One Processor Activation for Processor Feature #7387	MMA	7719	Both	Yes	No
Utility Billing for Processor #7387 - 100 processor minutes	MMA	7726	MES	Yes	No
Utility Billing for Processor #7387 with IBM i - 100 processor minutes	MMA	7743	MES	Yes	No
On/Off Processor Billing for Processor #7387 with IBM i - 1 processor day	MMA	7744	MES	Yes	No
On/Off Processor Day Billing for Processor #7387	MMA	7745	MES	Yes	No

Feature conversions

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

From FC:	To FC:	Parts Returned
4453 - 4GB (4x1GB) DIMMs, 208-pin, 266MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4454 - 8GB (4x2GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4490 - 4GB (4x1GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4491 - 16GB (4x4GB) DIMMs, 208-pin, 266 MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4494 - 16GB (4x4GB) DIMMs, 208-pin, 200 MHz Stacked DDR1 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4495 - 4/8GB (4X2GB)	5690 - 0/32GB DDR2	Yes

DIMMs, 276 PIN 533 MHz, DDR2 SDRAM	Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	
4496 - 8/16GB (4X4GB) DIMMs, 276 PIN, 533 MHz DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
4497 - 16GB (4X4GB) DIMMs, 276 PIN, 533 MHz, DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
7049 - 8/16GB (4x4GB) DIMMs, CUoD, 8GB Active, 200 MHz DDR1	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
7893 - 4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes
7894 - 8GB (4x2GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	Yes

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

From FC:	To FC:	Parts Returned
7865 - Processor Enclosure And Backplane	5675 - 0/4 Core Processor Enclosure and Backplane	Yes

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

From FC:	To FC:	Parts Returned
7768 - Processor Power Regulator	5617 - Processor Power Regulator	Yes

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

From FC:	To FC:	Parts Returned
7782 - 2-Way 1.9 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	7387 - 4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7830 - 2-Way 1.65 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	7387 - 4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7832 - 2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	7387 - 4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7833 - 2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR2 Memory DIMM Slots	7387 - 4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7834 - 2-Way 1.5 GHz POWER5 Processor Card, 0-Way Entitled, 8 DDR1 Memory DIMM Slots	7387 - 4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots.	Yes
8338 - 2-Way 2.2 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	7387 - 4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots.	Yes
7782 - 2-Way 1.9 GHz POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	Yes
7830 - 2-Way 1.65 GHz	7540 - 4.2 GHz Proc	Yes

POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	
7832 - 2-Way 1.9 GHz	7540 - 4.2 GHz Proc	Yes
POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots	Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	
7833 - 2-Way 1.9 GHz	7540 - 4.2 GHz Proc	Yes
POWER5 CUoD Processor Card, 0-Way Active, 8 DDR2 Memory DIMM Slots	Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	
7834 - 2-Way 1.5 GHz	7540 - 4.2 GHz Proc	Yes
POWER5 Processor Card, 0-Way Entitled, 8 DDR1 Memory DIMM Slots	Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	
8338 - 2-Way 2.2 GHz	7540 - 4.2 GHz Proc	Yes
POWER5+ Processor Card, 0-way active, 8 DDR2 Memory Slots	Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	
7618 - One way Processor Activation for Processor FC 8338	7700 - One Processor Activation for Processor Feature #7540	No
7665 - One way Processor Activation for Processor FC 7782	7700 - One Processor Activation for Processor Feature #7540	No
7897 - One Processor Activation for CUoD Processor Feature #7830	7700 - One Processor Activation for Processor Feature #7540	No
7898 - One Processor Activation for CUoD Processor Feature #7832	7700 - One Processor Activation for Processor Feature #7540	No
7899 - One Processor Activation for CUoD Processor Feature #7833	7700 - One Processor Activation for Processor Feature #7540	No
7929 - One Processor Entitlement for Processor Feature #7834	7700 - One Processor Activation for Processor Feature #7540	No
7618 - One way Processor Activation for Processor FC 8338	7719 - One Processor Activation for Processor Feature #7387	No
7665 - One way Processor Activation for Processor FC 7782	7719 - One Processor Activation for Processor Feature #7387	No
7897 - One Processor Activation for CUoD Processor Feature #7830	7719 - One Processor Activation for Processor Feature #7387	No
7898 - One Processor Activation for CUoD Processor Feature #7832	7719 - One Processor Activation for Processor Feature #7387	No
7899 - One Processor Activation for CUoD Processor Feature #7833	7719 - One Processor Activation for Processor Feature #7387	No
7929 - One Processor Entitlement for Processor Feature #7834	7719 - One Processor Activation for Processor Feature #7387	No

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

From FC:	To FC:	Parts Returned
7300 - System Drawer Enclosure w/ Bezel	5683 - System Chassis - 4 EIA	Yes
7879 - System Drawer Enclosure	5683 - System Chassis - 4 EIA	Yes

Feature conversions for 9117-MMA miscellaneous features

From FC:	To FC:	Parts Returned
5663 - Proc Enclosure and Backplane	5675 - 0/4 Core Processor Enclosure and Backplane	Yes

Feature conversions for 9117-MMA power features

From FC:	To FC:	Parts Returned
5625 - Proc Power Regulator	5617 - Processor Power Regulator	Yes

Feature conversions for 9117-MMA processor features

From FC:	To FC:	Parts Returned
5620 - 3.5 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	Yes
5622 - 4.2 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	Yes
7380 - 4.7 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	7540 - 4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	Yes
5403 - One Processor Activation for Processor Feature #7380	7700 - One Processor Activation for Processor Feature #7540	No
5670 - One Processor Activation for Processor Feature #5620	7700 - One Processor Activation for Processor Feature #7540	No
5672 - One Processor Activation for Processor Feature #5622	7700 - One Processor Activation for Processor Feature #7540	No

Feature conversions for 9406-570 to 9117-MMA administrative features

From FC:	To FC:	Parts Returned
1641 - 1.65 GHz Proc HW Upgr Feat	7388 - 5.0 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	Yes
1651 - 2.2 GHz Proc HW Upgr Feat	7388 - 5.0 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	Yes
1641 - 1.65 GHz Proc HW Upgr Feat	7540 - 4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	Yes
1651 - 2.2 GHz Proc HW Upgr Feat	7540 - 4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	Yes

Feature conversions for 9406-570 to 9117-MMA Capacity on Demand features

From FC:	To FC:	Parts Returned
7897 - 570 CUoD Proc Activation	7306 - One Processor Activation for Processor Feature #7388	No
7897 - 570 CUoD Proc Activation	7700 - One Processor Activation for Processor Feature #7540	No

Feature conversions for 9406-570 to 9117-MMA processor features

From FC:	To FC:	Parts Returned
7618 - 570 One Processor Activation	7306 - One Processor Activation for Processor Feature #7388	No
7618 - 570 One Processor Activation	7700 - One Processor Activation for Processor Feature #7540	No

Feature conversions for 9406-MMA to 9117-MMA administrative features

From FC:	To FC:	Parts Returned
1638 - 4.7 GHz Proc HW Upgr Feat	7380 - 4.7 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	No
1639 - 4.7 GHz Proc CBU HW Upgr Feat	7380 - 4.7 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	No

MT	Model	Feature number	Description	List price
9117	MMA	0844	#3658 Load Source Specify	$0
9117	MMA	2728	4 port USB PCIe Adapter	$199
9117	MMA	3649	450 GB 15K RPM SAS Disk Drive	$2,116
9117	MMA	3658	428GB 15K RPM SAS Disk Drive	$2,116
9117	MMA	5617	Processor Power Regulator	$2,118
9117	MMA	5642	Bulk Generic IBM Drawer Ind	$0
9117	MMA	5643	Bulk Generic OEM Drawer Ind	$0
9117	MMA	5675	0/4w Proc Encl and backplane	$2,118
9117	MMA	5682	MMA IBM BEZEL RACK-MOUNT DRW	$100
9117	MMA	5683	System Chassis - 4 EIA	$5,294
9117	MMA	5690	0/32GB(4X8GB), DDR2, 400MHz,	$8,680
9117	MMA	5735	8 GBit PCI Expr Dual Port fibr	$4,631
9117	MMA	5922	Non-paired SAS RAID indicator	$0
9117	MMA	6665	Power Cord 3 M (10 ft), Drawer	$19
9117	MMA	7306	1W PROC ACTIV FOR FC 7388	$26,604
9117	MMA	7332	100 Proc-Mins for FC 7388	$406
9117	MMA	7333	1 day on/off proc CoD for 7388	$244
9117	MMA	7334	100 Proc-Mins on 7388 (i-uniq)	$1,180
9117	MMA	7346	1 day on/off for 7388 (i-uniq)	$710
9117	MMA	7387	0/2W, 4.4GHz P6+SCM (Kirk+)	$8,772
9117	MMA	7388	0/2W, 5.0GHz P6+SCM (Kirk+)	$13,302
9117	MMA	7540	0/4W, 4.2GHz P6+DCM (Chang)	$21,942
9117	MMA	7700	1W PROC ACTIV FOR FC 7540	$21,942
9117	MMA	7701	100 Proc-Mins for FC 7540	$335
9117	MMA	7702	1 day on/off proc CoD for 7540	$201
9117	MMA	7706		$1,120

			100 Proc-Mins on 7540 (i-uniq)	
9117	MMA	7709	1 day on/off for 7540 (i-uniq)	$675
9117	MMA	7719	1W PROC ACTIV FOR FC 7387	$17,544
9117	MMA	7726	100 Proc-Mins for FC 7387	$268
9117	MMA	7743	100 Proc-Mins on 7387 (i-uniq)	$1,065
9117	MMA	7744	1 day on/off for 7387 (i-uniq)	$640
9117	MMA	7745	1 day on/off proc CoD for 7387	$161
9117	MMA	44535690	Feat Conv 4453 to 5690	$7,899
9117	MMA	44545690	Feat Conv 4454 to 5690	$5,199
9117	MMA	44905690	Feat Conv 4490 to 5690	$7,899
9117	MMA	44915690	Feat Conv 4491 to 5690	$0
9117	MMA	44945690	Feat Conv 4494 to 5690	$0
9117	MMA	44955690	Feat Conv 4495 to 5690	$4,699
9117	MMA	44965690	Feat Conv 4496 to 5690	$799
9117	MMA	44975690	Feat Conv 4497 to 5690	$0
9117	MMA	70495690	Feat Conv 7049 to 5690	$0
9117	MMA	78935690	Feat Conv 7893 to 5690	$7,299
9117	MMA	78945690	Feat Conv 7894 to 5690	$5,399
9117	MMA	78655675	Feat Conv 7865 to 5675	$1,970
9117	MMA	77685617	Feat Conv 7768 to 5617	$1,999
9117	MMA	77827387	Feat Conv 7782 to 7387	$7,699
9117	MMA	78307387	Feat Conv 7830 to 7387	$7,699
9117	MMA	78327387	Feat Conv 7832 to 7387	$7,699
9117	MMA	78337387	Feat Conv 7833 to 7387	$7,699
9117	MMA	78347387	Feat Conv 7834 to 7387	$7,899
9117	MMA	83387387	Feat Conv 8338 to 7387	$7,699
9117	MMA	77827540	Feat Conv 7782 to 7540	$19,099
9117	MMA	78307540	Feat Conv 7830 to 7540	$19,399
9117	MMA	78327540	Feat Conv 7832 to 7540	$17,199
9117	MMA	78337540	Feat Conv 7833 to 7540	$16,299
9117	MMA	78347540	Feat Conv 7834 to 7540	$20,999
9117	MMA	83387540	Feat Conv 8338 to 7540	$17,699
9117	MMA	76187700	Feat Conv 7618 to 7700	$16,799

9117	MMA	76657700	Feat Conv 7665 to 7700	$19,799
9117	MMA	78977700	Feat Conv 7897 to 7700	$18,199
9117	MMA	78987700	Feat Conv 7898 to 7700	$11,699
9117	MMA	78997700	Feat Conv 7899 to 7700	$10,699
9117	MMA	79297700	Feat Conv 7929 to 7700	$20,399
9117	MMA	76187719	Feat Conv 7618 to 7719	$12,399
9117	MMA	76657719	Feat Conv 7665 to 7719	$15,399
9117	MMA	78977719	Feat Conv 7897 to 7719	$13,799
9117	MMA	78987719	Feat Conv 7898 to 7719	$7,299
9117	MMA	78997719	Feat Conv 7899 to 7719	$6,299
9117	MMA	79297719	Feat Conv 7929 to 7719	$15,999
9117	MMA	73005683	Feat Conv 7300 to 5683	$5,099
9117	MMA	78795683	Feat Conv 7879 to 5683	$5,099
9117	MMA	56635675	Feat Conv 5663 to 5675	$1,970
9117	MMA	56255617	Feat Conv 5625 to 5617	$1,999
9117	MMA	56207540	Feat Conv 5620 to 7540	$17,399
9117	MMA	56227540	Feat Conv 5622 to 7540	$14,999
9117	MMA	73807540	Feat Conv 7380 to 7540	$16,499
9117	MMA	54037700	Feat Conv 5403 to 7700	$11,099
9117	MMA	56707700	Feat Conv 5670 to 7700	$17,699
9117	MMA	56727700	Feat Conv 5672 to 7700	$14,799
9117	MMA	16417388	Feat Conv 1641 to 7388	$11,799
9117	MMA	16517388	Feat Conv 1651 to 7388	$9,499
9117	MMA	16417540	Feat Conv 1641 to 7540	$19,499
9117	MMA	16517540	Feat Conv 1651 to 7540	$17,799
9117	MMA	78977306	Feat Conv 7897 to 7306	$20,604
9117	MMA	76187306	Feat Conv 7618 to 7306	$16,104
9117	MMA	78977700	Feat Conv 7897 to 7700	$15,942
9117	MMA	76187700	Feat Conv 7618 to 7700	$11,442
9117	MMA	16387380	Feat Conv 1638 to 7380	$0
9117	MMA	16397380	Feat Conv 1639 to 7380	$0

Machine type	Model	Feature Code	CDN Price
9117	MMA	844	$0
9117	MMA	2728	255
9117	MMA	3649	2,680

9117	MMA	3658	2,680
9117	MMA	5617	2,690
9117	MMA	5642	0
9117	MMA	5643	0
9117	MMA	5675	2,690
9117	MMA	5682	130
9117	MMA	5683	6,710
9117	MMA	5690	11,000
9117	MMA	5735	5,870
9117	MMA	5922	0
9117	MMA	6665	24
9117	MMA	7306	33,700
9117	MMA	7332	515
9117	MMA	7333	310
9117	MMA	7334	1,500
9117	MMA	7346	900
9117	MMA	7387	11,200
9117	MMA	7388	16,900
9117	MMA	7540	27,800
9117	MMA	7700	27,800
9117	MMA	7701	425
9117	MMA	7702	255
9117	MMA	7706	1,420
9117	MMA	7709	855
9117	MMA	7719	22,300
9117	MMA	7726	340
9117	MMA	7743	1,350
9117	MMA	7744	815
9117	MMA	7745	205

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