



IBM Power 770 utilizes latest POWER7 technology to deliver unprecedented performance, scalability, reliability, and manageability for demanding commercial workloads

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At a glance

The Power® 770 model MMC enterprise server is designed to deliver outstanding price/performance, mainframe-inspired reliability and availability features, flexible capacity upgrades, and innovative virtualization technologies. The Power 770 model MMC features:

- Up to 64 POWER7® cores with four processor enclosures per server
- One IBM® POWER7 processor card per processor enclosure: 16-core at 3.30 GHz or 12-core at 3.72 GHz
- Up to 4.0 TB of DDR3 memory with frequencies up to 1066 MHz, augmented with optional Active Memory™ Mirroring and Active Memory Expansion
- Enhanced I/O performance with two new, integrated POWER7 I/O controllers per processor drawer
- Optional Active Memory Mirroring
- Logical partitions -- up to 640 per system

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

Overview

The IBM Power 770 server (9117-MMC) utilizes the latest POWER7 processor and the next-generation I/O technology designed to deliver unprecedented performance, scalability, reliability, and manageability for demanding commercial workloads.

The innovative IBM Power 770 server with POWER7 processors is a symmetric multiprocessing (SMP), rack-mounted server. This modular-built system uses one to four enclosures; each enclosure is four EIA units tall and is housed in a 19-inch rack. New to the model MMC server are two new, powerful POWER7 processor drawers. Each of the drawers contains a powerful POWER7 processor card, an enhanced POWER7 I/O backplane, and a new Integrated Multifunction Card. Each POWER7 processor card features 64-bit architecture designed with two single-chip module (SCM) POWER7 processors. Each POWER7 SCM enables either up to six or eight active processor cores with 2 MB of L2 cache (256 KB per core) and 32 MB of L3 cache (4 MB per core). Each POWER7 SCM processor is available at frequencies of 3.72 GHz with six cores or 3.30 GHz with eight cores. This new model server is

available starting as low as four active cores and incrementing one core at a time through built-in Capacity on Demand (CoD) functions.

The POWER7 model MMC is a modular system that may be configured with one to four processor drawers. A system configured with up to four of these drawers using 6-core SCM processors will enable up to 48 processor cores running at frequencies up to 3.72 GHz. Or, a system configured with up to four drawers using 8-core SCM processors will enable up to 64 processor cores running at frequencies up to 3.30 GHz. A POWER7 system built with two or more model MMC processor drawers must be built with identical SCM POWER7 processors running at the same frequency.

Both of the above two new processor drawers for POWER7 model MMC systems were designed with two new, integrated POWER7 I/O controllers that enhance I/O performance while supporting a maximum of six internal PCIe adapters and six internal small form-factor, SAS DASD bays. Also, both drawers are designed with a new Integrated Multifunction Card which provides four Ethernet ports (two 10 Gb and two 1 Gb), a serial port, and two USB ports. Virtualization of these Ethernet ports is provided through VIOS for AIX®, IBM i, and Linux™. Native (non-VIOS) usage of these ports is supported by AIX or Linux. The Integrated Virtual Ethernet or Host Ethernet Adapter is not used with the Power 770 model MMC.

Another new design feature of POWER7 model MMC is the addition of 64 GB DDR3 DIMMs. These new DDR3 DIMMs are available in both the POWER7 model MMC and MHC processor drawers, and each drawer supports up to 16 DIMM slots running at speeds up to 1066 MHz. When configured with four drawers, both POWER7 model MMC and MHC each support up to a maximum of 4.0 TB of DDR3 memory. All POWER7 DDR3 memory uses memory architecture that provides increased bandwidth and capacity. This enables operating at a higher data rate for large memory configurations. Also new with POWER7 model MMC is Active Memory Mirroring (AMM) for Hypervisor, which is available as an optional feature. Also available as an option is Active Memory Expansion, which enhances memory capacity.

Key prerequisites

Refer to the [Hardware requirements](#) section and [Software requirements](#) section.

Planned availability date

- October 21, 2011, except for the following
- November 16, 2011, for AIX V7.1 with the 7100-00 Technology Level and Service Pack 4, or later
- February 10, 2012, for RAS functions with the latest service pack to firmware level 7.4:
 - Hot-node Add
 - Hot-node Upgrade (memory)
 - Hot-node Repair
 - Hot GX Adapter Repair
 - Concurrent GX Adapter Add

Description

Summary of features

The following features are available or supported on the Power 770:

- 4U 19-inch rack-mount system enclosure
- One to four system enclosures: 16U maximum system size

- One processor card feature per enclosure (includes the voltage regulator):
 - 0/12 core, 3.72 GHz processor card (#4983)
 - 0/16 core, 3.30 GHz processor card (#4984)
- POWER7 DDR3 Memory DIMMs (16 DIMM slots per processor card):
 - 0/32 GB (4 X 8 GB), 1066 MHz (#5600)
 - 0/64 GB (4 X 16 GB), 1066 MHz (#5601)
 - 0/128 GB (4 X 32 GB), 1066 MHz (#5602)
 - 0/256 GB (4 X 64 GB), 1066 MHz (#5564)
- Six hot-swappable, 2.5-inch, small form-factor, SAS disk, or solid-state disk (SSD) bays per enclosure
- One hot-plug, slim-line, SATA media bay per enclosure (optional)
- Redundant hot-swap ac power supplies in each enclosure
- Choice of Integrated Multifunction Card options (maximum of one per enclosure)
 - Dual 10 Gb Optical + Dual 1 Gb Ethernet (#1769)
 - Dual 10 Gb Copper + Dual 1 Gb Ethernet (#1768)
- One serial port per each Integrated Multifunction Card
- Two USB ports per each Integrated Multifunction Card plus another USB port on each enclosure (maximum nine usable per system)
- Two HMC ports per enclosure (maximum four per system)
- Eight I/O expansion slots per enclosure (maximum 32 per system)
 - Six Gen2 PCIe 8x slots plus two GX++ slots per enclosure
- Dynamic LPAR support, Processor and Memory CUoD
- PowerVM™ (optional):
 - Micro-Partitioning®
 - Virtual I/O Server (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)
- Optional PowerHA® for AIX, IBM i, and Linux
- 12X I/O drawer with PCI slots
 - Up to 16 PCIe I/O drawers (#5802 or #5877)
 - Up to 32 PCI-X DDR I/O drawers (7314-G30 or #5796)
- Disk-only I/O drawers
 - Up to 56 EXP24S SFF SAS I/O drawers on external SAS controller (#5887)
 - Up to 110 EXP12S SAS DASD/SSD I/O drawers on SAS PCI controllers (#5886)
 - Up to 60 EXP24 SCSI DASD Expansion drawers on SCSI PCI controllers (7031-D24 or #5786)
- IBM Systems Director Active Energy Manager™

Processors

- The following SMP and FSP cable features are required to connect the processors together when connecting two-drawer, three-drawer, and four-drawer CEC enclosures.

	SMP Cables	FSP Cables
Two-drawer	3711, 3712	3671
Three-drawer	3712, 3713	3671, 3672
Four-drawer	3712, 3713, 3714	3671, 3672, 3673

- A system can have from one to four CEC enclosures, and each CEC enclosure requires one processor card. Each processor card has two SCM processors.
- The processor card feature must be populated with POWER7 DDR3 Memory DIMMs (four DIMMs per memory feature number).
- All processor cards in the system must have the same feature number.
- Each system must have a minimum of four active 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.

Memory

- Each processor card feature must have a minimum of two memory features (two features per processor card) installed. This includes inactive processor card features present in the system.
- Memory features include a total of four DIMMs. There is a required plug location for every memory feature attached to a processor.
- The minimum activations ordered with all initial orders of memory features 5600, 5601, and 5602 must be 50% of their installed capacity.
- The minimum activations ordered with MES orders of memory features 5600, 5601, and 5602 will depend on the total installed capacity of features 5600, 5601, and 5602. This allows newly ordered memory to be purchased with less than 50% activations when the currently installed capacity exceeds 50% of the existing features 5600, 5601, and 5602 capacity.
- The minimum activations ordered with all initial orders of memory feature 5564 must be 192 GB or 256 GB per each feature 5564 ordered. That is 75% of the installed feature 5564 capacity.
- The minimum activations purchased with MES orders of feature 5564 memory, 0/256 GBs, will depend on the total installed capacity of feature 5564. This allows MES orders of feature 5564 memory to be purchased with less than 192 GB or 256 GB per each feature 5564 ordered when the system activations currently installed exceed 75% of the existing feature 5564 capacity.
- Memory activations are distributed equally across all memory features by the same activation features 8212 (1 GB) or 8213 (100 GB).
- Each system must contain a minimum of 32 GB of active system memory.
- Memory feature numbers 5600, 5601, 5602, and 5564 can be mixed on the same POWER7 processor module. Frequencies must be the same across the memory controller (4 DIMM slots).
- All processor cards have 16 memory DIMM slots (eight per processor) and must be populated with POWER7 DDR3 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 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.

I/O drawers availability

- To further reduce possible single points of failure, POWER7 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 770 using any operating systems.

- It is recommended that any attached remote I/O drawers be located in the same rack as the Power 770 server for ease of service, but they can be installed in separate racks if the application or other rack content requires it.
- The following list shows the I/O drawers that are supported or available on the model 770, with the correct interface to use for each of the drawers and the maximum number of attached I/O drawers:

Feature number	Order description	Status	Interface	Maximum number
5786	EXP24 SCSI Disk Drawer	Supported	SCSI	60
5796	PCI-X DDR 12X I/O Drawer	Available	12X	32
5802	PCIe 12X I/O w/Disks Drawer (disk bays)	Available	12X	16
5877	PCIe 12X I/O No Disk Drawer (no disk bays)	Available	12X	16
5886	Exp 12S SAS Disk Drawer	Available	SAS	110
5887	EXP24S SFF Gen2-bay Drawer	Available	SFF-2 SAS	56
7031-D24	EXP24 SCSI Disk Drawer	Supported	SCSI	60
7031-T24	EXP24 SCSI Disk Tower	Supported	SCSI	60
7314-G30	PCI-X DDR 12X I/O Drawer	Supported	12X	32

The following feature-numbered I/O drawers are available for order on the Power 770:

- The PCI-X DDR 12X Expansion Drawer (#5796) is a 4 EIA unit tall drawer and mounts in a 19-inch rack. The drawer is 22.35 cm (8.8 in) wide and takes up half the width of the 4 EIA rack space. It requires the use of a feature 7314 drawer mounting enclosure. The 4 EIA tall enclosure can hold up to two feature 5796 drawers mounted side by side in the enclosure. The drawer is 80 cm (31.5 in) deep and can weigh up to 20 kg (44 lb). The PCI-X DDR 12X Expansion Drawer has six 64-bit, 3.3 V, PCI-X DDR slots running at 266 MHz that use blind swap cassettes and support hot plugging of adapter cards. The drawer includes redundant hot-plug power and cooling. The client must select one of the two available interface adapters for use in the feature 5796 drawer: 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 via SDR or DDR cables. A maximum of four feature 5796 drawers can be placed on the same 12X loop. Mixing features 5802 or 5877 and 5796 on the same loop is not supported. Mixing feature 5796 and 7314-G30 on the same loop is supported with a maximum of four drawers total per loop. A minimum configuration of two 12X cables (either SDR or DDR), two ac power cables, and two SPCN cables is required to ensure proper redundancy.
- The PCIe 12X I/O Drawer (#5802 and #5877) is a 19-inch I/O and storage drawer. Feature 5802 provides a 4 EIA unit tall drawer containing 10 PCI-E-based I/O adapter slots and 18 SAS hot-swap small form-factor disk bays, which can be used for either disk drives or SSD, organized into two groups of nine. Each group of disk slots is controlled by one or two PCIe SAS storage adapters located in a PCIe slot in the same feature 5802 as the SAS drives. A maximum of two feature 5802 drawers can be placed on the same 12X loop. Mixing feature 5802 and feature 5796 or 7314-G30 on the same loop is not supported. Feature 5877 is the same as feature 5802, except it does not support any disk bays. Feature 5877 can be on the same loop as feature 5802. Feature 5877 cannot be upgraded to feature 5802.

The physical dimensions of the drawer measure 17.5 inches (444.5 mm) wide by 7.0 inches (177.8 mm) high by 28.0 inches (711.2 mm) deep for use in a 19-inch rack. The adapter slots use blind swap cassettes and support hot plugging of adapter cards. A minimum configuration of two 12X DDR cables, two ac power cables, and two SPCN cables is required to ensure proper redundancy. The drawer attaches to the host CEC enclosure with a 12X adapter in a GX slot via

12X DDR cables available in different cable lengths: 0.6 (#1861), 1.5 (#1862), 3.0 (#1865), or 8 meters (#1864). The 12X SDR cables are not supported.

- The EXP 12S SAS Drawer (#5886) is a 2 EIA tall drawer and mounts in a 19-inch rack. The drawer can hold either SAS disk drives or SSDs. The drawer is 20.12 inches long and can weigh up to 40 pounds, without SAS disks. The EXP 12S SAS drawer has twelve 3.5-inch SAS bays with redundant data paths to each bay. The drawer supports redundant hot-plug power and cooling and redundant hot-swap SAS expanders (Enclosure Services Manager-ESM). Each ESM has an independent SCSI Enclosure Services (SES) diagnostic processor.

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

- The large cache PCI-X (#5908) uses a SAS Y cable when a single port is running the EXP12S. A SAS X cable is used when a pair of adapters are used for controller redundancy.
- The medium cache PCI-X (#5902) and PCIe (#5903) adapters are always paired and use a SAS X cable to attach the feature 5886 I/O drawer.
- The zero-cache PCI-X (#5912) and PCIe (#5901) use a SAS Y cable when a single port is running the EXP12S. A SAS X cable is used for AIX and Linux environments when a pair of adapters is used for controller redundancy.

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

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

The feature 5886 can also be directly attached to the SAS port on the rear of the Power 770, providing a very low cost disk storage solution. When used this way, the embedded SAS RAID controllers augmented by the 175 MB Cache RAID - Dual IOA Enablement Card (#5662) in the system unit control the disk drives in EXP12S. A second unit cannot be cascaded to a feature 5886 attached in this way.

- The EXP24S SFF Gen2-bay Drawer (#5887) is an expansion drawer with twenty-four 2.5-inch form factor SAS bays. Slot filler panels are provided for empty bays when initially shipped. A feature 5887 supports up to 24 hot-swap SFF SAS hard disk drives (HDD). It uses only 2 EIA of space in a 19-inch rack. The EXP24S includes redundant ac power supplies and two power cords. The EXP24S SFF bays use Gen2 or SFF-2 SAS bays that are not compatible with CEC SFF Gen1 SAS bays or with feature 5802 or 5803 SFF SAS bays.

With AIX, Linux, and VIOS, the EXP24S can be ordered with four sets of six bays, two sets of 12 bays, or one set of 24 bays (mode 4, 2, or 1). With IBM i, the EXP24S can be ordered as one set of 24 bays (mode 1).

The EXP24S SAS ports are attached to SAS controllers that can be a SAS PCI-X or PCIe adapter or pair of adapters. The EXP24S can also be attached to an imbedded SAS controller in a server with an imbedded SAS port. Attachment between the SAS controller and the EXP24S SAS ports is via the appropriate SAS Y or X cables.

12X I/O Drawer Cables

- I/O drawers are connected to the adapters in the CEC enclosure with the following cables: data transfer cables (12X DDR cables for the feature 5802 and 5877 I/O drawers and 12X SDR or DDR cables for the feature 5796 and 7314-G30 I/O drawers) and power control cables.
- The first 12X I/O Drawer attached in any I/O drawer loop requires two data transfer cables. Each additional drawer in the loop (up to the maximum allowed) requires one additional data transfer cable.

- The first 12X I/O Drawer attached to a system unit requires two power control cables. Each additional I/O drawer added to a system requires one additional power control cable. Each system has one power control loop. All I/O drawers attached to a system are included in the same power control loop. Power control cable loops are different in this regard from data transfer cable loops.
- PCIe 12X Cable choices: The PCIe 12x drawer attaches to the host CEC enclosure with a 12x adapter in a GX++ slot via 12X DDR cables available in different cable lengths: 1.5 (#1862), 3.0 (#1865), or 8 meters (#1864).
- PCI-DDR 12X Cable choices: Each feature 5796 drawer requires one Dual-Port PCI-DDR 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 system unit. The following table identifies the supported cable lengths for each 12X Channel adapter. I/O drawers containing the Short Range adapter can be mixed in a single loop with I/O drawers containing the Long Range 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.

PCI-DDR 12X Cable Options

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

¹ The PCI-DDR 12X Cable (#1829, #1861 or #1862) is limited to connecting the CEC to the drawer if in the same rack and within 20 EIA. It 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 feature 5796 or G30 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 19-inch rack.

² The PCI-DDR 12X Cable (#1840 or #1865) is limited to connecting the CEC to the drawer if in the same rack and further than 20 EIA. It is possible in some limited configurations to use the 3.0 M, 12X cable (#1840 or #1865) to locate 5796 modules in adjacent racks. The cable length requires careful management of each drawer location within the rack. The best choice for connecting a feature 5796 or G30 I/O Drawer in an adjacent rack is the 8.0 M, 12X cable (#1834 or #1864).

³ The PCI-DDR 12X Cable (#1834 or #1864) is limited to connecting the CEC to the drawer if in different racks. It 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).

19-inch racks

The 9117-MMC and its I/O drawers are designed to mount in the 7014-T00, 7014-T42, 7014-B42, 7014-S25, feature 0551, 0553, or 0555 rack. These are built to the 19-inch EIA standard. When ordering a new 9117 system, the appropriate 7014 rack model can be ordered with the system hardware on the same initial order. IBM also makes the racks available as features of the 9117-MMC when you order additional I/O drawer hardware for an existing system (MES order). The rack feature number (#0551/0553) should be used if you want IBM to integrate the newly ordered I/O drawer in a 19-inch rack before shipping the MES order.

The 9117-MMC has the following rack requirements:

- The Power 770 may be ordered without a rack.
- The Power 770 consists of one to four CEC enclosures. Each enclosure occupies 4U of vertical rack space. The Power 770 can be installed in a 7014-T00, 7014-B42, 7014-S25, or 7014-T42 and shipped from IBM to the client rack. An existing 7014-T00, 7014-B42, 7014-S25, 7014-T42, feature 0551, 0553, or 0555 rack can be used for the Power 770 if sufficient space and power are available.
- The 7014-S25 and feature 0555 rack can only support one Power 770 CEC enclosure.
- For Power 770 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 770 system is installed in an 7014-T00, 7014-B42, or 7014-T42 rack or in a feature 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 rack or feature 0551 is feature number 6263. The required trim kit for the 7014-T42, 7014-B42, or feature rack is feature number 6272. When upgrading from a 9117-MMA, trim kit features 6246 or 6247 may be used for one drawer enclosure only.
- The design of the Power 770 is optimized for use in a 7014-T00, 7014-B42, 7014-S25, 7014-T42, feature 0551, or feature 0553 rack. Both the front cover and the processor flex cables occupy space on the front left and right side of an IBM 7014 or feature 055x rack that may not be available in typical non-IBM racks.
- Acoustic door features are available with the 7014-T00, 7014-B42, 7014-T42, feature 0551, and feature 0553 racks to meet the lower acoustic levels identified in the specification section of this document. The acoustic door feature can be ordered on new 7014-T00, 7014-B42, 7014-T42, feature 0551, and feature 0553 racks or ordered for the 7014-T00, 7014-B42, 7014-T42, feature 0551, and feature 0553 racks that clients already own.
- 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, S25, or T42.

1.3 Meter Rack (#0555)

The 1.3 Meter Rack (#0555) is a 25 EIA unit rack. The rack that is delivered as feature 0555 is the same rack delivered when you order the 7014-S25 rack; the included features may be different. Only feature 0555 is supported.

1.8 Meter Rack (#0551)

The 1.8 Meter Rack (#0551) is a 36 EIA unit rack. The rack that is delivered as feature 0551 is the same rack delivered when you order the 7014-T00 rack; the included features may be different. Some features that are delivered as part of the 7014-T00 must be ordered separately with the feature 0551. Order the feature 0551

only when required to support rack integration of MES orders prior to shipment from IBM Manufacturing.

2.0 Meter Rack (#0553)

The 2.0 Meter Rack (#0553) is a 42 EIA unit rack. The rack that is delivered as feature 0553 is the same rack delivered when you order the 7014-T42 or 7014-B42 rack; the included features may be different. Some features that are delivered as part of the 7014-T42 or 7014-B42 must be ordered separately with feature 0553. Order feature 0553 only when required to support rack integration of MES orders prior to shipment from IBM Manufacturing.

Integrated I/O

- Each CEC enclosure must contain one Integrated Multifunction Card (#1768 or #1769).
- The Integrated Multifunction Card's Ethernet ports can not be used for an IBM i console. Separate Ethernet adapters which can be directly controlled by IBM i without VIOS should be used for IBM i LAN consoles, if desired. Alternatively, an HMC can also be used for an IBM i console.
- The first and second CEC enclosure must contain one Integrated Multifunction Card (#1768 or #1769). The Integrated Multifunction Card is optional for the third or fourth CEC enclosure.
- Each Integrated Multifunction Card has four Ethernet ports, two USB ports, and one serial port. Usage of the serial port by AIX or Linux is supported for MODEM call home, TTY console and Snooping even if an HMC or SDMC is attached to the server, unlike the earlier Power 770 model MMB. Usage by the serial port to communicate with a UPS is not supported, like the model MMB.
- The first and second CEC enclosures each have two HMC or SDMC ports on the Service Processor-2 (#EU05). If there are two CEC enclosures, the HMC must be connected to both service processor cards.

Disks, media, and boot devices

- A device capable of reading a DVD 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 or SSD located in the CEC enclosure, located in a DASD drawer attached to a PCI adapter or located in an 12X I/O drawer attached to a GX++ adapter or from a network via LAN adapters.
- The minimum system configuration requires at least one SAS disk drive in the system for AIX or Linux and two for IBM i, or if using a Fibre Channel attached SAN (indicated by feature number 0837), a disk drive is not required. Attachment of the SAN using a Fibre Channel over Ethernet connection is also supported.
- Each CEC enclosure can support one media device when the Disk/Media Enclosure and Backplane feature (#5652) is ordered. Any supported DVD-RAM drive can be installed. Each system can support up to four media devices in the CEC enclosure -- a maximum of one in each enclosure.
- The model MMC supports both 2.5-inch and 3.5-inch SAS SFF DASD hard disks. The 3.5-inch DASD hard files can be attached to the model MMC but must be located in a feature 5886 EXP12S I/O drawer, whereas 2.5-inch DASD hard files may be either mounted internally or in the EXP24S SFF Gen2-bay Drawer (#5887).
- When ordering feature 1819, you must also order feature 5662. This applies to MES orders of feature 1819 unless feature 5662 is already present in the system. Feature 1815 and feature 5662 cannot be installed in the same drawer. Feature 1819 must not be installed in a drawer unless feature 5662 is also installed.

I/O slots and adapters

- Each Power 770 CEC enclosure has six full-length, 8X, PCIe slots and two GX++ slots.
- Eight I/O expansion slots per enclosure (maximum 32 per system).

Slot ID	Adapter	Type	Slot size
P2-C1	PCIe	8X	Full length
P2-C2	PCIe	8X	Full length
P2-C3	PCIe	8X	Full length
P2-C4	PCIe	8X	Full length
P2-C5	PCIe	8X	Full length
P2-C6	PCIe	8X	Full length
P1-C2	GX++		
P1-C3	GX++		

- The Power 770 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.
- The maximum feature 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.

Power

- Each Power 770 system with two or more CEC enclosures 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.
- Two ac power supplies are required for each CEC enclosure; the second power supply provides 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.

Power distribution units

For systems installed in IBM 7014 or feature 055x racks, the following Power Distribution Unit (PDU) rules apply (not all PDUs are available in all models of the 7014 or #055x):

- For PDU feature numbers 7188 and 7109 when using power cord feature numbers 6654, 6655, 6656, 6657, or 6658: each pair of PDUs can power up to three Power 770 CEC enclosures.
- For PDU feature numbers 7188 and 7109 when using power cord feature numbers 6489, 6491, 6492, or 6653: each pair of PDUs can power up to seven Power 770 CEC enclosures.

To provide full redundancy, each server drawer has two power supplies that must be connected to separate PDUs.

Hot-plug options

- The following options are hot-plug capable:
 - GX++ adapters.
 - System ac power supplies: one functional power supply must remain installed at all times while the system is operating.
 - Disk drives.
 - Most PCIe adapters.
 - Media devices.

- 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.

Logical partitioning

- Without PowerVM, Dynamic LPAR allows one partition per processor.
- With PowerVM, up to 10 partitions are allowed per processor. Logical partitioning is supported when PowerVM (#7942 or #7995) is ordered.
- For Linux partitions, a DVD-RAM and a Media Enclosure and Backplane (#5652) are required.

Available backplane configurations

The 770 CEC drawer has an extremely flexible and powerful backplane for supporting disk or SSDs. The six SFF bays can be configured in three different ways to match your business needs. There are two built-in SAS controllers that can be optionally augmented with a 175 MB Cache RAID Battery Card. Two embedded SAS disk/SSD controllers are provided for redundancy or for additional flexibility. The optional 175 MB Cache RAID - Dual IOA Enablement Card feature (#5662) enables dual 175 MB write cache and provides dual batteries for protection of that write cache.

The backplane can be configured as one set of six bays, two sets of three bays (3/3), or three sets of two bays (2/2/2). Configuration options will vary depending upon the controller options and the operating system selected. The controllers for the six-bay or 3/3 configurations are always the two pairs of embedded controllers. But if the 2/2/2 configuration is used, the two embedded controllers run the first two sets of bays (2/2) and a feature 5901 PCIe SAS adapter located in a PCIe slot in a CEC enclosure controls the third set (2). By having three controllers, you can have three boot drives supporting three partitions.

The following SSD/HDD configuration rules apply:

- You can mix SSD and HDD drives when configured as one set of six bays.
- If you want to have both SSDs and HDDs within a 3/3 split configuration, you must use the same type of drive within each set of three. You cannot mix SSDs and HDDs within a subset of three bays.
- If you want to have both SSDs and HDDs within a 2/2/2 split configuration, you must use the same type of drive within each set of two. You cannot mix SSDs and HDDs within a subset of two bays. The feature 5901 PCIe SAS adapter that controls the remaining two bays in a 2/2/2 configuration does not support SSDs.

You can configure the two embedded controllers together as a pair for higher redundancy or you can configure them separately. If you configure them separately, they can be owned by different partitions or they could be treated independently within the same partition. If configured as a pair, they provide controller redundancy and can automatically switch over to the other controller should one have problems. Also, if configured as a pair, both can be active at the same time (active/active) assuming there are two or more arrays configured, providing additional performance capability as well as redundancy. If configured as a pair, the pair controls all six SFF bays and both see all six drives. The 3/3 or 2/2/2 configurations are not used with the paired controllers. RAID 0 and RAID 10 are supported and you can also mirror two sets of controller/drives using the operating system.

Adding the optional 175 MB Cache RAID - Dual IOA Enablement Card (#5662) causes the pair of embedded controllers in that processor enclosure to be configured as dual controllers accessing all six SAS bays. Without the feature 5662, each of the two controllers can access only two or three SAS bays. With the 175 MB Cache RAID - Dual IOA Enablement Card, you can get controller redundancy, additional RAID protection options, and additional I/O performance. RAID 5 (a minimum of three drives required) and RAID 6 (a minimum of four drives required) are available when configured as dual controllers with one set of six bays.

Another expansion option available using the paired embedded controller configuration with the 175 MB Cache RAID - Dual IOA Enablement Card feature is a SAS expansion port. The SAS expansion port can add more SAS bays to the six bays in the system unit. A feature 5886 SAS disk drawer is attached using a SAS port on the rear of the processor drawer, and its 12 SAS bays are run by the pair of embedded controllers. The pair of embedded controllers are now running 18 SAS bays (six SFF bays in the system unit and twelve 3.5-inch bays in the drawer). The disk drawer is attached to the SAS port with a SAS YI cable and the embedded controllers connected to the port using a feature 1819 cable assembly. In this 18-bay configuration, all drives must be HDDs.

IBM i supports configurations using one set of six bays but does not support logically splitting the backplane into 3/3 or 2/2/2. Thus, the 175 MB Cache RAID - Dual IOA Enablement Card (#5662) is required if IBM i is to access any of the SAS bays in that processor enclosure. AIX and Linux support configurations using two sets of three bays (3/3) or three sets of two bays (2/2/2) without feature 5662 and supports dual controllers running one set of six bays with feature 5662.

The system backplane also includes a third embedded controller for running the DVD-RAM drive in the CEC drawer. Because the controller is independent from the two SAS disk/SSD controllers, it allows the DVD to be switched between multiple partitions without impacting the assignment of disks or SSDs in the CEC drawer.

Capacity on Demand

Several types of Capacity on Demand (CoD) processors and memory are optionally available on the Power 770 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

Capacity Upgrade on Demand (CUoD) allows you to purchase additional permanent processor or memory capacity and dynamically activate them when needed.

On/Off Capacity on Demand

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.

If a Power 770 server uses the IBM i operating system in addition to any other supported operating system on the same server, the client must inform the sales team placing the billing feature order which operating system caused the temporary On/Off CoD processor use so that the correct feature can be used for billing.

The following features are used to order enablement features and support billing charges on the Power 770:

Model	Processor feature	On/Off CoD processor enablement feature	AIX/Linux	IBM i
			On/Off CoD processor billing feature	On/Off CoD processor billing feature
MMC	4983	7951	5332	5333 : 1 Proc-Day
MMC	4984	7951	5334	5335 : 1 Proc-Day
MMC	4983	7951	EP2G	EP2H : 100 Proc-Days

MMC 4984 7951 EP2J EP2K : 100 Proc-Days

Model	Memory features	On/Off CoD memory enablement feature	On/Off CoD memory billing feature
MMC	5600	7954	7377
MMC	5601	7954	7377
MMC	5602	7954	7377
MMC	5564	7954	7377

The On/Off CoD process consists of three steps: Enablement, Activation, and Billing.

On/Off CoD enablement: Description

Before requesting temporary capacity on a server, you must "enable" it for On/Off CoD. To do this, order an enablement feature (MES only) and sign the required contracts. IBM will generate an enablement code, mail it to you, and post it on the web for you to retrieve and enter on your server. A processor enablement code lets you request up to 360 processor days of temporary capacity. If you have reached the limit of 360 processor days, place an order for another processor enablement code to reset the number of days you can request to 360.

A memory enablement code lets you request up to 999 memory days of temporary capacity. If you have reached the limit of 999 memory days, place an order for another memory enablement code to reset the number of days you can request to 999.

On/Off CoD Enablement: Step-by-Step

Prerequisite 1: Sales channel (IBM Business Partner) must sign one of the following contracts, if applicable:

- IBM Business Partner Agreement, Distributor Attachment for On/Off Capacity On Demand
- IBM Business Partner Agreement for Solution Providers -- Attachment for On/Off Capacity On Demand
- IBM Business Partner Agreement -- Attachment for On/Off Capacity On Demand

Prerequisite 2: Sales channel (IBM Business Partner or IBM Direct) must register at the following website

<http://www.ibm.com/servers/eserver/iserries/ondemand/cod>

- Step 1: Client initiates request for On/Off CoD use by requesting Sales channel to enable the machine for temporary capacity.
- Step 2: Client must complete and sign the following contracts. It is the Sales channel's responsibility to return the signed contract to the responsible CSO organization and fax a copy to IBM at 507-253-4553 or email to tcod@us.ibm.com.
 - Required: IBM Customer Agreement, Attachment for On/Off Capacity On Demand; IBM Supplement for On/Off Capacity On Demand
 - Optional: IBM Addendum for On/Off Capacity On Demand Alternative Reporting
- Step 3: Sales channel places an order for processor or memory enablement features.
- Step 4: Sales channel updates the website registration data (see prerequisite 2 above) with information about the customer machine being enabled for temporary capacity. Note: The order for an enablement feature will not be fulfilled until this step is completed.
- Step 5: IBM generates an enablement code and mails/posts it.
- Step 6: Customer retrieves the enablement code and applies it to the server.

On/Off activation requests: Description

When On/Off CoD temporary capacity is needed, simply use the HMC menu for On/Off CoD and specify how many of the inactive processors or gigabytes of memory you would like temporarily activated for some number of days.

You will be billed for the days requested, whether the capacity is assigned to partitions or left in the shared processor pool.

At the end of the temporary period (days you requested), you must ensure the temporarily activated capacity is available to be reclaimed by the server (not assigned to partitions), or you will be billed for any unreturned processor days (per the contract you signed).

On/Off CoD activation requests: Step-by-step

When there is a need for temporary capacity, use the On/Off CoD temporary capacity HMC menu for the server and specify how many of the inactive processors or gigabytes of memory you would like temporarily activated for some number of days. The user must assign the temporary capacity to a partition (whether or not the machine is configured for LPAR) to begin using temporary capacity.

On/Off CoD billing: Description

The contract, signed by the client before receiving the enablement feature, requires the On/Off CoD user to report billing data at least once a month (whether there is activity or not). This data is used to determine the proper amount to bill at the end of each billing period (calendar quarter). Failure to report billing data for use of temporary processor or memory capacity during a billing quarter will result in default billing equivalent to 90 processor days of temporary capacity. The Sales channel will be notified of customer requests for temporary capacity. As a result, the Sales channel must order a quantity of billing features (one feature for each billable processor and memory day reported).

On/Off CoD billing: Step-by-step

The client must report billing data (requested and unreturned processor and memory days) at a minimum of once per month either electronically or via fax (stated requirement in the signed contract). At the end of each billing period (calendar quarter), IBM will process the accumulated data reported and notify the Sales channel for proper billing. The Sales channel places an order for the appropriate quantity of billing features (one processor billing feature ordered for each processor day used, or one memory day for each memory day utilized). IBM will ship a billing notice (notifies customer of billing actions) to the ship-to address on the order as part of the fulfillment process. The customer pays the Sales channel and the Sales channel pays IBM for the fulfillment of the billing features.

For more information regarding registration, enablement, and usage of On/Off CoD, visit

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

Utility CoD

Utility CoD autonomically 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 becomes 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 website and payment is

based on reported usage. Utility CoD requires PowerVM Standard Edition (#7942) or PowerVM Enterprise Edition (#7995) to be active on the 9117-MMC.

If a Power 770 server uses the IBM i operating system in addition to any other supported operating system on the same server, the client must inform the sales team placing the billing feature order which operating system caused the temporary Utility CoD processor use so that the correct feature can be used for billing.

Model	Utility billing processor feature	Utility CoD feature	description
MMC	EP2G	100	Processor minutes for #4983
MMC	EP2H	100	Processor minutes for #4983, IBM i
MMC	EP2J	100	Processor minutes for #4984
MMC	EP2K	100	Processor minutes for #4983, IBM i

For more information regarding registration, enablement, and use of Utility CoD, visit:

<http://www-947.ibm.com/systems/support/planning/capacity/index.html>

Trial Capacity on Demand (Trial CoD)

Clients can request either a Standard or an Exception Trial, visit

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

Software licensing

For software licensing considerations with the various CoD offerings, refer to the latest revision of the Capacity on Demand Planning Guide at

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

Services

The IBM Server Product Services offers implementation and migration services to help you put your IBM Power Systems™ 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 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. To see what IBM can do for you, visit

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

IBM Power Systems Deployment-Ready Services

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

- Integration
 - Component integration
 - Rack integration
 - Operating system preinstallation
 - Unit personalization
 - Third-party hardware/software installation
 - Customer-specified placement
- Asset tagging: Standard tagging Radio Frequency Item Device (RFID)
- Special packaging: Box consolidation

- System customization: Remote access partitioning customized operating system/firmware

For more information on Deployment-Ready Services, refer to

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

Model upgrades

You can upgrade the 9117-MMA or 9117-MMB with 9117-MMC processors. For upgrades from 9117-MMA or 9117-MMB systems, IBM will install new CEC enclosures to replace the enclosures the client currently has. The client's current CEC enclosures will be returned to IBM in exchange for the financial consideration identified under the applicable feature conversions for each upgrade.

Clients taking advantage of the model upgrade offer from a 9117-MMA or 9117-MMB system are required to return all components of the serialized MT-model that were not ordered via feature numbers. Any feature for which a feature conversion is used to obtain a new part must be returned to IBM also. Clients may keep and reuse any features from the CEC enclosures that were not involved in a feature conversion transaction.

Upgrade considerations

Feature conversions have been set up for the following:

- 9117-MMA or 9117-MMB processors to 9117-MMC processors with activations
- DDR2 memory DIMMs to DDR3 memory DIMMs
- New trim kits upgrading from 9117-MMA to 9117-MMC (existing trim kits are only functional for one drawer configurations or for racks holding only I/O and no 770 processor enclosures)
- PowerVM (Standard to Enterprise)
- Drawer/Bezel
- PCIe Crypto Gen3
- PCIx 1.5 GB RAID

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

- DDR3 memory DIMMs (#5600, #5601, and #5602)
- Active Memory Expansion Enablement (#4791)
- FSP/Clock Pass Through Card (#5665)
- Service Processor-2 (#EU05)
- 175 MB Cache RAID - Dual IOA Enablement Card (#5662)
- Operator Panel (#1853)
- Disk/Media Backplane (#5652)
- PCIe adapters with cables
- Line cords, keyboards, and displays
- PowerVM (#7942 and #7995)
- I/O drawers (#5786, #5796, #5802, #5877, and #5886)
- Racks (#0551, #0553, and #0555)
- Doors (#6068, #6069, #6248, #6249, #6858)
- SATA DVD-RAM (#5762)

The Power 770 can support the following 12X drawers and disk-only drawers:

- Feature 5802 and 5877 PCIe 12X I/O drawers
- Feature 5797 and 7413-G30 PCI-X (12X) I/O Drawer

- Feature 5786 and 7031-D24 TotalStorage EXP24 SCSI Disk Drawer
- Feature 5886 EXP12S SAS Disk Drawer

The model MMC supports only the SAS DASD SFF hard disks internally. The older 3.5-inch DASD hard disks can be attached to the model MMC but must be located in an I/O drawer such as feature 5886.

For 9117-MMA or 9117-MMB systems that have the On/Off CoD function enabled, you must reorder the On/Off enablement features (#7951 and #7954) when placing the upgrade MES order for the new Power 770 system to keep the On/Off CoD function active. The On/Off enablement features should be removed from the configuration file before the MES order is started to initiate the model upgrade. Any temporary use of processors or memory owed to IBM on the existing system must be paid before installing the new Power 770 model MMC.

Features 8018 and 8030 are available to support migration of the PowerVM features 7942 or 7995 during the initial order and build of the MMC upgrade MES order. Customers may add feature 8018 or 8030 to their upgrade orders in a quantity not to exceed the quantity of feature 7942 or 7995 obtained for the system being upgraded. Feature 7942 or 7995 should be migrated to the new configuration report in a quantity that equals feature 8018 or 8030. Additional 7942 or 7995 features can be ordered during the upgrade.

PowerVM

PowerVM is available on the 9117-MMC:

- PowerVM Editions are available as a hardware feature (#7942 for Standard Edition, #7995 for Enterprise Edition). Clients select the feature that provides the level of virtualization appropriate for their workloads.
- Micro-Partitioning allows a single processor core to be shared by up to 10 logical partitions.
- Virtual I/O Server is a single-function appliance that resides in an IBM POWER5, POWER6®, or POWER7 processor-based partition. It facilitates the sharing of physical I/O resources between client partitions (AIX V5.3, or later, IBM i V6.1 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 logical partitions.
- Virtual networking: A shared Ethernet adapter enables connectivity between internal and external virtual LANs (VLANs); virtual Ethernet provides high-speed connections between partitions.
- PowerVM Lx86 supports running most x86 Linux applications within Linux partitions.
- Live Partition Mobility, available only with PowerVM-Enterprise Edition, will allow you to move a running AIX or Linux LPAR from one physical server to another with no downtime if both servers are using POWER6 or POWER7 processors. This capability can be used to evacuate workloads from a system before performing scheduled maintenance, moving workloads across a pool of different physical resources as business needs shift, and moving workloads away from under-utilized machines so that they can be powered off to save on energy and cooling costs.
- Active Memory Sharing allows memory to be dynamically moved between running partitions for optimal resource usage.

PowerVM Editions:

- PowerVM Standard Edition (#7942) supports up to 10 partitions per core, VIOS, PowerVM Lx86, and multiple shared processor pools.
- PowerVM Enterprise Edition (#7995) adds support for Live Partition Mobility and Active Memory Sharing.

Other PowerVM technologies include:

- Workload Partitions (WPARs) provide isolated instances on top of a single AIX 6.1 image.
- Live Application Mobility, available with WPAR Manager, provides the movement of a running AIX application from one server to another.
- System Planning Tool simplifies the process of planning and deploying Power Systems LPARs and virtual I/O.

Capacity Backup Offering (applies to IBM i only)

The Power 770 systems' Capacity Backup (CBU) designation can help meet your requirements for a second system to use for backup, high availability, and disaster recovery. It enables you to temporarily transfer IBM i processor license entitlements and 5250 Enterprise Enablement entitlements purchased for a primary machine to a secondary CBU-designated system. Temporarily transferring these resources instead of purchasing them for your secondary system may result in significant savings. Processor activations cannot be transferred.

The CBU specify feature number 4891 is available only as part of a new server purchase or during an MES upgrade from an existing system to a 9117-MMC. Certain system prerequisites must be met and system registration and approval are required before the CBU specify feature can be applied on a new server.

Standard IBM i terms and conditions do not allow either IBM i processor license entitlements or 5250 OLTP (Enterprise Enablement) entitlements to be transferred permanently or temporarily. These entitlements remain with the machine they were ordered for. When you register the association between your primary and on-order CBU system, you must agree to certain terms and conditions regarding the temporary transfer.

After a CBU system designation is approved and the system is installed, you can temporarily move your optional IBM i processor license entitlement and 5250 Enterprise Enablement entitlements from the primary system to the CBU system when the primary system is down or while the primary system processors are inactive. The CBU system can then better support fail-over and role swapping for a full range of test, disaster recovery, and high availability scenarios. Temporary entitlement transfer means that the entitlement is a property transferred from the primary system to the CBU system and may remain in use on the CBU system as long as the registered primary and CBU system are in deployment for the high availability or disaster recovery operation.

The primary system for a Power 770 server can be:

- 9119-FHA
- 9119-FHB
- 9406-595
- 9117-MMA
- 9406-MMA
- 9406-570
- 9117-MMB
- 9117-MMC
- 9179-MHB
- 9179-MHC

These systems have IBM i software licenses with an IBM i P30 software tier, or higher. The primary machine must be in the same enterprise as the CBU system.

Before you can temporarily transfer IBM i processor license entitlements from the registered primary system, you must have more than one IBM i processor license on the primary machine and at least one IBM i processor license on the CBU server. An activated processor must be available on the CBU server to use the transferred entitlement. You may then transfer any IBM i processor entitlements above the minimum one, assuming the total IBM i workload on the primary system does

not require the IBM i entitlement you would like to transfer during the time of the transfer. During this temporary transfer, the CBU system's internal records of its total number of IBM i processor license entitlements are not updated, and you may see IBM i license noncompliance warning messages from the CBU system. Such messages that arise in this situation do not mean you are not in compliance.

Before you can temporarily transfer 5250 entitlements, you must have more than one 5250 Enterprise Enablement entitlement on the primary server and at least one 5250 Enterprise Enablement entitlement on the CBU system. You may then transfer the entitlements that are not required on the primary server during the time of transfer and that are above the minimum of one entitlement.

For example, if you have an 8-core Power 770 as your primary system with four IBM i processor license entitlements (three above the minimum) and two 5250 Enterprise Enablement entitlements (one above the minimum), you can temporarily transfer up to three IBM i entitlements and one 5250 Enterprise Enablement entitlement. During the temporary transfer, the CBU system's internal records of its total number of IBM i processor entitlements is not updated, and you may see IBM i license noncompliance warning messages from the CBU system.

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

For CBU registration and further information, visit

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

Active Memory Expansion

Active Memory Expansion is an innovative POWER7 technology that allows the effective maximum memory capacity to be much larger than the true physical memory maximum. Sophisticated compression/decompression of memory content can allow memory expansion up to 100%. This can allow a partition to do significantly more work or support more users with the same physical amount of memory. Similarly, it can allow a server to run more partitions and do more work for the same physical amount of memory.

Active Memory Expansion is available for partitions running AIX 6.1 with Technology Level 4 and Service Pack 2, or later.

Active Memory Expansion uses CPU resource to compress/decompress the memory contents. The trade off of memory capacity for processor cycles can be an excellent choice, but the degree of expansion varies on how compressible the memory content is, and it also depends on having adequate spare CPU capacity available for this compression/decompression. Tests in IBM laboratories using sample workloads showed excellent results for many workloads in terms of memory expansion per additional CPU utilized. Other test workloads had more modest results.

Clients have a great deal of control over Active Memory Expansion usage. Each individual AIX partition can turn on or turn off Active Memory Expansion. Control parameters set the amount of expansion desired in each partition to help control the amount of CPU used by the Active Memory Expansion function. An IPL is required for the specific partition that is turning memory expansion on or off. Once turned on, there are monitoring capabilities in standard AIX performance tools such as lparstat, vmstat, topas, and svmon.

A planning tool is included with AIX 6.1 with Technology Level 4, allowing you to sample actual workloads and estimate both how expandable the partition's memory is and how much CPU resource is needed. Any Power Systems model can run the planning tool. In addition a one-time, 60-day trial of Active Memory Expansion is available to provide more exact memory expansion and CPU measurements. The trial can be requested using the Capacity on Demand web page

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

Active Memory Expansion is enabled by chargeable hardware feature 4791, which can be ordered with the initial order of the server or as an MES order. A software key is provided when the enablement feature is ordered, which is applied to the server. An IPL is not required to enable the server. The key is specific to an individual server and is permanent. It cannot be moved to a different server.

The additional CPU resource used to expand memory is part of the CPU resource assigned to the AIX partition running Active Memory Expansion. Normal licensing requirements apply.

IBM i operating system

For customers loading the IBM i operating system, the four-digit numeric QPRCFEAT value used on the 9117-MMC is the same as the four-digit numeric feature number for the processors used in the system. For example, if the processor feature number in a system is 4984, the QPRCFEAT value for the system would be 4984.

- The QPRCFEAT value in a Power 770 server does not change with the addition of more processors or additional CEC enclosures.
- The QPRCFEAT value in a Power 770 server would change only if the feature number of the processors was changed due to a processor upgrade.

Reliability, availability, and serviceability (RAS)

The reliability of the IBM Power 770 starts with components, devices, and subsystems that are designed to be fault-tolerant. POWER7 uses lower-voltage technology, improving reliability with stacked latches to reduce soft error (SER) susceptibility. During the design and development process, subsystems go through rigorous verification and integration testing processes. During system manufacturing, systems go through a thorough testing process to help ensure high product quality levels.

The processor and memory subsystem contain a number of features designed to avoid or correct environmentally induced, single-bit, intermittent failures as well as handle solid faults in components, including selective redundancy to tolerate certain faults without requiring an outage or parts replacement.

The AIX operating system supports disk mirroring (RAID 1) and disk controller duplexing. The Linux operating system supports disk drive mirroring (RAID 1). The adapter provides RAID 0, RAID 5, RAID 6, and RAID 10 for AIX and Linux. Under IBM i OS, mirroring and data spreading is provided by the operating system and RAID 5 and RAID 6 is provided by the adapter.

Memory error-correction extensions

POWER7 memory has error detection and correction code circuitry designed to detect and correct faults that extend across multiple memory modules (DRAMs). This includes tolerating a complete DRAM chip failure (Chipkill recovery). POWER7 memory used in the Power 770 system also contains a spare memory (DRAM) per rank of memory, which can be substituted for a failed DRAM module (DRAM sparing). The spares can be used when a DRAM fault is detected and provides additional protection beyond that provided by the error detection and correction circuitry. In addition, the POWER7 memory subsystem provides scrubbing of memory to detect and correct intermittent errors.

The bus transferring data between the processor and the memory uses CRC error detection with a failed operation retry mechanism and the ability to dynamically retune bus parameters when a fault occurs. In addition, the memory bus has spare capacity to substitute a spare data bit-line for which is determined to be faulty.

Fault monitoring functions

On POWER7 processor-based servers, hardware failures and software-detected hardware 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 check stop conditions and forwards them to the SFP application and notifies the system administrator.

After the information is logged, if the system is properly configured, a call home service request is initiated, and the pertinent failure data with service parts information and part locations is sent to an IBM Service organization. Client contact information and specific system-related data, such as the machine type, model, and serial number along with 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.

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

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 does not correct the problem with the service processor, the hypervisor will notify the operating system, and the operating system can take appropriate action, including calling for service or initiating a failover operation to the alternate service processor if present.

Environmental monitoring functions

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

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

POWER7 processor availability enhancements

As in POWER6, the POWER7 processor has the ability to do processor instruction retry and alternate processor recovery for a number of core-related faults. This 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. With this function, when an error is encountered in the core, the POWER7 processor will first automatically retry the instruction. If the source of the error was truly transient, the instruction will succeed and the system will continue as before. On IBM systems prior to POWER6, this error would have caused a checkstop.

Hard failures are more difficult, being true logical errors that will be replicated each time the instruction is repeated. Retrying the instruction will not help in this situation because the instruction will continue to fail. In a number of cases, systems with POWER7 processors have the ability to extract the failing instruction from the faulty core and retry it elsewhere in the system for a number of faults, after which the failing core is dynamically deconfigured and called out for replacement. The entire process is transparent to the partition owning the failing instruction. These systems are designed to avoid a full system outage.

POWER7 single processor check stopping

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

POWER7 cache availability

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

Active Memory Mirroring

Active Memory Mirroring (AMM) for Hypervisor is a featured option (#4797) on MMC. This option mirrors the main memory used by the Hypervisor firmware. With this option, an uncorrectable error in one copy of the mirrored memory will be corrected by use of the mirrored pair. This option efficiently guards against system-wide outages due to any such error associated with the mirrored Hypervisor firmware memory. With this option, uncorrectable errors in data owned by a partition or application will continue to be handled by the existing Special Uncorrectable Error Handling methods in the hardware, firmware, and operating system.

Special Uncorrectable Error handling

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

PCI extended error handling

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

Predictive failure and dynamic component deallocation

Servers with POWER® processors have long 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 is propagated system-wide. In many cases, the system will first attempt to reallocate resources in such a way that will avoid unplanned outages. In the event that insufficient resources exist to maintain full system availability, these servers will attempt to maintain partition availability by user-defined priority.

Uncorrectable error recovery

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

Serviceability

The IBM Power 770 is 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. With the Power 770, you can replace service parts (customer replaceable unit). To do this, the Power 770 uses Guiding Light LEDs to indicate the parts that need to be replaced.

An HMC attached to the Power 770 enables support personnel (with your 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, that are loaded from the DVD-RAM 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 enables checking of system devices and features.
- Concurrent mode allows the normal system functions to continue while selected resources are being checked.
- Maintenance mode enables checking of devices and adapters.

Note: Because the 9117-MMC system has an optional DVD-RAM (#5762), alternative methods for maintaining and servicing the system need to be available if the 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. These procedures are available through the InfoCenter application.

Service environments

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

Service Interface

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

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

- LEDs

- Operator panel
- Service Processor menu
- Operating system service menu
- Service Focal Point on the HMC

In the Guiding Light LED implementation, when a fault condition is detected on the POWER7 system, an amber system fault LED will be illuminated on the operator panel. The Guiding Light system pinpoints the exact part by blinking the amber field-replaceable unit (FRU) identify LED associated with the part to be replaced when selected by the servicer as part of the repair procedure. This action will roll up to the enclosure locate and blue system locate LED on the operator panel to provide a path from the system level to the enclosure and down to the individual component to be serviced.

The enclosure and system identify LEDs will turn on solid and can be used to follow the path from the system to the enclosure and down to the specific FRU.

First-failure data capture and error data analysis

First-failure data capture (FFDC) is a technique that helps ensure that when a fault is detected in a system, the root cause of the fault will be captured without the need to re-create the problem or run any sort of extended tracing or diagnostics program. For the vast majority of faults, a good FFDC design means that the root cause can also be detected automatically without servicer intervention. FFDC information, error data analysis, and fault isolation are necessary to implement the advanced serviceability techniques that enable efficient service of the systems and to help determine the failing items.

Error handling and reporting

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

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

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

Service processor

The service processor provides the capability to diagnose, check the status of, and sense the operational conditions of a system. It runs on its own power boundary and

does not require resources from a system processor to be operational to perform its tasks.

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

Concurrent maintenance

The Power 770 continues to support concurrent add or repair of power, cooling, PCI adapters, media devices, I/O drawers, GX adapter, and the operator panel. In addition, it continues to support concurrent firmware fix pack updates when possible. The determination of whether a firmware fix pack release can be updated concurrently is identified in the readme file released with the firmware.

Hot-node add, memory upgrade, hot-node repair

With the proper configuration and required protective measures, the Power 770 server is designed for node add, memory upgrade, or node repair without powering down the system. Power 770 servers support the adding of an additional CEC enclosure (node) to a system (hot-node add) or adding additional memory (memory upgrade) to an existing node. The additional Power 770 enclosure or memory would be ordered as a system upgrade (MES order) and added to the original system. The additional resources of the newly added CEC enclosure (node) or memory can then be assigned to existing OS partitions or new partitions as required. Hot-node add and memory upgrade makes it possible to upgrade a server by integrating a second, third, or fourth CEC enclosure or additional memory into the server with reduced impact to the system operation.

In an unlikely event that CEC hardware (for example, processor or memory) experienced a failure, the hardware can be repaired by freeing up the processors and memory in the node and its attached I/O resources (node evacuation).

To guard against any potential impact to system operation during hot-node add, memory upgrade, or node repair, clients must comply with the following protective measures:

- For memory upgrade and node repair, the system should have sufficient inactive or spare processor and memory. Critical I/O resources must be configured with redundant paths.
- Schedule upgrades or repairs during nonpeak operational hours.
- Move business applications to another server using the Live Partition Mobility feature or quiesce them.
- Back up critical application and system state information.
- Checkpoint databases.

Live Partition Mobility

Live Partition Mobility, available only with PowerVM-Enterprise Editions, allows a client to migrate an AIX partition running on one POWER7 system to other POWER6 or POWER7 system without disrupting services. The migration transfers the entire system environment, including processor state, memory, attached virtual devices, and connected users. It provides continuous OS and application availability during planned partition outages for repair of hardware and firmware faults, or continuous availability during a concurrent repair that requires freeing up CEC resources.

Accessibility by people with disabilities

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

http://www.ibm.com/able/product_accessibility/index.html

Section 508 of the US Rehabilitation Act

IBM Power 770 is capable as of October 21, 2011, when used in accordance with associated IBM documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A US Section 508 Voluntary Product Accessibility Template (VPAT) can be requested at

http://www-03.ibm.com/able/product_accessibility/index.html

Statement of general direction

IBM plans to offer a 15 meter, 3 Gb bandwidth SAS cable for the PCIe2 1.8 GB Cache RAID SAS Adapter (#5913) when attaching the EXP24S Drawer (#5887) for large configurations where the 10 meter cable is a distance limitation.

IBM intends to enhance the IBM Systems Director Management Console (SDMC) to support the Power 770 (9117-MMC). IBM also intends for the current Hardware Management Console (HMC) (7042-CR6) to be upgradable to an IBM SDMC that supports the Power 770 (9117-MMC).

Standard Disclaimer

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SUSE intends to support the IBM PCIe2 4-Port 10 Gb & 1 Gb Ethernet Adapters (#5744 and #5745) with an upcoming SUSE Linux Enterprise Server 11 Service Pack. SUSE plans availability for first quarter 2012. For additional questions about the availability of this release, contact SUSE.

Disclaimer

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an material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Reference information

Refer to Hardware Announcement [111-201](#), dated October 12, 2011.

Product number

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

Description	Machine type	Model	Feature number
IBM Power 770	9117	MMC	
#1879 Load Source Specify	9117	MMC	0870
#1948 Load Source Specify	9117	MMC	0872
Quad ENET Card w Copper SFP+	9117	MMC	1768
Quad ENET Card w SR Optical	9117	MMC	1769
283GB 15K RPM SAS Disk	9117	MMC	1879
300GB 15K RPM SAS Disk	9117	MMC	1880
Quantity 150 of #1879	9117	MMC	1926
Quantity 150 of #1948	9117	MMC	1927
Quantity 150 of #1880	9117	MMC	1928
Quantity 150 of #1953	9117	MMC	1929
283GB 15k RPM SAS SFF-2 Disk	9117	MMC	1948
300GB 15k RPM SAS SFF-2 Disk	9117	MMC	1953
SAS YO Cable 1.5m - HD 6Gb Ada	9117	MMC	3450
SAS YO Cable 3m - HD 6Gb Adapt	9117	MMC	3451
SAS YO Cable 6m - HD 6Gb Adapt	9117	MMC	3452
SAS YO Cable 10m - HD 6Gb Adap	9117	MMC	3453
SAS X Cable 3m - HD 6Gb 2-Adap	9117	MMC	3454
SAS X Cable 6m - HD 6Gb 2-Adap	9117	MMC	3455
SAS X Cable 10m - HD 6Gb 2-Ada	9117	MMC	3456
SAS AT Cable 0.6m - HD 6Gb Ada	9117	MMC	3689
On/Off, 999 GB-Days Billing	9117	MMC	4710
Active Memory Mirroring	9117	MMC	4797
3.72 GHz Proc, 0/12 core P7	9117	MMC	4983
3.30 GHz Proc, 0/16 core P7	9117	MMC	4984
PCIe 2-Port 4X IB QDR Adapt	9117	MMC	5285
PCIe2 2-port 10GbE SR Adapter	9117	MMC	5287
PCIe2 2-port 10GbE SFP+ Adaptr	9117	MMC	5288
2 Port Async EIA 232 PCIe Adap	9117	MMC	5289
1-Core Proc. Act for #4983	9117	MMC	5329
100 CoD Utl mins, #4983, AIXL	9117	MMC	5330
100 CoD Utl mins, #4983, IBMi	9117	MMC	5331
1 Proc-day On/Off #4983, AIXL	9117	MMC	5332
1 Proc-day On/Off #4983, IBMi	9117	MMC	5333
1-Core Proc. Act for #4984	9117	MMC	5334
100 CoD Utl mins, #4984, AIXL	9117	MMC	5335
100 CoD Utl mins, #4984, IBMi	9117	MMC	5336
1 Proc-day On/Off #4984, AIXL	9117	MMC	5337
1 Proc-day On/Off #4984, IBMi	9117	MMC	5338
System Pwr Sup -1925W	9117	MMC	5532
0/256GB DDR3 1066MHZ 4 DIMMs	9117	MMC	5564
Chasis & IBM Bezel for MMC	9117	MMC	5585
Chasis & OEM Bezel for MMC	9117	MMC	5586
PCIe2 8x 4-port Fibre Channel	9117	MMC	5729
PCIe2 4-Port 10GbE&1GbE SR&RJ4	9117	MMC	5744
PCIe2 4-Port 10GbE&GbE SFP+Cop	9117	MMC	5745
PCIe2 1.8GB Cache RAID SAS Ada	9117	MMC	5913
SAS AA Cable 3m - HD 6Gb Adapt	9117	MMC	5915
SAS AA Cable 6m - HD 6Gb Adapt	9117	MMC	5916
SAS AA Cable 1.5m - HD 6Gb Ada	9117	MMC	5917
SAS AA Cbl 0.6m - HD 6Gb Adapt	9117	MMC	5918

Non-paired Indicator 5913 PCIe	9117	MMC	5924
Carry-over Indicator for 5665	9117	MMC	8525
Carry-over Indicator for 5652	9117	MMC	8526
Carry-over Indicator for 8212	9117	MMC	8527
Carry-over Indicator for 8213	9117	MMC	8528
Carry-over Indicator for 5662	9117	MMC	8529
Carry-over Indicator for 1853	9117	MMC	8532
Specify mode-1 & (2) 5913 EXP	9117	MMC	9385
Specify mode-2 & (4) 5913 EXP	9117	MMC	9386
Carry-over Indicator for 4992	9117	MMC	EH01
Carry-over Indicator for 4997	9117	MMC	EH02
Carry-over for AME #4791	9117	MMC	EH03
100 On/Off Prc-Days #4983 AIXL	9117	MMC	EP2G
100 On/Off Prc-Days #4983 IBMi	9117	MMC	EP2H
100 On/Off Prc-Days #4984 AIXL	9117	MMC	EP2J
100 On/Off Prc-Days #4984 IBMi	9117	MMC	EP2K
1TB Removable Disk Cartridge	9117	MMC	EU01
Service Processor-2	9117	MMC	EU05

The following are features already announced for the IBM Power Systems 9117 machine type:

Description	Machine type	Model	Feature number
One CSC Billing Unit	9117	MMC	0010
Ten CSC Billing Units	9117	MMC	0011
Mirrored System Disk Level, Sp	9117	MMC	0040
Device Parity Protection All	9117	MMC	0041
Mirrored System Bus Level	9117	MMC	0043
Device Parity RAID 6 All	9117	MMC	0047
RISC to RISC Data Migration	9117	MMC	0205
AIX Partition Specify	9117	MMC	0265
Linux Partition Specify	9117	MMC	0266
IBM i Partition Specify	9117	MMC	0267
Ext Tape Attached via #5736	9117	MMC	0290
Specify Custom Data Protection	9117	MMC	0296
Spcf EXP24 Attach via Existing	9117	MMC	0302
Mirrored Level System Specify	9117	MMC	0308
RAID Hot Spare Specify	9117	MMC	0347
V.24/EIA232 6.1m (20 Ft) PCI C	9117	MMC	0348
V.24/EIA232 15.2m (50 Ft) PCI	9117	MMC	0349
V.35 6.1m (20 Ft) PCI Cable	9117	MMC	0353
V.35 15.2m (50 Ft) PCI Cable	9117	MMC	0354
V.36 6.1m (20 Ft) PCI Cable	9117	MMC	0356
X.21 6.1m (20 Ft) PCI Cable	9117	MMC	0359
X.21 15.2m (50 Ft) PCI Cable	9117	MMC	0360
V.24/EIA232 (80 Ft) PCI Cable	9117	MMC	0365
UPS Factory Integration Spcfy	9117	MMC	0373
HMC Factory Integration Spcfy	9117	MMC	0374
Display Factory Int. Specify	9117	MMC	0375
Rack Space for UPS	9117	MMC	0376
Reserve Rack for HMC	9117	MMC	0377
Reserve Rack Space for Display	9117	MMC	0378
MMA/MMB/MHB upgrade indicator	9117	MMC	0397
SSD Placement Indicator CEC	9117	MMC	0462
SSD Placement Indicator 5802/3	9117	MMC	0463
SSD Placement Indicator 5886	9117	MMC	0464
SSD Placement Indicator 5887	9117	MMC	0465
19 inch, 1.8 meter high rack	9117	MMC	0551
19 inch, 2.0 meter high rack	9117	MMC	0553
19 inch, 1.3 meter high rack	9117	MMC	0555
IBM i 6.1 w/6.1.1 Machine Code	9117	MMC	0566
IBM i 7.1 Specify Code	9117	MMC	0567
Rack Filler Panel Kit	9117	MMC	0599
Load Source Not in CEC	9117	MMC	0719
#1787 Load Source Specify	9117	MMC	0722
#1996 Load Source Specify	9117	MMC	0724
Specify Load Source in 5786	9117	MMC	0725
Specify Load Source 5802/3/77	9117	MMC	0726

Specify 5886 Load Source plac	9117	MMC	0727
#5887 Load Source Specify	9117	MMC	0728
4327 Load Source Specify	9117	MMC	0835
4328 Load Source Specify	9117	MMC	0836
SAN Load Source Specify	9117	MMC	0837
3676 Load Source Specify	9117	MMC	0838
3677 Load Source Specify	9117	MMC	0839
3678 Load Source Specify	9117	MMC	0840
4329 Load Source Specify	9117	MMC	0841
3658 Load Source Specify	9117	MMC	0844
1884 Load Source Specify	9117	MMC	0851
1888 Load Source Specify	9117	MMC	0853
1909 Load Source Specify	9117	MMC	0854
3587 Load Source Specify	9117	MMC	0855
1911 Load Source Specify	9117	MMC	0856
#1916 Load Source Specify	9117	MMC	0857
#1947 Load Source Specify	9117	MMC	0871
#1956 Load Source Specify	9117	MMC	0874
#1962 Load Source Specify	9117	MMC	0875
#1794 Load Source Specify	9117	MMC	0876
US TAA Compliance Indicator	9117	MMC	0983
Modem Cable US/Canada and GU	9117	MMC	1025
USB External Docking Station R	9117	MMC	1104
USB 160 GB Removable Disk Dr	9117	MMC	1106
USB 500 GB Removable Disk Dr	9117	MMC	1107
Decline ESA Indicator	9117	MMC	1120
Custom Serv. Specify, Roch	9117	MMC	1140
200V 16A 4.3m (14 Ft) TL Line	9117	MMC	1406
4.3m 200V/16A Pwr Cd Italy	9117	MMC	1408
125V 4.3m (14 Ft) Line Cord	9117	MMC	1413
200V 1.8m (6 Ft) Locking Line	9117	MMC	1414
200V 1.8m (6 Ft) Watertight LC	9117	MMC	1415
200V 4.3m (14 Ft) Locking Line	9117	MMC	1416
200V 4.3m (14 Ft) Watertight L	9117	MMC	1417
4.3m 200V/16A Power Cord EU/As	9117	MMC	1420
4.3m 200V/16A Power Cord CH/DK	9117	MMC	1421
200V 1.8m (6 Ft) Locking Line	9117	MMC	1424
200V 1.8m (6 Ft) Watertight Li	9117	MMC	1425
200V 4.3m (14 Ft) Locking Line	9117	MMC	1426
200V 4.3m (14 Ft) watertight L	9117	MMC	1427
4.3m 200V/10A Power Cord EU/As	9117	MMC	1439
4.3m 200V/10A Power Cord Denma	9117	MMC	1440
4.3m 200V/10A Power Cord S. Af	9117	MMC	1441
4.3m 200V/10A Power Cord Swiss	9117	MMC	1442
4.3m 200V/10A Power Cord UK	9117	MMC	1443
4.3m 200V/10A Power Cord Israe	9117	MMC	1445
4.3m 200V/32A Power Cord EU 1	9117	MMC	1449
4.3m 200V/16A Power Cord EU 2	9117	MMC	1450
200V (6 Ft) 1.8m Line Cord	9117	MMC	1451
200V (14 Ft) 4.3m Line Cord	9117	MMC	1452
200V (6 Ft) 1.8m Locking Line	9117	MMC	1453
200V 12A (14 Ft) 4.3m TL Line	9117	MMC	1454
200V (6 Ft) 1.8m Watertight Li	9117	MMC	1455
200V (14 Ft) 4.3m Watertight L	9117	MMC	1456
200V (6 Ft) 1.8m Upper Line Co	9117	MMC	1457
200V (6 Ft) 1.8m Upper Locking	9117	MMC	1458
200V (6 Ft) 1.8m Locking	9117	MMC	1459
30m SPCN Cable	9117	MMC	1466
4.3m 200V/16A Pwr Cd	9117	MMC	1477
177GB SFF-1 SSD w/ eMLC AIX/Li	9117	MMC	1775
177GB SFF-1 SSD w/ eMLC IBM i	9117	MMC	1787
600GB 10k RPM SAS SFF Disk	9117	MMC	1790
177GB SFF-2 SSD w/ eMLC AIX/Li	9117	MMC	1793

177GB SFF-2 SSD w/ eMLC IBM i	9117	MMC	1794
GX 12X DDR Adapter Dual port	9117	MMC	1808
SAS Cable for triple split DAS	9117	MMC	1815
Quantity 150 of #1962	9117	MMC	1817
Quantity 150 of #1964	9117	MMC	1818
SAS Cbl Assembly for SAS Port	9117	MMC	1819
1.5 Meter 12X to 4X Channel CC	9117	MMC	1828
0.6 Meter 12X Cable	9117	MMC	1829
1.5 Meter 12X cable	9117	MMC	1830
8.0 Meter 12X Cable	9117	MMC	1834
3.0 Meter 12X Cable	9117	MMC	1840
3 Meter 12X to 4X Channel CC	9117	MMC	1841
12X to 4X Chan conv- 10M	9117	MMC	1842
Quantity 150 of #1956	9117	MMC	1844
Operator Panel	9117	MMC	1853
10 Meter 12X to 4X Enhance CCC	9117	MMC	1854
0.6 Meter 12X DDR Cable	9117	MMC	1861
1.5 Meter 12X DDR Cable	9117	MMC	1862
8 Meter 12X DDR Cable	9117	MMC	1864
3.0 Meter 12X DDR Cable	9117	MMC	1865
Quantity 150 of #1917	9117	MMC	1866
Quantity 150 of #1947	9117	MMC	1868
Quantity 150 of #1925	9117	MMC	1869
146.8GB 10K RPM SAS SFF Disk D	9117	MMC	1882
73.4 GB 15K RPM SAS SFF Disk D	9117	MMC	1883
69.7 GB 15K RPM SAS SFF Disk D	9117	MMC	1884
300GB 10K RPM SFF SAS Disk D	9117	MMC	1885
146GB 15K RPM SFF SAS Disk D	9117	MMC	1886
Quantity 150 of #1793	9117	MMC	1887
139GB 15K RPM SFF SAS Disk D	9117	MMC	1888
69GB SFF SAS Solid State D	9117	MMC	1890
QUANTITY 150 OF 1883	9117	MMC	1891
QUANTITY 150 OF 1882	9117	MMC	1899
69GB SFF SAS Solid State Drive	9117	MMC	1909
283GB 10K RPM SFF SAS Disk Dri	9117	MMC	1911
PCI X DDR Dual Channel Ultra32	9117	MMC	1912
571GB 10k RPM SAS SFF Disk	9117	MMC	1916
146GB 15k RPM SAS SFF-2 Disk	9117	MMC	1917
300GB 10k RPM SAS SFF-2 Disk	9117	MMC	1925
139GB 15k RPM SAS SFF-2 Disk	9117	MMC	1947
283GB 10k RPM SAS SFF-2 Disk	9117	MMC	1956
Quantity 150 of #1794	9117	MMC	1958
571GB 10k RPM SAS SFF-2 Disk	9117	MMC	1962
600GB 10k RPM SAS SFF-2 Disk	9117	MMC	1964
177GB SSD Module with eMLC (AI	9117	MMC	1995
1 Gigabit iSCSI TOE PCI X on C	9117	MMC	1996
PCIe RAID SSD SAS Adapter 3Gb	9117	MMC	2055
Converter Cable, VHDCI to P, M	9117	MMC	2118
Ultra 320 SCSI Cable -1M	9117	MMC	2124
Ultra 320 SCSI Cable -3M	9117	MMC	2125
Ultra 320 SCSI Cable -5M	9117	MMC	2126
Ultra 320 SCSI Cable -10M	9117	MMC	2127
Ultra 320 SCSI Cable -20M	9117	MMC	2128
Ultra 320 SCSI Cable -0.55M	9117	MMC	2138
Primary OS - IBM i	9117	MMC	2145
Primary OS AIX	9117	MMC	2146
Primary OS Linux	9117	MMC	2147
LC-SC 50 Micron Fiber Conv Cab	9117	MMC	2456
LC-SC 62.5 Mic.Fib.Conv.Cable	9117	MMC	2459
4 port USB PCIe Adapter	9117	MMC	2728
2 Port USB PCI Adapter	9117	MMC	2738
POWER GXT135P Graphics Acceler	9117	MMC	2849
ARTIC960Hx 4 Port EIA 232 Cabl	9117	MMC	2861
ARTIC960Hx 4 Port X 21 Cable	9117	MMC	2863
ARTIC960Hx 4-Port V.35(DTE)Cab	9117	MMC	2864
PCIe 2 Line WAN w/Modem	9117	MMC	2893
Asynch.Termin/Print.Cbl EIA232	9117	MMC	2934
Asynchronous Cable EIA 232/V	9117	MMC	2936
8P Async Adp. EIA232/RS-422	9117	MMC	2943
ARTIC960Hx 4Port Mult.PCI Adp	9117	MMC	2947
Cable, V.24 / EIA-232	9117	MMC	2951
Cable, V.35	9117	MMC	2952
Cable, V.36 / EIA 499	9117	MMC	2953

Cable, X.21	9117	MMC	2954
2-Port Multip. PCI Adapter	9117	MMC	2962
Ser to Ser Port Cab Draw/Draw	9117	MMC	3124
Serial to Se.Port Cbl Rack 8M	9117	MMC	3125
73.4GB 15K RPM U320 SCSI DDA	9117	MMC	3278
146.8GB 15K RPM U320 SCSI DDA	9117	MMC	3279
300 GB 15K RPM SCSI Disk Drive	9117	MMC	3585
69GB 3.5 SAS Solid State Driv	9117	MMC	3586
69GB 3.5 SAS Solid State Driv	9117	MMC	3587
Widescreen LCD Monitor	9117	MMC	3632
T210 Flat Panel Monitor	9117	MMC	3635
T541H/L150p 15inchTFT Col.M	9117	MMC	3637
ThinkVision L170p Flat Pan.M	9117	MMC	3639
ThinkVision L171p Flat Panel M	9117	MMC	3640
IBM T115 Flat Panel Monitor	9117	MMC	3641
ThinkVision L191p Flat Panel M	9117	MMC	3642
IBM T120 Flat Panel Monitor	9117	MMC	3643
19in. Flat Panel Monitor	9117	MMC	3644
17in. Flat Panel Monitor	9117	MMC	3645
73GB 15K RPM SAS Disk Drive	9117	MMC	3646
146GB 15K RPM SAS Disk Drive	9117	MMC	3647
300GB 15K RPM SAS Disk Drive	9117	MMC	3648
450GB 15K RPM SAS Disk Drive	9117	MMC	3649
SAS Cable (EE) Drawer to Dr 1M	9117	MMC	3652
SAS Cable (EE) Drawer to Dr 3M	9117	MMC	3653
SAS Cable (EE) Drawer to Dr 6M	9117	MMC	3654
428GB 15K RPM SAS Disk Drive	9117	MMC	3658
SAS Cable (X) Adapter to SAS E	9117	MMC	3661
SAS Cbl X Adp SAS Enclosure 6M	9117	MMC	3662
SAS Cbl X Adp SAS Encl 15M	9117	MMC	3663
Serv Interface Cable 2 3 and 4	9117	MMC	3671
Serv Interface Cable 3 and 4 E	9117	MMC	3672
Serv Interface Cable 4 Encl	9117	MMC	3673
69.7GB 15k rpm SAS Disk Drv	9117	MMC	3676
139.5GB 15k rpm SAS Disk Drive	9117	MMC	3677
283.7GB 15k rpm SAS Disk Drive	9117	MMC	3678
SAS Cab (AI) Adapter to Int 1M	9117	MMC	3679
3M SAS CABLE, ADPTR TO ADPTR (	9117	MMC	3681
6M SAS CABLE, ADPTR TO ADPTR (	9117	MMC	3682
SAS Cab (AE) Adapter to En 3M	9117	MMC	3684
SAS Cable(AE) Adapter to En 6M	9117	MMC	3685
SAS Ca(YI) System to SAS 1.5M	9117	MMC	3686
SAS Ca(YI) System to SAS 3M	9117	MMC	3687
SAS Cable (AT) 0.6 Meter	9117	MMC	3688
SAS Cab(YO) Adapter to SAS1.5M	9117	MMC	3691
SAS Cab(YO) Adapter to SAS 3M	9117	MMC	3692
SAS Cab(YO) Adapter to SAS 6M	9117	MMC	3693
SAS Cab(YO) Adapter to SAS 15M	9117	MMC	3694
Process Cable Two Drawer Sys	9117	MMC	3711
Processor Cable TwoThreeFour D	9117	MMC	3712
Process Cbl TwoThreeFour Draw	9117	MMC	3713
Process Cbl Four Drawer System	9117	MMC	3714
0.3M Serial Prt Converter Cbl	9117	MMC	3925
Asynch Printer/Term.Cab,4M	9117	MMC	3926
Serial Port Null Mod Cab 3.7M	9117	MMC	3927
Ser.Port Null Modem Cable,10M	9117	MMC	3928
6Foot Extend.Cbl for Displays	9117	MMC	4242
Extender Cable USB Keybo 1.8M	9117	MMC	4256
VGA to DVI Connection Converte	9117	MMC	4276
70.56GB 15k rpm Disk Unit	9117	MMC	4327
141.12GB 15k RPM Disk Unit	9117	MMC	4328
282.25GB 15k rpm Disk Unit	9117	MMC	4329
Package 5x 2055 20x 1995	9117	MMC	4367
Package 5x 2055 20x 1995	9117	MMC	4377
One and only one rack indicator feature is required on all orders (#4650 to #4666).			
No Factory Integration Ind.	9117	MMC	4650
Rack Indicator, Rack 1	9117	MMC	4651
Rack Indicator, Rack 2	9117	MMC	4652
Rack Indicator, Rack 3	9117	MMC	4653
Rack Indicator, Rack 1	9117	MMC	4654
Rack Indicator, Rack 5	9117	MMC	4655
Rack Indicator, Rack 6	9117	MMC	4656
Rack Indicator, Rack 7	9117	MMC	4657

Rack Indicator, Rack 8	9117	MMC	4658
Rack Indicator, Rack 9	9117	MMC	4659
Rack Indicator, Rack 10	9117	MMC	4660
Rack Indicator, Rack 11	9117	MMC	4661
Rack Indicator, Rack 12	9117	MMC	4662
Rack Indicator, Rack 13	9117	MMC	4663
Rack Indicator, Rack 14	9117	MMC	4664
Rack Indicator, Rack 15	9117	MMC	4665
Rack Indicator, Rack 16	9117	MMC	4666
PCI-X Crypt.Coproc.(FIPS 4)	9117	MMC	4764
Active Memory Exp Enablement	9117	MMC	4791
PCIe Crypto Coprocessor Gen3	9117	MMC	4808
PCIe Crypto Coprocessor Gen4	9117	MMC	4809
CBU SPECIFY	9117	MMC	4891
Single 5250 Enter. Enabl.	9117	MMC	4992
Full 5250 Enter. Enable.	9117	MMC	4997
Software Preload Required	9117	MMC	5000
Customer Solution Center Roche	9117	MMC	5002
Power Dist Unit 1 Phase NEMA	9117	MMC	5160
Power Dist Unit 1 Phase IEC	9117	MMC	5161
Power Dist Unit 2 of 3 Phase	9117	MMC	5162
Power Dist Unit - 3 Phase	9117	MMC	5163
RFID Tags for Servers, Blades	9117	MMC	5524
Sys Console On HMC	9117	MMC	5550
Sys Console Ethernet No IOP	9117	MMC	5553
0/32GB DDR3 1066MHZ 4 DIMMs	9117	MMC	5600
0/64GB DDR3 1066MHZ 4 DIMMs	9117	MMC	5601
0/128GB DDR3 1066MHZ 4 DIMMs	9117	MMC	5602
Blind Swap Type III Cas PCIe	9117	MMC	5646
Blind Swap Type III Cas PCI X	9117	MMC	5647
Disk/Media Backplane	9117	MMC	5652
175MB Cache RAID Dual IOA	9117	MMC	5662
FSP/Clock Pass Through Card	9117	MMC	5665
IBM Gigab.Eth-SX PCI-X Adapter	9117	MMC	5700
10/100/1000 BaseTX Eth.PCI-X	9117	MMC	5701
2-Port BaseTX Etht.PCI-X Adp	9117	MMC	5706
10Gb FCoE PCIe Dual Port Adapt	9117	MMC	5708
1Gb iSCSI TOE PCI-X-Copp.Adpt	9117	MMC	5713
1Gb iSCSI TOE PCI-X-Opt.Adpt	9117	MMC	5714
2 Gigab.Fibre Chann.PCI-X Adp	9117	MMC	5716
4 Port 10/100/1000 Base TX PCI	9117	MMC	5717
10Gb Etht-SR PCI-X 2.0 DDR Adp	9117	MMC	5721
10Gb Etht-LR PCI-X 2.0 DDR Adp	9117	MMC	5722
2 Port Asyn.EIA-232 PCI Adpt	9117	MMC	5723
10 Gigabit Ethernet CX4 PCI Ex	9117	MMC	5732
8 Gigabit PCI Express® Dual Por	9117	MMC	5735
PCI X DDR Dual Channel Ultra32	9117	MMC	5736
4-Port 10/100/1000 BaseTX Adpt	9117	MMC	5740
Single Bus repeater for 5786	9117	MMC	5741
Dual Bus repeater for 5786	9117	MMC	5742
POWER GXT145 PCI Express Graph	9117	MMC	5748
4Gbps Fibre Channel (2 Port)	9117	MMC	5749
4 GB Single-Port Fibre Channel	9117	MMC	5758
4 Gb Dual Port Fibre Channel	9117	MMC	5759
SATA Slimline DVD RAM Drive	9117	MMC	5762
2 Port 10/100/1000 Base TX Eth	9117	MMC	5767
2 Port Gigabit Ethernet SX PCI	9117	MMC	5768
10 Gb Eth SR PCI Express Adp	9117	MMC	5769
10 Gigabit Ethernet LR PCI	9117	MMC	5772
4GigabitPCI-E Single Port Fibr	9117	MMC	5773
4 Gigabit PCI Express Dual Por	9117	MMC	5774
PCI-X EXP24 Ctl-1.5GB No IOP	9117	MMC	5782
4 Port Async EIA 232 PCIe Adap	9117	MMC	5785
TotalStorage EXP24 Disk Dwr	9117	MMC	5786
PCI DDR 12X Expansion Drawer	9117	MMC	5796
12X I/O Drawer PCIe, SFF disk	9117	MMC	5802
PCIe 380MB Cache Dual x4 3Gb S	9117	MMC	5805
12X I/O Drawer PCIe, No Disk	9117	MMC	5877
EXP 12S Expansion Drawer	9117	MMC	5886
EXP24S SFF Gen2-bay Drawer	9117	MMC	5887
PCI-X SAS Adapter	9117	MMC	5900
PCIe Dual x4 SAS Adapter	9117	MMC	5901
PCI X DDR Dual x4 3Gb SAS RAID	9117	MMC	5902
PCIe 380MB Cache Dual x4 3Gb	9117	MMC	5903

PCI X DDR 1.5GB Cache SAS RAID	9117	MMC	5908
PCI X DDR Dual x4 SAS Adapter	9117	MMC	5912
Non paired SAS RAID indicator	9117	MMC	5922
Non paired PCIe SAS RAID Ind	9117	MMC	5923
Full width Key USB, US English	9117	MMC	5951
Full width Key USB, French	9117	MMC	5952
Full width Key USB, Italian	9117	MMC	5953
Full width Key USB, German/Aus	9117	MMC	5954
Full width Key USB, UK English	9117	MMC	5955
Full width Key USB, Spanish	9117	MMC	5956
Full width Key USB, Japanese	9117	MMC	5957
Full width Key USB, BrazilianP	9117	MMC	5958
Full width Key USB, Hungarian	9117	MMC	5959
Full width Key USB, Korean	9117	MMC	5960
Full width Key USB, Chinese	9117	MMC	5961
Full width Key USB, French Can	9117	MMC	5962
Full width Key USB, Belgian/UK	9117	MMC	5964
Full width Key USB, Swedish/Fi	9117	MMC	5965
Full width Key USB, Danish	9117	MMC	5966
Full width Key USB, Bulgarian	9117	MMC	5967
Full width Key USB, Swiss/Fr/G	9117	MMC	5968
Full width Key USB, Norwegian	9117	MMC	5969
Full width Key USB, Dutch	9117	MMC	5970
Full width Key USB, Portuguese	9117	MMC	5971
Full width Key USB, Greek	9117	MMC	5972
Full width Key USB, Hebrew	9117	MMC	5973
Full width Key USB, Polish	9117	MMC	5974
Full width Key USB, Slovakian	9117	MMC	5975
Full width Key USB, Czech	9117	MMC	5976
Full width Key USB, Turkish	9117	MMC	5977
Full width Key USB, LA Spanish	9117	MMC	5978
Full width Key USB, Arabic	9117	MMC	5979
Full width Key USB, Thai	9117	MMC	5980
Full width Key USB, Russian	9117	MMC	5981
Full width Key USB, Slovenian	9117	MMC	5982
Full width Key USB, US English	9117	MMC	5983
Power Control Cable(SPCN)-2m	9117	MMC	6001
Power Control Cbl (SPCN) 3 m	9117	MMC	6006
Power Control Cbl (SPCN) 15 m	9117	MMC	6007
Power Control Cable(SPCN)-6m	9117	MMC	6008
Power Control Cable(SPCN)-30m	9117	MMC	6029
Opt Front Door for 1.8m Rack	9117	MMC	6068
Opt Front Door for 2.0m Rack	9117	MMC	6069
1.8m Rack Trim Kit	9117	MMC	6246
2.0m Rack Trim Kit	9117	MMC	6247
1.8m Rack Acoustic Doors	9117	MMC	6248
2.0m Rack Acoustic Doors	9117	MMC	6249
1.8m Rack Trim Kit	9117	MMC	6263
2.0m Rack Trim Kit	9117	MMC	6272
Dual prt 12X Chan Attach Short	9117	MMC	6446
4.3m 250V/10A Power Cord	9117	MMC	6455
Dual port 12X Chan Attach Long	9117	MMC	6457
Pwr Cbl 14FT, Drwr - IBM PDU	9117	MMC	6458
3.7m 250V/10A RA Pwr Cd	9117	MMC	6459
Pwr Crd (14FT), Drwr - OEM PDU	9117	MMC	6460
4.3m 250V/10A Power Cord	9117	MMC	6461
4.3m 250V/10A Power Cord	9117	MMC	6462
4.3m 250V/10A Power Cord	9117	MMC	6463
4.3m 250V/10A Power Cord	9117	MMC	6464
4.3m 250V/10A Power Cord	9117	MMC	6465
4.3m 250V/10A Power Cord	9117	MMC	6466
4.3m 250V/10A Power Cord	9117	MMC	6467
Pwr Crd 4.3M, Drwr - OEM PDU	9117	MMC	6469
PWR Cord(6foot),To wall	9117	MMC	6470
Pwr Crd 2.7m 9ft wall OEM PDU	9117	MMC	6471
Pwr Crd 2.7m 9ft wall OEM PDU	9117	MMC	6472
Pwr Crd 2.7m 9ft wall OEM PDU	9117	MMC	6473
Pwr Crd 2.7m 9ft wall OEM PDU	9117	MMC	6474
Pwr Crd 2.7m 9ft wall OEM PDU	9117	MMC	6475

Pwr Crd 2.7m 9ft wall OEM PDU	9117	MMC	6476
Pwr Crd 2.7m 9ft wall OEM PDU	9117	MMC	6477
Pwr Crd 2.7m 9ft wall OEM PDU	9117	MMC	6478
PWR Cord(9foot),(250V,10A)	9117	MMC	6479
Pwr Crd 1.8m 6ft wall 250V,15A	9117	MMC	6487
PWR Cord(9foot),(125V,15A)	9117	MMC	6488
4.3m (14 Ft) 3PH/24A Power Cor	9117	MMC	6489
4.3m (14 Ft) 1PH/48A Pwr Cord	9117	MMC	6491
4.3m (14 Ft) 1PH/48 60A Pwr Co	9117	MMC	6492
Pwr Crd 2.7m 9ft wall 250V,10A	9117	MMC	6493
Pwr Crd 2.7m 9ft wall 250V,10A	9117	MMC	6494
To wall/OEM PDU, (250V, 10A)	9117	MMC	6495
Pwr Crd 2.7m 9ft wall 250V,10A	9117	MMC	6496
PWR Cord(6ft),To wall/OEM PDU	9117	MMC	6497
Power Cord 6ftTo wall OEM PDU	9117	MMC	6498
Power Cable Drawer to IBM PD	9117	MMC	6577
Optional Rack Security Kit	9117	MMC	6580
Modem Tray for 19-Inch Rack	9117	MMC	6586
Pwr Crd 2.7m 9ft wall 125V,15A	9117	MMC	6651
4.3m 1PH/24-30A Pwr Cord	9117	MMC	6654
4.3m 14Ft 1PH/24 30A WR Pwr	9117	MMC	6655
4.3m 14Ft 1PH/24A Power Cord	9117	MMC	6656
Pwr.Cord(9ft),To wall/OEM PDU	9117	MMC	6659
PWR Cord(14ft),Dr.to OEM PDU	9117	MMC	6660
2.1m 200V PDU Power Cable	9117	MMC	6664
Pwr Cord 3M, Drwr to IBM PDU	9117	MMC	6665
Pwr Crd 4.3M, Drwr - OEM PDU	9117	MMC	6669
Pwr Crd 6-FT, (125V,15A)PT#59	9117	MMC	6670
Pwr Crd 2.7M, Drwr - IBM PDU	9117	MMC	6671
Pwr Crd 1.5M, Drwr - IBM PDU	9117	MMC	6672
Pwr Crd 2.7M, wall - OEM PDU	9117	MMC	6680
Power Cord (6ft),To wall	9117	MMC	6687
PCI 2-Line WAN IOA No IOP	9117	MMC	6805
PCI 4-Modem WAN IOA No IOP	9117	MMC	6808
PCI 2-Line WAN w/Modem NoIOP	9117	MMC	6833
IIntelligent PDU+ 1 EIA Unit	9117	MMC	7109
Environmental Monitoring Probe	9117	MMC	7118
Power Distribution Unit	9117	MMC	7188
Quantity 150 of #2124	9117	MMC	7204
Quantity 150 of #2125	9117	MMC	7205
Quantity 150 of #2126	9117	MMC	7206
Quantity 150 of #2127	9117	MMC	7207
Quantity 150 of #2128	9117	MMC	7208
Quantity 150 of #2138	9117	MMC	7213
AAP Software Pre-Inst.Indic.	9117	MMC	7305
I/O Drawer Mounting Enclosure	9117	MMC	7314
On/Off, 1GB-1Day Billing	9117	MMC	7377
Quantity 150 of #4327	9117	MMC	7509
Quantity 150 of #4328	9117	MMC	7510
Quantity 150 of #4329	9117	MMC	7511
Quantity 150 of #5741	9117	MMC	7514
Quantity 150 of #3676	9117	MMC	7517
Quantity 150 of #3677	9117	MMC	7518
Quantity 150 of #3678	9117	MMC	7519
Quantity 150 of 3586	9117	MMC	7535
Quantity 150 of 3587	9117	MMC	7536
Quantity 150 of 3658	9117	MMC	7538
Quantity 150 of #1884	9117	MMC	7543
Quantity 150 of #1888	9117	MMC	7544
Quantity 150 of #1890	9117	MMC	7545
Quantity 150 of #1909	9117	MMC	7546
Quantity 150 of #1885	9117	MMC	7547
Quantity 150 of #1886	9117	MMC	7548
Quantity 150 of 3647	9117	MMC	7549

Quantity 150 of #1790	9117	MMC	7550
PCIe RAID SSD SAS Adapter 3Gb	9117	MMC	7557
Quantity 150 of 3648	9117	MMC	7564
Quantity 150 of 3649	9117	MMC	7565
Quantity 150 of #1916	9117	MMC	7566
QTY 150 177GB SFF-1 SSD 1775	9117	MMC	7578
QTY 150 177GB SFF-1 SSD IBM i	9117	MMC	7582
2.0m Rack Side Attach Kit	9117	MMC	7780
Eth Cbl 6M HW Management	9117	MMC	7801
Eth Cbl 15M HW Management	9117	MMC	7802
Side-by-Side for 1.8m Racks	9117	MMC	7840
Ruggedize Rack Kit	9117	MMC	7841
PCI Blind Swap Cassette Kit	9117	MMC	7862
PCI Blind Swap Cassette Kit	9117	MMC	7863
PowerVM Standard Edition	9117	MMC	7942
On/Off Processor Enablement	9117	MMC	7951
On/Off Memory Enablement	9117	MMC	7954
PowerVM Enterprise Edition	9117	MMC	7995
570toMMA Adv POWER Virt COI	9117	MMC	8018
Advanced POWER Virtualization	9117	MMC	8030
RJ-45 to DB-25 Converter Cable	9117	MMC	8133
Linux Software Preinstall	9117	MMC	8143
Linux Software Preinstall BP	9117	MMC	8144
Activation of 1 GB DDR3 POWER7	9117	MMC	8212
Act of 100 GB DDR3 POWER7	9117	MMC	8213
One Processor Activation for P	9117	MMC	8430
PWR Cord Carry Over Ind,#9802	9117	MMC	8431
PWR Cord Carry Over Ind,#9820	9117	MMC	8432
PWR Cord Carry Over Ind,#9821	9117	MMC	8433
PWR Cord Carry Over Ind,#9825	9117	MMC	8434
PWR Cord Carry Over Ind,#9827	9117	MMC	8435
PWR Cord Carry Over Ind,#9828	9117	MMC	8436
PWR Cord Carry Over Ind,#9829	9117	MMC	8437
PWR Cord Carry Over Ind,#9830	9117	MMC	8438
PWR Cord Carry Over Ind,#9831	9117	MMC	8439
PWR Cord Carry Over Ind,#9833	9117	MMC	8440
PWR Cord Carry Over Ind,#9834	9117	MMC	8441
Base Customer Spec Plcmnt	9117	MMC	8453
Mouse-USB,Black KBD Att C	9117	MMC	8841
USB Mouse	9117	MMC	8845
Order Routing Indicator System	9117	MMC	9169
Language Group Spcf-US Eng	9117	MMC	9300
specify mode-1 & (1)5901/5278	9117	MMC	9359
Specify mode-1 & (2)5901/5278	9117	MMC	9360
Specify mode-2 & (2)5901/5278	9117	MMC	9361
Specify mode-4 & (4)5901/5278	9117	MMC	9365
Specify mode-2 & (4)5901/5278	9117	MMC	9366
Specify mode-1 & (2)5903/5805	9117	MMC	9367
Specify mode-2 & (4)5903/5805	9117	MMC	9368
Specify mode-1 & (1)5904/6/8	9117	MMC	9382
Specify mode-1 & (2) 5904/6/8	9117	MMC	9383
Specify mode-1 & CEC SAS port	9117	MMC	9384
New AIX License Core Counter	9117	MMC	9440
New IBM i Lic Core Counter	9117	MMC	9441
New Red Hat Lic Core Counter	9117	MMC	9442
New SUSE Lic Core Counter	9117	MMC	9443
Other AIX Lic Core Counter	9117	MMC	9444
Other Linux Lic Core Counter	9117	MMC	9445
3rd Party Linux Lic Core Cnt	9117	MMC	9446
VIOS Core Counter	9117	MMC	9447
Month Indicator	9117	MMC	9461
Day Indicator	9117	MMC	9462
Hour Indicator	9117	MMC	9463
Minute Indicator	9117	MMC	9464
Qty Indicator	9117	MMC	9465
Countable Member Indicator	9117	MMC	9466
Reserved Rack Space Indicator	9117	MMC	9570
Language Group Spcf-Dutch	9117	MMC	9700
Language Group Spcf-French	9117	MMC	9703
Language Group Spcf-German	9117	MMC	9704
Language Group Spcf-Polish	9117	MMC	9705
Lang Group Specify - Norwegian	9117	MMC	9706
Lang.Group Spcf-Portuguese	9117	MMC	9707
Language Group Spcf-Spanish	9117	MMC	9708

Language Group Spcf-Italian	9117	MMC	9711
Langua Gr Speci Canadian Frenc	9117	MMC	9712
Language Group Spcf-Japanese	9117	MMC	9714
Language Group Specify Tr Chin	9117	MMC	9715
Language Group Spcf-Korean	9117	MMC	9716
Language Group Spcf-Turkish	9117	MMC	9718
Language Group Spcf-Hungarian	9117	MMC	9719
Language Group Spcf-Slovakian	9117	MMC	9720
Language Group Spcf-Russian	9117	MMC	9721
Lang Group Spcf Simpl Chinese	9117	MMC	9722
Language Group Spcf-Czech	9117	MMC	9724
Language Group Spcf-Romanian	9117	MMC	9725
Lang Group Specify - Croatian	9117	MMC	9726
Language Group Spcf-Slovenian	9117	MMC	9727
Lang Group Specify - Braz Port	9117	MMC	9728
Lang Group Specify - Thai	9117	MMC	9729
Trial Live Partition Mobility	9117	MMC	ELPM
1m 10GbE Cable SFP+ Act Twinax	9117	MMC	EN01
3m 10GbE Cable SFP+ Act Twinax	9117	MMC	EN02
5m 10GbE Cable SFP+ Act Twinax	9117	MMC	EN03

The following are newly announced features on the specific models of the IBM Power Systems 1455, 9117, and 9179 machine type:

Description	Machine type	Model	Feature number
On/Off, 999 GB-Days Billing	9117	MMB	4710
	9179	MHB	
1 yr. SW Update for 1455-48E	1455	48E	EB21
1 yr. SW Update for 1455-64C	1455	64C	EB22
1 yr. SW Update for 1455-24E	1455	24E	EB23
100 On/Off Prc-Days #4980 AIXL	9117	MMB	EP2A
100 On/Off Prc-Days #4980 IBMi	9117	MMB	EP2B
100 On/Off Prc-Days #4981 AIXL	9117	MMB	EP2C
100 On/Off Prc-Days #4981 IBMi	9117	MMB	EP2D
100 On/Off Prc-Days #4982 AIXL	9179	MHB	EP2E
100 On/Off Prc-Days #4982 IBMi	9179	MHB	EP2F

Model conversions

From Type	From Model	To Type	To Model
9117	MMA	9117	MMC
9117	MMB	9117	MMC

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-MMA to 9117-MMC adapter features

From FC:	To FC:	Return parts
4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	4809 - PCIe Crypto Coprocessor Gen4 BSC 4765-001	Yes
5904 - PCI-X DDR 1.5GB Cache SAS RAID Adapter	5908 - PCI-X DDR 1.5GB Cache SAS RAID Adapter (BSC)	Yes

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

From FC:	To FC:	Return parts
4495 - 4/8GB (4x2GB) DIMMs, 276 PIN 533 MHZ, DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
4496 - 8/16GB (4x4GB) DIMMs, 276 PIN, 533 MHZ DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
4497 - 16GB (4x4GB) DIMMs, 276 PIN, 533 MHZ, DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
4499 - 16GB (4x4GB) DIMMs, 276 pin, 400MHZ DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
5693 - 0/4GB DDR2 Memory (4x1GB) DIMMs- 667 MHZ- POWER6 CoD Memory	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
5694 - 0/8GB DDR2 Memory (4x2GB) DIMMs- 667 MHZ- POWER6 CoD Memory	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
5695 - 0/16GB DDR2 Memory (4x4GB) DIMMs- 533 MHZ- POWER6 CoD Memory	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
7892 - 2GB (4x512MB) DIMMs, 276-pin, 533MHZ DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
7893 - 4GB (4x1GB) DIMMs, 276-pin, 533MHZ DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
7894 - 8GB (4x2GB) DIMMs, 276-pin, 533 MHZ DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4x8GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
4495 - 4/8GB (4x2GB) DIMMs, 276 PIN 533 MHZ, DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
4496 - 8/16GB (4x4GB) DIMMs, 276 PIN, 533 MHZ DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
4497 - 16GB (4x4GB) DIMMs, 276 PIN, 533 MHZ, DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
4498 - 32GB (4x8GB) DIMMs, 276 pin, 400MHZ DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
4499 - 16GB (4x4GB) DIMMs, 276 pin, 400MHZ DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
5690 - 0/32GB DDR2 Memory (4x8GB) DIMMs- 400 MHZ- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
5693 - 0/4GB DDR2 Memory (4x1GB) DIMMs- 667 MHZ- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
5694 - 0/8GB DDR2 Memory (4x2GB) DIMMs- 667 MHZ- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
5695 - 0/16GB DDR2 Memory (4x4GB) DIMMs- 533 MHZ- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
5696 - 0/32GB DDR2 Memory (4x8GB) DIMMs- 400 MHZ- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
7892 - 2GB (4x512MB) DIMMs, 276-pin, 533MHZ DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
7893 - 4GB (4x1GB) DIMMs, 276-pin, 533MHZ DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4x16GB) DIMMs - 1066 MHZ - POWER7 CoD Memory	Yes
7894 - 8GB (4x2GB) DIMMs,	5601 - 0/64GB DDR3 Memory	Yes

276-pin, 533 MHz DDR2 SDRAM	(4X16GB) DIMMs - 1066 MHz - POWER7 CoD Memory	
4496 - 8/16GB (4X4GB) DIMMs, 276 PIN, 533 MHz DDR2 SDRAM	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
4497 - 16GB (4X4GB) DIMMs, 276 PIN, 533 MHz, DDR2 SDRAM	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
4498 - 32GB (4X8GB) DIMMs, 276 pin, 400MHz DDR2 SDRAM	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
4499 - 16GB (4X4GB) DIMMs, 276 pin, 400MHz DDR2 SDRAM	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHZ- POWER6 CoD Memory	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
5695 - 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHZ- POWER6 CoD Memory	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
5696 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHZ- POWER6 CoD Memory	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
5680 - Activation of 1GB DDR2 POWER6 Memory	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7272 - 2GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7273 - 4GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7274 - 8GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7275 - 16GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7276 - 32GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7663 - 1GB DDR2 Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
8017 - 570 to MMA CoD Memory Activation Carry Over Indicator	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
5681 - Activation of 256 GB DDR2 POWER6 Memory	8213 - Activation of 100 GB DDR3 POWER7 Memory	No

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

From FC:	To FC:	Return parts
5620 - 3.5 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
5621 - 4.2 GHz Proc Card, 0/ 2 Core POWER6, 8 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
5622 - 4.2 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
7380 - 4.7 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
7387 - 4.4GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots.	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
7388 - 5.0 GHz Proc Card, 0/ 2 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
7540 - 4.2 GHz Proc Card, 0/ 4 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
4990 - Single 5250 Enterprise Enablement	4992 - Single 5250 Enterprise Enablement	No
4991 - Full 5250 Enterprise Enablement	4997 - Full 5250 Enterprise Enablement	No

5403 - One Processor Activation for Processor Feature #7380	5329 - 1-Core Activation for Processor Feature #4983	No
5670 - One Processor Activation for Processor Feature #5620	5329 - 1-Core Activation for Processor Feature #4983	No
5671 - One Processor Activation for Processor Feature #5621	5329 - 1-Core Activation for Processor Feature #4983	No
5672 - One Processor Activation for Processor Feature #5622	5329 - 1-Core Activation for Processor Feature #4983	No
7306 - One Processor Activation for Processor Feature #7388	5329 - 1-Core Activation for Processor Feature #4983	No
7700 - One Processor Activation for Processor Feature #7540	5329 - 1-Core Activation for Processor Feature #4983	No
7719 - One Processor Activation for Processor Feature #7387	5329 - 1-Core Activation for Processor Feature #4983	No

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

From FC:	To FC:	Return parts
5626 - System CEC Enclosure with IBM Bezel	5585 - System CEC Enclosure with IBM BEZEL, I/O Backplane, and System Midplane	Yes
5683 - System Chassis - 4 EIA	5585 - System CEC Enclosure with IBM BEZEL, I/O Backplane, and System Midplane	Yes
5627 - System CEC Enclosure with OEM Bezel + Labels	5586 - System CEC Enclosure with OEM BEZEL, I/O Backplane, and System Midplane	Yes
6246 - 1.8m Rack Trim Kit	6263 - 1.8m Rack Trim Kit	No
6247 - 2.0m Rack Trim Kit	6272 - 2.0m Rack Trim Kit	No

Feature conversions for 9117-MMB to 9117-MMC adapter features

From FC:	To FC:	Return parts
4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	4809 - PCIe Crypto Coprocessor Gen4 BSC 4765-001	Yes
5904 - PCI-X DDR 1.5GB Cache SAS RAID Adapter	5908 - PCI-X DDR 1.5GB Cache SAS RAID Adapter (BSC)	Yes

Feature conversions for 9117-MMB to 9117-MMC processor features

From FC:	To FC:	Return parts
4980 - 3.5 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
4981 - 3.1 GHz Proc Card, 0/16 Core POWER7, 16 DDR3 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes
4980 - 3.5 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	4984 - 3.30 GHz Proc Card, 0/16 Core POWER7, 16 DDR3 Memory Slots	Yes
The conversion from #4980 to #4984 is not announced in China or Taiwan.		
4981 - 3.1 GHz Proc Card, 0/16 Core POWER7, 16 DDR3 Memory Slots	4984 - 3.30 GHz Proc Card, 0/16 Core POWER7, 16 DDR3 Memory Slots	Yes

The conversion from #4981 to #4984 is not announced in China or Taiwan.

5459 - One Processor Activation for Processor Feature #4980	5329 - 1-Core Activation for Processor Feature #4983	No
5468 - One Processor Activation for Processor Feature #4981	5329 - 1-Core Activation for Processor Feature #4983	No
5459 - One Processor Activation for Processor Feature #4980	5334 - 1-Core Activation for Processor Feature #4984	No

The conversion from #5459 to #5334 is not announced in China or Taiwan.

5468 - One Processor Activation for Processor Feature #4981	5334 - 1-Core Activation for Processor Feature #4984	No
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The conversion from #5468 to #5334 is not announced in China or Taiwan.

Feature conversions for 9117-MMB to 9117-MMC rack-related features

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

Feature conversions for 9117-MMB to 9117-MMC system unit base feature

From FC:	To FC:	Return parts
5659 - System CEC Enclosure with IBM BEZEL, I/O Backplane, and System Midplane	5585 - System CEC Enclosure with IBM BEZEL, I/O Backplane, and System Midplane	Yes
5669 - System CEC Enclosure with OEM BEZEL, I/O Backplane, and System Midplane	5586 - System CEC Enclosure with OEM BEZEL, I/O Backplane, and System Midplane	Yes

Feature conversions for 9117-MMC virtualization engine features

From FC:	To FC:	Return parts
7942 - PowerVM -Standard Edition	7995 - PowerVM - Enterprise Edition	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=111-200>

Publications

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

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

Troubleshooting, service, and support

Product documentation is available on a DVD (SK5T-7087), which is shipped with the Power 770, or you can access the product documentation at

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

Services

Global Technology Services

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

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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

IBM Power 770 model MMC CEC enclosure

- Width: 483 mm (19.0 in)
- Depth: 863 mm (32.0 in)
- Height: 174 mm (6.85 in) 4 EIA units
- Weight: 70.3 kg (155 lb)

Dimensions and specifications shown are for a single drawer. Model MMC 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

- 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% nonoperating
- 20% to 80% operating
- Maximum dew point:
 - 28° C (82° F) nonoperating
 - 29° C (84° F) operating
- Operating voltage: 200 to 240 V ac
- Operating frequency: 50 to 60 Hz +/- 3 Hz
- Power consumption: 1,600 watts maximum (per enclosure with 16 cores active)
- Power source loading: 1.649 kVA maximum (per enclosure with 16 cores active)
- Thermal output: 5,461 Btu/hr maximum (per enclosure with 16 cores active)
- Maximum altitude: 3,048 m (10,000 ft)
- Noise level
 - One enclosure with 16 active cores:
 - 7.1 bels (operating/idle)
 - 6.6 bels (operating/idle) with acoustic rack doors
 - Four enclosures with 64 active cores:
 - 7.6 bels (operating/idle)
 - 7.1 bels (operating/idle) with acoustic rack doors

EMC conformance classification

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

- US: FCC CFR, Title 47, Part 15, EMI Class A
- EEA, Turkey: EU Council Directive 2004/108/EC, EMI Class A
- Japan: VCCI Council, EMI Class A
- Korea: KCC, EMI Class A
- China (PRC): CPCS, EMI Class A
- Taiwan: Taiwan BSMI, EMI Class A
- Australia\New Zealand: ACMA, EMI Class A
- Canada: ICES-003, EMI Class A
- Russia: GOST R, EMI Class A
- Saudi Arabia: MoCI, EMI Class A
- Vietnam: MPT, EMI Class A

Homologation -- Telecom Environmental Testing (Safety and EMC)

Homologation approval for specific countries has been initiated with the IBM Homologation and Type Approval (HT&A) organization in LaGaude, France. This Power Systems model and applicable features meet the environmental testing requirements of the country telecom and have been designed and tested in compliance with the Full Quality Assurance Approval (FQAA) process as delivered by the British Approval Board for Telecom (BABT), the UK telecom regulatory authority.

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

Product safety/Country testing/Certification

- UL 60950-1 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-MMC can be installed in a 7014-T00, 7014-T42, 7014-B42, or 7014-S25 rack, which provides:

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

The design of the Power 770 is optimized for use in an IBM 7014-T00 or 7014-T42 rack. Both the front cover and the external processor fabric cables occupy space on the front left and right side of an IBM 7014 rack that may not be available in non-IBM racks. If loading two or more CEC enclosures in a 7014-T42 or 7014-B42 rack, the CEC enclosures need to be loaded 36U or below to allow space for the flex cables.

Minimum system configuration:

Each new model MMC system must include a minimum of the following items:

- One CEC enclosure (4U) with the following:
 - 1X System Enclosure with IBM Bezel (#5585) or OEM Bezel (#5586)
 - Service Processor-2 (#EU05)
 - 1X DASD Backplane (#5652)
 - 2X Power Cords (two selected by customer)
 - 2X AC Power Supply (#5632)
 - 1X Operator Panel (#1853)
 - 1X Integrated Multifunction Card (one of these):
 - Quad Ethernet 2 X 1 GB and 2 X 10 GB Optical (#1769)
 - Quad Ethernet 2 X 1 GB and 2 X 10 GB Copper (#1768)
- **Note:** The Integrated Multifunction Card is not natively supported by IBM i.
- 1X Primary Operating System (one of these):
 - AIX (#2146)
 - Linux (#2147)
 - IBM i (#2145)
- 1X Processor Card (one of these):
 - 3.72 GHz, 12-Core POWER7 Processor Card, 0-core active (#4983)
 - 3.30 GHz, 16-Core POWER7 Processor Card, 0-core active (#4984)
- 4X Processor Activations (quantity of four for one of these):

- One Processor Activation for Processor Feature 4983 (#5329)
- One Processor Activation for Processor Feature 4984 (#5334)
- 2X DDR3 Memory DIMMs:
 - 0/32 GB (4 x 8 GB), 1066 MHz, (#5600, or larger)
- 32X Activation of 1 GB DDR3 - POWER7 Memory (#8212).
- For AIX or Linux 1X Disk Drive and for IBM i 2X disk drive: formatted to match the system primary O/S indicator selected, or if using a Fibre Channel attached SAN (indicated by #0837) a disk drive is not required.
- 1X Language Group (selected by customer).
- 1X Removable Media Device (#5762): optionally orderable, a stand-alone system (not network attached) would require this feature.
- 1X HMC is required for every 9117-MMC; however, a communal HMC is acceptable.

Notes:

- Additional optional features can be added, as desired.
- Feature-numbered racks are allowed for I/O expansion only.
- A machine type/model rack, if desired, should be ordered as the primary rack.
- A minimum number of four processor activations must be ordered per system.
- The minimum activations ordered with all initial orders of memory features 5600, 5601, and 5602 must be 50% of their installed capacity.
- The minimum activations ordered with MES orders of memory features 5600, 5601, and 5602 will depend on the total installed capacity of features 5600, 5601, and 5602. This allows newly ordered memory to be purchased with less than 50% activations when the currently installed capacity exceeds 50% of the existing features 5600, 5601, and 5602 capacity.
- The minimum activations ordered with all initial orders of memory feature 5564 must be 192 GB or 256 GB per each feature 5564 ordered. That is 75% of the installed feature 5564 capacity.
- The minimum activations purchased with MES orders of feature 5564 memory, 0/256 GBs, will depend on the total installed capacity of feature 5564. This allows MES orders of feature 5564 memory to be purchased with less than 192 GB or 256 GB per each feature 5564 ordered when the system activations currently installed exceed 75% of the existing feature 5564 capacity.
- Memory activations are distributed equally across all memory features by the same activation features 8212 (1 GB) or 8213 (100 GB).

Hardware management console (HMC) machine code

If attaching an HMC to a new server or adding function to an existing server that requires a firmware update, the HMC machine code may need to be updated.

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

<http://www14.software.ibm.com/webapp/set2/flrt/home>

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

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

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

When IBM Systems Director is used to manage an HMC or if the HMC manages more than 254 partitions, the HMC should have 3 GB of RAM minimum and be a rack-mount HMC model CR3, or later, or desktside HMC model C05, or later.

Software requirements

- If installing the AIX operating system (one of these):
 - AIX 7.1 with the 7100-01 Technology Level, or later
 - AIX Version 7.1 with the 7100-00 Technology Level and Service Pack 4 with APAR IV06096, or later
 - AIX 6.1 with the 6100-07 Technology Level, or later
 - AIX 6.1 with the 6100-06 Technology Level and Service Pack 6 with APAR IV11842, or later
 - AIX 6.1 with the 6100-05 Technology Level and Service Pack 7 with APAR IV11845, or later
 - AIX 5.3 with the 5300-12 Technology Level and Service Pack 5 with APAR IV11684, or later
- If installing the IBM i operating system (one of these):
 - IBM i 7.1, or later
 - IBM i 6.1 with machine code 6.1.1, or later

For compatibility information for hardware features and the corresponding AIX and IBM i Technology Levels, visit

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

- If installing the Linux operating system (one of these):
 - Red Hat Enterprise Linux 6.1 for POWER, or later
 - Red Hat Enterprise Linux 5.7 for POWER, or later
 - SUSE Linux Enterprise Server 11 Service Pack 1, or later, with current maintenance updates available from SUSE to enable all planned functionality
 - SUSE Linux Enterprise Server 10 Service Pack 4, or later, with current maintenance updates available from SUSE to enable all planned functionality
- If installing VIOS: VIOS 2.2.1.0
- If installing Java™ 1.4.2 on POWER7 servers: There are unique considerations when running Java 1.4.2 on POWER7 servers. For best exploitation of the outstanding performance capabilities and most recent improvements of POWER7 technology, IBM recommends upgrading Java-based applications to Java 7, Java 6, or Java 5 whenever possible. For more information, visit

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

Limitations

The 9117-MMC has the following limitations:

- LPAR/Memory
 - The first eight DIMM slots (two features) of every enclosure always have to be populated with equal memory DIMM sizes.
 - The last eight DIMM slots (two features) can be populated with different memory DIMM sizes from the first eight and from each other.
 - The first eight DIMM slots will determine the maximum LPAR size that is supported within the system based on the following table:

Memory feature number	Maximum LPAR size
#5600 (8 GB DIMM)	512 GB
#5601 (16 GB DIMM)	1 TB
#5602 (32 GB DIMM)	2 TB
#5564 (64 GB DIMM)	4 TB

- If the last eight DIMM slots are populated with identical DIMMs and represent a larger DIMM size than the first eight, then their size will determine the maximum LPAR size.
- The Integrated Multifunction Card's Ethernet ports can not be used for an IBM i console. Separate Ethernet adapters which can be directly controlled by IBM i without VIOS should be used for IBM i LAN consoles, if desired. Alternatively, an HMC can also be used for an IBM i console.
- The POWER GXT145 PCI Express Graphics Accelerator (#5748) and the POWER GXT135P Graphics Accelerator with Digital Support (#2849) is not hot-plug capable.
- The 3.5-inch DASD disk drives are not supported in the CEC enclosure.
- A number of older I/O devices, adapters, and memory that were supported on the Power 570 (9117-MMA) are not supported on the Power 770, and newer technology must be used to replace it.
- These include:
 - HSL-2/RIO-2 interface drawers and towers
 - 10,000 rpm SCSI disks
 - 15,000 rpm SCSI drives 35 GB, or smaller
 - IDE DVD drives in the CEC enclosure (DVD drives: features 3706, 4430, 4460, 4633, 5756, and 5757)
 - DDR2 memory
 - SCSI adapters: features 2749, 2757, 2780, 5580, 5581, 5583, 5590, 5591, 5702, 5712, 5776, 5778, and 5706
 - Fibre Channel adapters: features 2787, 5704, 5760, and 5761
 - Integrated System x® servers: features 4812 and 4813
 - Ethernet adapters: features 1981, 5718, 1982, 5719, 1984, 5707, and 3709
 - IOPs: features 2844, 2847, and 3705
 - DTTA (telephony): feature 6312
 - Twinax: feature 4746
 - Cryptographic adapters: features 4801 and 5805
 - Diskette drives: feature 2591
 - Quarter-Inch Cartridge (QIC) tape drives (neither feature number or machine type/model)
- One-step model upgrades from POWER5 or POWER5+ are not supported. Only model upgrades from the 9117-MMA or 9117-MMB are supported. A 9406-MMA must first be converted to a 9117-MMA.
- UPS attachment to the system CEC via the Serial to SPCN feature (#1827) is no longer supported. UPS support may be added by using an existing attached feature 5802 or 5877 drawer, plus the necessary DDR IB cables, SPCN cable, and GX++ adapter (#1808).

Limitations:

- Live Partition Mobility is not supported on IBM i. It is optional with Power VM Enterprise Edition.
- Active Memory Sharing is optional with Power VM Enterprise Edition and requires one of these operating systems:
 - AIX V5.3 with the 5300-12 Technology Level and Service Pack 5, or later
 - IBM i 6.1, or later, and VIOS 2.2.1.0
 - SUSE Linux Enterprise Server 11 Service Pack 1 for Power, or later
 - Red Hat Enterprise Linux 6.1, or later
- Active Memory Mirroring is standard on 9179-MHC and optional on 9117-MMC.
 - Firmware level 7.4, or later, is required.

Planning information

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 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

Volume orders: Contact your IBM representative.

IBM Global Financing

Yes

Warranty period

One year.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the

remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

Warranty service

If required, IBM provides repair or exchange service. 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.

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 replacement parts

Tier 1 CRUs are those parts which require minimal effort, skill, or experience in order to service. Tier 1 items are mandatory CRUs when base 9 x 5 next-business-day warranty or maintenance is specified in the terms and conditions contract and is in force. However, if the customer elects not to perform Tier 1 service, an IBM SSR may be contracted at an additional service charge to perform the service. If the customer has 7x24 warranty or maintenance in force, then all parts, Tier 1 and Tier2, may be replaced or serviced by a SSR without an additional charge.

The following parts have been designated as Tier 1 CRUs:

- Keyboard
- Mouse
- Display
- Mounting hardware
- Fans
- Line power cord
- Operator panel
- Power supply
- DASD
- Ethernet and IB adapters
- RAID battery card and battery
- Slim line DVD
- FSP Card
- Internal to External SAS Cable
- PCI Adapter Cassette
- DVD
- TOD Battery
- Clock Pass-thru card

Tier 2 CRUs require more effort than Tier 1 CRUs and also require a higher level of skill or experience when being serviced by the customer. As with Tier 1 parts, if the customer elects not to perform Tier 2 service, an IBM SSR may be contracted at an additional service charge to perform the service. If the customer has 7x24 warranty or maintenance in force, then all parts will be replaced or serviced by an SSR without an additional charge.

The following parts have been designated as Tier 2 CRUs:

- FSP Cable
- PCI Adapter
- SAS DASD / Media Backplane
- SMP Cable
- IO Planar

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, next-business-day 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

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

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. Service levels are response-time objectives and are not guaranteed. See the [Warranty service upgrades](#) section for additional details.

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

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

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 website. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard 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.

Customer Replaceable Unit Service and On-site Service for other selected parts

Customer replacement parts

Tier 1 CRUs are those parts which require minimal effort, skill, or experience in order to service. Tier 1 items are mandatory CRUs when base 9 x 5 next-business-day warranty or maintenance is specified in the terms and conditions contract and is in force. However, if the customer elects not to perform Tier 1 service, an IBM SSR may be contracted at an additional service charge to perform the service. If the customer has 7x24 warranty or maintenance in force, then all parts, Tier 1 and Tier2, may be replaced or serviced by a SSR without an additional charge.

The following parts have been designated as Tier 1 CRUs:

- Keyboard
- Mouse
- Display
- Mounting hardware
- Fans
- Line power cord
- Operator panel
- Power supply
- DASD
- Ethernet and IB adapters
- RAID battery card and battery
- Slim line DVD
- FSP Card
- Internal to External SAS Cable
- PCI Adapter Cassette
- DVD
- TOD Battery
- Clock Pass-thru card

Tier 2 CRUs require more effort than Tier 1 CRUs and also require a higher level of skill or experience when being serviced by the customer. As with Tier 1 parts, if the customer elects not to perform Tier 2 service, an IBM SSR may be contracted at an additional service charge to perform the service. If the customer has 7x24 warranty or maintenance in force, then all parts will be replaced or serviced by an SSR without an additional charge.

The following parts have been designated as Tier 2 CRUs:

- FSP Cable
- PCI Adapter
- SAS DASD / Media Backplane
- SMP Cable
- IO Planar

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, next-business-day 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
- European Announcement Letter ZS03-0150 for IBM Customer Agreement (ICA)
- European Announcement Letter ZS04-0135 for Enterprise Agreement Contract
- European Announcement Letter ZS98-0118 for ServiceSuite® Contract
- European HW Operations Guide and Service Level Description Table available at <http://www-5.ibm.com/services/europe/maintenance/>

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 1-800-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.

The applicable processor tier is: Medium

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

Machine using LMC Type Model: 9117-MMC

IBM may release changes to the machine code. IBM plans to make the machine code changes available for download from the IBM technical support website

<http://www14.software.ibm.com/webapp/set2/firmware>

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.

The educational allowance is 13% for the products in this announcement.

Prices

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

Product charges

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

Description	Model number	Feature number	Purchase price	Minimum Initial/ Monthly Maint. Charge	RP Both/ Support	CSU MES
IBM Power 770						
One CSC Billing Unit	MMC				No	
Ten CSC Billing Units	MMC	0010			Both	Yes No
Mirrored System Disk Level, Sp	MMC	0011			Both	Yes No
Device Parity Protection All	MMC	0040			Both	Yes No
Mirrored System Bus Level	MMC	0041			Both	Yes No
Device Parity RAID 6 All	MMC	0043			Both	Yes No
	MMC	0047			Both	Yes No

RISC to RISC Data Migration	MMC	0205	Initial	Yes	No
AIX Partition Specify	MMC	0265	Both	Yes	No
Linux Partition Specify	MMC	0266	Both	Yes	No
IBM i Partition Specify	MMC	0267	Both	Yes	No
Ext Tape Attached via #5736	MMC	0290	Support	Yes	No
Specify Custom Data Protection	MMC	0296	Both	Yes	No
Spcf EXP24 Attach via Existing	MMC	0302	Support	Yes	No
Mirrored Level System Specify	MMC	0308	Both	Yes	No
RAID Hot Spare Specify	MMC	0347	Both	Yes	No
V.24/EIA232 6.1m (20 Ft) PCI C	MMC	0348	Both	Yes	No
V.24/EIA232 15.2m (50 Ft) PCI	MMC	0349	Support	Yes	No
V.35 6.1m (20 Ft) PCI Cable	MMC	0353	Both	Yes	No
V.35 15.2m (50 Ft) PCI Cable	MMC	0354	Support	Yes	No
V.36 6.1m (20 Ft) PCI Cable	MMC	0356	Support	Yes	No
X.21 6.1m (20 Ft) PCI Cable	MMC	0359	Both	Yes	No
X.21 15.2m (50 Ft) PCI Cable	MMC	0360	Support	Yes	No
V.24/EIA232 (80 Ft) PCI Cable	MMC	0365	Support	Yes	No
UPS Factory Integration Spcfy	MMC	0373	MES	Yes	No
HMC Factory Integration Spcfy	MMC	0374	MES	Yes	No
Display Factory Int. Specify	MMC	0375	MES	Yes	No
Rack Space for UPS	MMC	0376	MES	Yes	No
Reserve Rack for HMC	MMC	0377	MES	Yes	No
Reserve Rack Space for Display	MMC	0378	MES	Yes	No
MMA/MMB/MHB upgrade indicator	MMC	0397	MES	Yes	No
SSD Placement Indicator CEC	MMC	0462	Both	Yes	No
SSD Placement Indicator 5802/3	MMC	0463	Initial	N/A	No
SSD Placement Indicator 5886	MMC	0464	Initial	N/A	No
SSD Placement Indicator 5887	MMC	0465	Initial	N/A	No
19 inch, 1.8 meter high rack	MMC	0551	MES	Yes	No
19 inch, 2.0 meter high rack	MMC	0553	MES	Yes	No
19 inch, 1.3 meter high rack	MMC	0555	Support	Yes	No
IBM i 6.1 w/6.1.1 Machine Code	MMC	0566	Both	Yes	No
IBM i 7.1 Specify Code	MMC	0567	Both	Yes	No
Rack Filler Panel Kit	MMC	0599	Both	Yes	No
Load Source Not in CEC	MMC	0719	Both	Yes	No
#1787 Load Source Specify	MMC	0722	Both	Yes	No
#1996 Load Source Specify	MMC	0724	Initial	N/A	No

Specify Load Source in 5786	MMC	0725		Support	Yes	No
Specify Load Source 5802/3/77	MMC	0726		Both	Yes	No
Specify 5886 Load Source plac	MMC	0727		Both	Yes	No
#5887 Load Source Specify	MMC	0728		Both	Yes	No
4327 Load Source Specify	MMC	0835		Support	Yes	No
4328 Load Source Specify	MMC	0836		Support	Yes	No
SAN Load Source Specify	MMC	0837		Both	Yes	No
3676 Load Source Specify	MMC	0838		Support	Yes	No
3677 Load Source Specify	MMC	0839		Support	Yes	No
3678 Load Source Specify	MMC	0840		Support	Yes	No
4329 Load Source Specify	MMC	0841		Support	Yes	No
3658 Load Source Specify	MMC	0844		Support	Yes	No
1884 Load Source Specify	MMC	0851		Support	Yes	No
1888 Load Source Specify	MMC	0853		Both	Yes	No
1909 Load Source Specify	MMC	0854		Support	Yes	No
3587 Load Source Specify	MMC	0855		Support	Yes	No
1911 Load Source Specify	MMC	0856		Both	Yes	No
#1916 Load Source Specify	MMC	0857		Both	Yes	No
#1879 Load Source Specify	MMC	0870		Both	Yes	No
#1947 Load Source Specify	MMC	0871		Both	Yes	No
#1948 Load Source Specify	MMC	0872		Both	Yes	No
#1956 Load Source Specify	MMC	0874		Both	Yes	No
#1962 Load Source Specify	MMC	0875		Both	Yes	No
#1794 Load Source Specify	MMC	0876		Both	Yes	No
US TAA Compliance Indicator	MMC	0983		Initial	N/A	No
Modem Cable US/Canada and GU	MMC	1025		Support	Yes	No
USB External Docking Station R	MMC	1104		Both	Yes	No
USB 160 GB Removable Disk Dr	MMC	1106		Both	Yes	No
USB 500 GB Removable Disk Dr	MMC	1107		Both	Yes	No
Decline ESA Indicator	MMC	1120	NC	Initial	N/A	No
Custom Serv. Specify, Roch	MMC	1140		Both	Yes	No
200V 16A 4.3m (14 Ft) TL Line	MMC	1406		Support	Yes	No
4.3m 200V/16A Pwr Cd Italy	MMC	1408		Support	Yes	No
125V 4.3m (14 Ft) Line Cord	MMC	1413		Support	Yes	No
200V 1.8m (6 Ft) Locking Line	MMC	1414		Support	Yes	No
200V 1.8m (6 Ft) Watertight LC	MMC	1415		Support	Yes	No
200V 4.3m (14 Ft) Locking Line	MMC	1416		Support	Yes	No

200V 4.3m (14 Ft) Watertight L					
	MMC	1417	Support	Yes	No
4.3m 200V/16A Power Cord EU/As					
	MMC	1420	Support	Yes	No
4.3m 200V/16A Power Cord CH/DK					
	MMC	1421	Support	Yes	No
200V 1.8m (6 Ft) Locking Line					
	MMC	1424	Support	Yes	No
200V 1.8m (6 Ft) Watertight Li					
	MMC	1425	Support	Yes	No
200V 4.3m (14 Ft) Locking Line					
	MMC	1426	Support	Yes	No
200V 4.3m (14 Ft) watertight L					
	MMC	1427	Support	Yes	No
4.3m 200V/10A Power Cord EU/As					
	MMC	1439	Support	Yes	No
4.3m 200V/10A Power Cord Denma					
	MMC	1440	Support	Yes	No
4.3m 200V/10A Power Cord S. Af					
	MMC	1441	Support	Yes	No
4.3m 200V/10A Power Cord Swiss					
	MMC	1442	Support	Yes	No
4.3m 200V/10A Power Cord UK					
	MMC	1443	Support	Yes	No
4.3m 200V/10A Power Cord Israe					
	MMC	1445	Support	Yes	No
4.3m 200V/32A Power Cord EU 1					
	MMC	1449	Support	Yes	No
4.3m 200V/16A Power Cord EU 2					
	MMC	1450	Support	Yes	No
200V (6 Ft) 1.8m Line Cord					
	MMC	1451	Support	Yes	No
200V (14 Ft) 4.3m Line Cord					
	MMC	1452	Support	Yes	No
200V (6 Ft) 1.8m Locking Line					
	MMC	1453	Support	Yes	No
200V 12A (14 Ft) 4.3m TL Line					
	MMC	1454	Support	Yes	No
200V (6 Ft) 1.8m Watertight Li					
	MMC	1455	Support	Yes	No
200V (14 Ft) 4.3m Watertight L					
	MMC	1456	Support	Yes	No
200V (6 Ft) 1.8m Upper Line Co					
	MMC	1457	Support	Yes	No
200V (6 Ft) 1.8m Upper Locking					
	MMC	1458	Support	Yes	No
200V (6 Ft) 1.8m Locking					
	MMC	1459	Support	Yes	No
30m SPCN Cable					
	MMC	1466	Support	Yes	No
4.3m 200V/16A Pwr Cd					
	MMC	1477	Support	Yes	No
Quad ENET Card w Copper SFP+					
	MMC	1768	Both	Yes	No
Quad ENET Card w SR Optical					
	MMC	1769	Both	Yes	No
177GB SFF-1 SSD w/ eMLC AIX/Li					
	MMC	1775	Both	Yes	No
177GB SFF-1 SSD w/ eMLC IBM i					
	MMC	1787	Both	Yes	No
600GB 10k RPM SAS SFF Disk					
	MMC	1790	Both	Yes	No
177GB SFF-2 SSD w/ eMLC AIX/Li					
	MMC	1793	Both	Yes	No
177GB SFF-2 SSD w/ eMLC IBM i					
	MMC	1794	Both	Yes	No
GX 12X DDR Adapter Dual port					
	MMC	1808	Both	No	No
SAS Cable for triple split DAS					
	MMC	1815	Both	Yes	No
Quantity 150 of #1962					
	MMC	1817	Both	Yes	No
Quantity 150 of #1964					

	MMC	1818	Both	Yes	No
SAS Cbl Assembly for SAS Port	MMC	1819	Both	Yes	No
1.5 Meter 12X to 4X Channel CC	MMC	1828	Both	Yes	No
0.6 Meter 12X Cable	MMC	1829	Support	Yes	No
1.5 Meter 12X cable	MMC	1830	Support	Yes	No
8.0 Meter 12X Cable	MMC	1834	Support	Yes	No
3.0 Meter 12X Cable	MMC	1840	Support	Yes	No
3 Meter 12X to 4X Channel CC	MMC	1841	Both	Yes	No
12X to 4X Chan conv- 10M	MMC	1842	Support	Yes	No
Quantity 150 of #1956	MMC	1844	Both	Yes	No
Operator Panel	MMC	1853	Both	Yes	No
10 Meter 12X to 4X Enhance CCC	MMC	1854	Both	Yes	No
0.6 Meter 12X DDR Cable	MMC	1861	Both	Yes	No
1.5 Meter 12X DDR Cable	MMC	1862	Both	Yes	No
8 Meter 12X DDR Cable	MMC	1864	Both	Yes	No
3.0 Meter 12X DDR Cable	MMC	1865	Both	Yes	No
Quantity 150 of #1917	MMC	1866	Both	Yes	No
Quantity 150 of #1947	MMC	1868	Both	Yes	No
Quantity 150 of #1925	MMC	1869	Both	Yes	No
283GB 15K RPM SAS Disk	MMC	1879	Both	Yes	No
300GB 15K RPM SAS Disk	MMC	1880	Both	Yes	No
146.8GB 10K RPM SAS SFF Disk D	MMC	1882	Support	Yes	No
73.4 GB 15K RPM SAS SFF Disk D	MMC	1883	Support	Yes	No
69.7 GB 15K RPM SAS SFF Disk D	MMC	1884	Support	Yes	No
300GB 10K RPM SFF SAS Disk D	MMC	1885	Both	Yes	No
146GB 15K RPM SFF SAS Disk D	MMC	1886	Both	Yes	No
Quantity 150 of #1793	MMC	1887	Both	Yes	No
139GB 15K RPM SFF SAS Disk D	MMC	1888	Both	Yes	No
69GB SFF SAS Solid State D	MMC	1890	Support	Yes	No
QUANTITY 150 OF 1883	MMC	1891	Support	Yes	No
QUANTITY 150 OF 1882	MMC	1899	Support	Yes	No
69GB SFF SAS Solid State Drive	MMC	1909	Support	Yes	No
283GB 10K RPM SFF SAS Disk Dri	MMC	1911	Both	Yes	No
PCI X DDR Dual Channel Ultra32	MMC	1912	Support	Yes	No
571GB 10k RPM SAS SFF Disk	MMC	1916	Both	Yes	No
146GB 15k RPM SAS SFF-2 Disk	MMC	1917	Both	Yes	No
300GB 10k RPM SAS SFF-2 Disk	MMC	1925	Both	Yes	No
Quantity 150 of #1879					

	MMC	1926	Both	Yes	No
Quantity 150 of #1948	MMC	1927	Both	Yes	No
Quantity 150 of #1880	MMC	1928	Both	Yes	No
Quantity 150 of #1953	MMC	1929	Both	Yes	No
139GB 15k RPM SAS SFF-2 Disk	MMC	1947	Both	Yes	No
283GB 15k RPM SAS SFF-2 Disk	MMC	1948	Both	Yes	No
300GB 15k RPM SAS SFF-2 Disk	MMC	1953	Both	Yes	No
283GB 10k RPM SAS SFF-2 Disk	MMC	1956	Both	Yes	No
Quantity 150 of #1794	MMC	1958	Both	Yes	No
571GB 10k RPM SAS SFF-2 Disk	MMC	1962	Both	Yes	No
600GB 10k RPM SAS SFF-2 Disk	MMC	1964	Both	Yes	No
177GB SSD Module with eMLC (AI	MMC	1995	Both	No	No
1 Gigabit iSCSI TOE PCI X on C	MMC	1996	Both	No	No
PCIe RAID SSD SAS Adapter 3Gb	MMC	2055	Both	Yes	No
Converter Cable, VHDCI to P, M	MMC	2118	Support	Yes	No
Ultra 320 SCSI Cable -1M	MMC	2124	Support	Yes	No
Ultra 320 SCSI Cable -3M	MMC	2125	Support	Yes	No
Ultra 320 SCSI Cable -5M	MMC	2126	Support	Yes	No
Ultra 320 SCSI Cable -10M	MMC	2127	Support	Yes	No
Ultra 320 SCSI Cable -20M	MMC	2128	Support	Yes	No
Ultra 320 SCSI Cable -0.55M	MMC	2138	Support	Yes	No
Primary OS - IBM i	MMC	2145	Both	Yes	No
Primary OS AIX	MMC	2146	Both	Yes	No
Primary OS Linux	MMC	2147	Both	Yes	No
LC-SC 50 Micron Fiber Conv Cab	MMC	2456	Both	Yes	No
LC-SC 62.5 Mic.Fib.Conv.Cable	MMC	2459	Both	Yes	No
4 port USB PCIe Adapter	MMC	2728	Both	Yes	No
2 Port USB PCI Adapter	MMC	2738	Support	Yes	No
POWER GXT135P Graphics Acceler	MMC	2849	Support	Yes	No
ARTIC960Hx 4 Port EIA 232 Cabl	MMC	2861	Support	Yes	No
ARTIC960Hx 4 Port X 21 Cable	MMC	2863	Support	Yes	No
ARTIC960Hx 4-Port V.35(DTE)Cab	MMC	2864	Support	Yes	No
PCIe 2 Line WAN w/Modem	MMC	2893	Both	Yes	No
Asynch.Termin/Print.Cbl EIA232	MMC	2934	Both	Yes	No
Asynchronous Cable EIA 232/V	MMC	2936	Both	Yes	No
8P Async Adp. EIA232/RS-422	MMC	2943	Support	Yes	No
ARTIC960Hx 4Port Mult.PCI Adp	MMC	2947	Support	Yes	No
Cable, v.24 / EIA-232					

Cable, V.35	MMC	2951	Support	Yes	No
Cable, V.36 / EIA 499	MMC	2952	Support	Yes	No
Cable, X.21	MMC	2953	Support	Yes	No
2-Port Multip. PCI Adapter	MMC	2954	Support	Yes	No
Serial to Ser Port Cab Draw/Draw	MMC	2962	Support	Yes	No
Serial to Se.Port Cbl Rack 8M	MMC	3124	Both	Yes	No
73.4GB 15K RPM U320 SCSI DDA	MMC	3125	Both	Yes	No
146.8GB 15K RPM U320 SCSI DDA	MMC	3278	Support	Yes	No
SAS YO Cable 1.5m - HD 6Gb Ada	MMC	3279	Support	Yes	No
SAS YO Cable 3m - HD 6Gb Adapt	MMC	3450	Both	Yes	No
SAS YO Cable 6m - HD 6Gb Adapt	MMC	3451	Both	Yes	No
SAS YO Cable 10m - HD 6Gb Adap	MMC	3452	Both	Yes	No
SAS X Cable 3m - HD 6Gb 2-Adap	MMC	3453	Both	Yes	No
SAS X Cable 6m - HD 6Gb 2-Adap	MMC	3454	Both	Yes	No
SAS X Cable 10m - HD 6Gb 2-Ada	MMC	3455	Both	Yes	No
300 GB 15K RPM SCSI Disk Drive	MMC	3456	Both	Yes	No
69GB 3.5 SAS Solid State Driv	MMC	3585	Support	Yes	No
69GB 3.5 SAS Solid State Driv	MMC	3586	Support	Yes	No
NOTE - The monitor or display features are subject to a \$16 Electronic Waste Recycling Fee (15-INCH TO 34-INCH VIDEO DEVICE.)	MMC	3587	Support	Yes	No
Widescreen LCD Monitor	MMC	3632	Both	Yes	No
T210 Flat Panel Monitor	MMC	3633	Support	Yes	No
T541H/L150p 15inchTFT Col.M	MMC	3637	Support	Yes	No
ThinkVision L170p Flat Pan.M	MMC	3639	Support	Yes	No
ThinkVision L171p Flat Panel M	MMC	3640	Support	Yes	No
IBM T115 Flat Panel Monitor	MMC	3641	Support	Yes	No
ThinkVision L191p Flat Panel M	MMC	3642	Support	Yes	No
IBM T120 Flat Panel Monitor	MMC	3643	Support	Yes	No
19in. Flat Panel Monitor	MMC	3644	Support	Yes	No
17in. Flat Panel Monitor	MMC	3645	Support	Yes	No
73GB 15K RPM SAS Disk Drive	MMC	3646	Support	Yes	No
146GB 15K RPM SAS Disk Drive	MMC	3647	Support	Yes	No
300GB 15K RPM SAS Disk Drive	MMC	3648	Support	Yes	No
450GB 15K RPM SAS Disk Drive	MMC	3649	Support	Yes	No
SAS Cable (EE) Drawer to Dr 1M	MMC	3652	Both	Yes	No
SAS Cable (EE) Drawer to Dr 3M	MMC	3653	Both	Yes	No
SAS Cable (EE) Drawer to Dr 6M	MMC	3654	Both	Yes	No
428GB 15K RPM SAS Disk Drive	MMC				

	MMC	3658	Support	Yes	No
SAS Cable (X) Adapter to SAS E	MMC	3661	Both	Yes	No
SAS Cbl X Adp SAS Enclosure 6M	MMC	3662	Both	Yes	No
SAS Cbl X Adp SAS Encl 15M	MMC	3663	Both	Yes	No
Serv Interface Cable 2 3 and 4	MMC	3671	Both	Yes	No
Serv Interface Cable 3 and 4 E	MMC	3672	Both	Yes	No
Serv Interface Cable 4 Encl	MMC	3673	Both	Yes	No
69.7GB 15k rpm SAS Disk Drv	MMC	3676	Support	Yes	No
139.5GB 15k rpm SAS Disk Drive	MMC	3677	Support	Yes	No
283.7GB 15k rpm SAS Disk Drive	MMC	3678	Support	Yes	No
SAS Cab (AI) Adapter to Int 1M	MMC	3679	Both	Yes	No
3M SAS CABLE, ADPTR TO ADPTR (	MMC	3681	Both	Yes	No
6M SAS CABLE, ADPTR TO ADPTR (	MMC	3682	Both	Yes	No
SAS Cab (AE) Adapter to En 3M	MMC	3684	Both	Yes	No
SAS Cable(AE) Adapter to En 6M	MMC	3685	Both	Yes	No
SAS Ca(YI) System to SAS 1.5M	MMC	3686	Support	Yes	No
SAS Ca(YI) System to SAS 3M	MMC	3687	Both	Yes	No
SAS Cable (AT) 0.6 Meter	MMC	3688	Both	Yes	No
SAS AT Cable 0.6m - HD 6Gb Ada	MMC	3689	Both	Yes	No
SAS Cab(YO) Adapter to SAS1.5M	MMC	3691	Both	Yes	No
SAS Cab(YO) Adapter to SAS 3M	MMC	3692	Both	Yes	No
SAS Cab(YO) Adapter to SAS 6M	MMC	3693	Both	Yes	No
SAS Cab(YO) Adapter to SAS 15M	MMC	3694	Both	Yes	No
Process Cable Two Drawer Sys	MMC	3711	Both	Yes	No
Processor Cable TwoThreeFour D	MMC	3712	Both	Yes	No
Process Cbl TwoThreeFour Draw	MMC	3713	Both	Yes	No
Process Cbl Four Drawer System	MMC	3714	Both	Yes	No
0.3M Serial Prt Converter Cbl	MMC	3925	Both	Yes	No
Asynch Printer/Term.Cab,4M	MMC	3926	Support	Yes	No
Serial Port Null Mod Cab 3.7M	MMC	3927	Both	Yes	No
Ser.Port Null Modem Cable,10M	MMC	3928	Both	Yes	No
6Foot Extend.Cbl for Displays	MMC	4242	Both	Yes	No
Extender Cable USB Keybo 1.8M	MMC	4256	Both	Yes	No
VGA to DVI Connection Converte	MMC	4276	Both	Yes	No
70.56GB 15k rpm Disk Unit	MMC	4327	Support	Yes	No
141.12GB 15k RPM Disk Unit	MMC	4328	Support	Yes	No
282.25GB 15k rpm Disk Unit	MMC	4329	Support	Yes	No
Package 5X 2055 20X 1995					

Package 5X 2055 20X 1995	MMC	4367	Both	Yes	No
One and only one rack indicator feature is required on all orders (#4650 to #4666). No Factory Integration Ind.	MMC	4377	Both	Yes	No
Rack Indicator, Rack 1	MMC	4650	Initial	N/A	No
Rack Indicator, Rack 2	MMC	4651	Initial	N/A	No
Rack Indicator, Rack 3	MMC	4652	Initial	N/A	No
Rack Indicator, Rack 1	MMC	4653	Initial	N/A	No
Rack Indicator, Rack 5	MMC	4654	Initial	N/A	No
Rack Indicator, Rack 6	MMC	4655	Initial	N/A	No
Rack Indicator, Rack 7	MMC	4656	Initial	N/A	No
Rack Indicator, Rack 8	MMC	4657	Initial	N/A	No
Rack Indicator, Rack 9	MMC	4658	Initial	N/A	No
Rack Indicator, Rack 10	MMC	4659	Initial	N/A	No
Rack Indicator, Rack 11	MMC	4660	Initial	N/A	No
Rack Indicator, Rack 12	MMC	4661	Initial	N/A	No
Rack Indicator, Rack 13	MMC	4662	Initial	N/A	No
Rack Indicator, Rack 14	MMC	4663	Initial	N/A	No
Rack Indicator, Rack 15	MMC	4664	Initial	N/A	No
Rack Indicator, Rack 16	MMC	4665	Initial	N/A	No
On/Off, 999 GB-Days Billing	MMC	4666	Initial	N/A	No
PCI-X Crypt.Coproc.(FIPS 4)	MMC	4710	MES	Yes	No
Active Memory Exp Enablement	MMC	4764	Support	Yes	No
Active Memory Mirroring	MMC	4791	Both	Yes	No
PCIe Crypto Coprocessor Gen3	MMC	4797	Both	Yes	No
PCIe Crypto Coprocessor Gen4	MMC	4808	Both	Yes	No
CBU SPECIFY	MMC	4809	Both	Yes	No
3.72 GHz Proc, 0/12 core P7	MMC	4891	Initial	N/A	No
3.30 GHz Proc, 0/16 core P7	MMC	4983	Both	No	Yes
Single 5250 Enter. Enabl.	MMC	4984	Both	No	Yes
Full 5250 Enter. Enable.	MMC	4992	Both	Yes	No
Software Preload Required	MMC	4997	Both	Yes	No
Customer Solution Center Roche	MMC	5000	Initial	N/A	No
Power Dist Unit 1 Phase NEMA	MMC	5002	Initial	N/A	No
Power Dist Unit 1 Phase IEC	MMC	5160	Support	Yes	No
Power Dist Unit 2 of 3 Phase	MMC	5161	Support	Yes	No
Power Dist Unit - 3 Phase	MMC	5162	Support	Yes	No
PCIe 2-Port 4X IB QDR Adapt	MMC	5163	Support	Yes	No

MMC	5285	Both	Yes	No
PCIe2 2-port 10GbE SR Adapter	MMC 5287	Both	Yes	No
PCIe2 2-port 10GbE SFP+ Adaptr	MMC 5288	Both	Yes	No
2 Port Async EIA 232 PCIe Adap	MMC 5289	Both	Yes	No
1-Core Proc. Act for #4983	MMC 5329	Both	Yes	No
100 CoD Ut1 mins, #4983, AIXL	MMC 5330	MES	Yes	No
100 CoD Ut1 mins, #4983, IBMi	MMC 5331	MES	Yes	No
1 Proc-day On/Off #4983, AIXL	MMC 5332	MES	Yes	No
1 Proc-day On/Off #4983, IBMi	MMC 5333	MES	Yes	No
1-Core Proc. Act for #4984	MMC 5334	Both	Yes	No
100 CoD Ut1 mins, #4984, AIXL	MMC 5335	MES	Yes	No
100 CoD Ut1 mins, #4984, IBMi	MMC 5336	MES	Yes	No
1 Proc-day On/Off #4984, AIXL	MMC 5337	MES	Yes	No
1 Proc-day On/Off #4984, IBMi	MMC 5338	MES	Yes	No
RFID Tags for Servers, Blades	MMC 5524	Both	Yes	No
System Pwr Sup -1925W	MMC 5532	Both	Yes	No
Sys Console On HMC	MMC 5550	Both	Yes	No
Sys Console Ethernet No IOP	MMC 5553	Both	Yes	No
0/256GB DDR3 1066MHz 4 DIMMs	MMC 5564	Both	No	No
Chasis & IBM Bezel for	MMC 5585	Both	No	Yes
Chasis & OEM Bezel for	MMC 5586	Both	No	Yes
0/32GB DDR3 1066MHz 4 DIMMs	MMC 5600	Both	No	Yes
0/64GB DDR3 1066MHz 4 DIMMs	MMC 5601	Both	No	Yes
0/128GB DDR3 1066MHz 4 DIMMs	MMC 5602	Both	No	Yes
Blind Swap Type III Cas PCIe	MMC 5646	MES	Yes	No
Blind Swap Type III Cas PCI X	MMC 5647	MES	Yes	No
Disk/Media Backplane	MMC 5652	Both	No	No
175MB Cache RAID Dual IOA	MMC 5662	Both	Yes	No
FSP/Clock Pass Through Card	MMC 5665	Both	Yes	No
IBM Gigab.Eth-SX PCI-X Adapter	MMC 5700	Support	Yes	No
10/100/1000 BaseTX Eth.PCI-X	MMC 5701	Support	Yes	No
2-Port BaseTX Etht.PCI-X Adp	MMC 5706	Both	Yes	No
10Gb FCoE PCIe Dual Port Adapt	MMC 5708	Both	Yes	No
1Gb iSCSI TOE PCI-X-Copp.Adpt	MMC 5713	Both	Yes	No
1Gb iSCSI TOE PCI-X-Opt.Adpt	MMC 5714	Support	Yes	No
2 Gigab.Fibre Chann.PCI-X Adp	MMC 5716	Support	Yes	No
4 Port 10/100/1000 Base TX PCI	MMC 5717	Both	Yes	No
10Gb Etht-SR PCI-X 2.0 DDR Adp				

	MMC	5721	Support	Yes	No
10Gb Etht-LR PCI-X 2.0 DDR Adp	MMC	5722	Support	Yes	No
2 Port Asyn.EIA-232 PCI Adpt	MMC	5723	Support	Yes	No
PCIe2 8x 4-port Fibre Channel	MMC	5729	Both	Yes	No
10 Gigabit Ethernet CX4 PCI Ex	MMC	5732	Both	Yes	No
8 Gigabit PCI Express Dual Por	MMC	5735	Both	Yes	No
PCI X DDR Dual Channel Ultra32	MMC	5736	Both	Yes	No
4-Port 10/100/1000 BaseTX Adpt	MMC	5740	Support	Yes	No
Single Bus repeater for 5786	MMC	5741	Support	Yes	No
Dual Bus repeater for 5786	MMC	5742	Support	Yes	No
PCIe2 4-Port 10GbE&1GbE SR&RJ4	MMC	5744	Both	Yes	No
PCIe2 4-Port 10GbE&GbE SFP+Cop	MMC	5745	Both	Yes	No
POWER GXT145 PCI Express Graph	MMC	5748	Both	Yes	No
4Gbps Fibre Channel (2 Port)	MMC	5749	Both	Yes	No
4 GB Single-Port Fibre Channel	MMC	5758	Support	Yes	No
4 Gb Dual Port Fibre Channel	MMC	5759	Both	Yes	No
SATA Slimline DVD RAM Drive	MMC	5762	Both	Yes	No
2 Port 10/100/1000 Base TX Eth	MMC	5767	Both	Yes	No
2 Port Gigabit Ethernet SX PCI	MMC	5768	Both	Yes	No
10 Gb Eth SR PCI Express Adp	MMC	5769	Both	Yes	No
10 Gigabit Ethernet LR PCI	MMC	5772	Both	Yes	No
4GigabitPCI-E Single Port Fibr	MMC	5773	Support	Yes	No
4 Gigabit PCI Express Dual Por	MMC	5774	Both	Yes	No
PCI-X EXP24 Ctl-1.5GB No IOP	MMC	5782	Support	Yes	No
4 Port Async EIA 232 PCIe Adap	MMC	5785	Both	Yes	No
TotalStorage EXP24 Disk Dwr	MMC	5786	Support	Yes	No
PCI DDR 12X Expansion Drawer	MMC	5796	Both	Yes	No
12X I/O Drawer PCIe, SFF disk	MMC	5802	Both	Yes	No
PCIe 380MB Cache Dual x4 3Gb S	MMC	5805	Both	Yes	No
12X I/O Drawer PCIe, No Disk	MMC	5877	Both	Yes	No
EXP 12S Expansion Drawer	MMC	5886	Support	Yes	No
EXP24S SFF Gen2-bay Drawer	MMC	5887	Both	Yes	No
PCI-X SAS Adaper	MMC	5900	Support	Yes	No
PCIe Dual x4 SAS Adapter	MMC	5901	Both	Yes	No
PCI X DDR Dual x4 3Gb SAS RAID	MMC	5902	Support	Yes	No
PCIe 380MB Cache Dual x4 3Gb	MMC	5903	Support	Yes	No
PCI X DDR 1.5GB Cache SAS RAID	MMC	5908	Both	Yes	No
PCI X DDR Dual x4 SAS Adapter					

MMC	5912	Both	Yes	No
PCIe2 1.8GB Cache RAID SAS Ada				
MMC	5913	Both	Yes	No
SAS AA Cable 3m - HD 6Gb Adapt				
MMC	5915	Both	Yes	No
SAS AA Cable 6m - HD 6Gb Adapt				
MMC	5916	Both	Yes	No
SAS AA Cable 1.5m - HD 6Gb Ada				
MMC	5917	Both	Yes	No
SAS AA Cbl 0.6m - HD 6Gb Adapt				
MMC	5918	Both	Yes	No
Non paired SAS RAID indicator				
MMC	5922	Support	Yes	No
Non paired PCIe SAS RAID Ind				
MMC	5923	Both	Yes	No
Non-paired Indicator 5913 PCIe				
MMC	5924	Both	Yes	No
Full width Key USB, US English				
MMC	5951	Both	Yes	No
Full width Key USB, French				
MMC	5952	Both	Yes	No
Full width Key USB, Italian				
MMC	5953	Both	Yes	No
Full width Key USB, German/Aus				
MMC	5954	Both	Yes	No
Full width Key USB, UK English				
MMC	5955	Both	Yes	No
Full width Key USB, Spanish				
MMC	5956	Both	Yes	No
Full width Key USB, Japanese				
MMC	5957	Both	Yes	No
Full width Key USB, BrazilianP				
MMC	5958	Both	Yes	No
Full width Key USB, Hungarian				
MMC	5959	Both	Yes	No
Full width Key USB, Korean				
MMC	5960	Both	Yes	No
Full width Key USB, Chinese				
MMC	5961	Both	Yes	No
Full width Key USB, French Can				
MMC	5962	Both	Yes	No
Full width Key USB, Belgian/UK				
MMC	5964	Both	Yes	No
Full width Key USB, Swedish/Fi				
MMC	5965	Both	Yes	No
Full width Key USB, Danish				
MMC	5966	Both	Yes	No
Full width Key USB, Bulgarian				
MMC	5967	Both	Yes	No
Full width Key USB, Swiss/Fr/G				
MMC	5968	Both	Yes	No
Full width Key USB, Norwegian				
MMC	5969	Both	Yes	No
Full width Key USB, Dutch				
MMC	5970	Both	Yes	No
Full width Key USB, Portuguese				
MMC	5971	Both	Yes	No
Full width Key USB, Greek				
MMC	5972	Both	Yes	No
Full width Key USB, Hebrew				
MMC	5973	Both	Yes	No
Full width Key USB, Polish				
MMC	5974	Both	Yes	No
Full width Key USB, Slovakian				
MMC	5975	Both	Yes	No
Full width Key USB, Czech				
MMC	5976	Both	Yes	No
Full width Key USB, Turkish				
MMC	5977	Both	Yes	No
Full width Key USB, LA Spanish				
MMC	5978	Both	Yes	No
Full width Key USB, Arabic				
MMC	5979	Both	Yes	No
Full width Key USB, Thai				

	MMC	5980	Both	Yes	No
Full width Key USB, Russian	MMC	5981	Both	Yes	No
Full width Key USB, Slovenian	MMC	5982	Both	Yes	No
Full width Key USB, US English	MMC	5983	Both	Yes	No
Power Control Cable(SPCN)-2m	MMC	6001	Support	Yes	No
Power Control Cbl (SPCN) 3 m	MMC	6006	Both	Yes	No
Power Control Cbl (SPCN) 15 m	MMC	6007	Both	Yes	No
Power Control Cable(SPCN)-6m	MMC	6008	Support	Yes	No
Power Control Cable(SPCN)-30m	MMC	6029	Support	Yes	No
Opt Front Door for 1.8m Rack	MMC	6068	MES	Yes	No
Opt Front Door for 2.0m Rack	MMC	6069	MES	Yes	No
1.8m Rack Trim Kit	MMC	6246	Support	Yes	No
2.0m Rack Trim Kit	MMC	6247	Support	Yes	No
1.8m Rack Acoustic Doors	MMC	6248	MES	Yes	No
2.0m Rack Acoustic Doors	MMC	6249	MES	Yes	No
1.8m Rack Trim Kit	MMC	6263	MES	Yes	No
2.0m Rack Trim Kit	MMC	6272	MES	Yes	No
Dual prt 12X Chan Attach Short	MMC	6446	Both	Yes	No
4.3m 250V/10A Power Cord	MMC	6455	Support	Yes	No
Dual port 12X Chan Attach Long	MMC	6457	Both	Yes	No
Pwr Cbl 14FT, Drwr - IBM PDU	MMC	6458	Both	Yes	No
3.7m 250V/10A RA Pwr Cd	MMC	6459	Support	Yes	No
Pwr Crd (14FT), Drwr - OEM PDU	MMC	6460	Both	Yes	No
4.3m 250V/10A Power Cord	MMC	6461	Support	Yes	No
4.3m 250V/10A Power Cord	MMC	6462	Support	Yes	No
4.3m 250V/10A Power Cord	MMC	6463	Support	Yes	No
4.3m 250V/10A Power Cord	MMC	6464	Support	Yes	No
4.3m 250V/10A Power Cord	MMC	6465	Support	Yes	No
4.3m 250V/10A Power Cord	MMC	6466	Support	Yes	No
4.3m 250V/10A Power Cord	MMC	6467	Support	Yes	No
Pwr Crd 4.3M, Drwr - OEM PDU	MMC	6469	Both	Yes	No
PWR Cord(6foot),To wall	MMC	6470	Support	Yes	No
Pwr Crd 2.7m 9ft wall OEM PDU	MMC	6471	Both	Yes	No
Pwr Crd 2.7m 9ft wall OEM PDU	MMC	6472	Both	Yes	No
Pwr Crd 2.7m 9ft wall OEM PDU	MMC	6473	Both	Yes	No
Pwr Crd 2.7m 9ft wall OEM PDU	MMC	6474	Both	Yes	No
Pwr Crd 2.7m 9ft wall OEM PDU	MMC	6475	Both	Yes	No
Pwr Crd 2.7m 9ft wall OEM PDU					

	MMC	6476	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	MMC	6477	Both	Yes	No
Pwr Crd 2.7m 9ft wall	OEM PDU				
	MMC	6478	Both	Yes	No
PWR Cord(9foot), (250V,10A)					
	MMC	6479	Support	Yes	No
Pwr Crd 1.8m 6ft wall	250V,15A				
	MMC	6487	Support	Yes	No
PWR Cord(9foot), (125V,15A)					
	MMC	6488	Both	Yes	No
4.3m (14 Ft) 3PH/24A Power Cor					
	MMC	6489	MES	Yes	No
4.3m (14 Ft) 1PH/48A Pwr Cord					
	MMC	6491	MES	Yes	No
4.3m (14 Ft) 1PH/48 60A Pwr Co					
	MMC	6492	MES	Yes	No
Pwr Crd 2.7m 9ft wall	250V,10A				
	MMC	6493	Both	Yes	No
Pwr Crd 2.7m 9ft wall	250V,10A				
	MMC	6494	Both	Yes	No
To wall/OEM PDU, (250V, 10A)					
	MMC	6495	Support	Yes	No
Pwr Crd 2.7m 9ft wall	250V,10A				
	MMC	6496	Both	Yes	No
PWR Cord(6ft),To wall/OEM PDU					
	MMC	6497	Both	Yes	No
Power Cord 6ftTo wall	OEM PDU				
	MMC	6498	Support	Yes	No
Power Cable Drawer to IBM PD					
	MMC	6577	Both	Yes	No
Optional Rack Security Kit					
	MMC	6580	MES	Yes	No
Modem Tray for 19-Inch Rack					
	MMC	6586	MES	Yes	No
Pwr Crd 2.7m 9ft wall	125V,15A				
	MMC	6651	Both	Yes	No
4.3m 1PH/24-30A Pwr Cord					
	MMC	6654	MES	Yes	No
4.3m 14Ft 1PH/24 30A WR Pwr					
	MMC	6655	MES	Yes	No
4.3m 14Ft 1PH/24A Power Cord					
	MMC	6656	MES	Yes	No
Pwr.Cord(9ft),To wall/OEM PDU					
	MMC	6659	Both	Yes	No
PWR Cord(14ft),Dr.to OEM PDU					
	MMC	6660	MES	Yes	No
2.1m 200V PDU Power Cable					
	MMC	6664	Support	Yes	No
Pwr Cord 3M, Drwr to IBM PDU					
	MMC	6665	Both	Yes	No
Pwr Crd 4.3M, Drwr - OEM PDU					
	MMC	6669	Both	Yes	No
Pwr Crd 6-FT, (125V,15A)PT#59					
	MMC	6670	Support	Yes	No
Pwr Crd 2.7M, Drwr - IBM PDU					
	MMC	6671	Both	Yes	No
Pwr Crd 1.5M, Drwr - IBM PDU					
	MMC	6672	Both	Yes	No
Pwr Crd 2.7M, wall - OEM PDU					
	MMC	6680	Both	Yes	No
Power Cord (6ft),To wall					
	MMC	6687	Support	Yes	No
PCI 2-Line WAN IOA No IOP					
	MMC	6805	Support	Yes	No
PCI 4-Modem WAN IOA No IOP					
	MMC	6808	Support	Yes	No
PCI 2-Line WAN w/Modem NoIOP					
	MMC	6833	Support	Yes	No
IIntelligent PDU+ 1 EIA Unit					
	MMC	7109	MES	Yes	No
Environmental Monitoring Probe					
	MMC	7118	Both	Yes	No
Power Distribution Unit					

Quantity 150 of #2124	MMC	7188	MES	Yes	No
Quantity 150 of #2125	MMC	7204	Support	Yes	No
Quantity 150 of #2126	MMC	7205	Support	Yes	No
Quantity 150 of #2127	MMC	7206	Support	Yes	No
Quantity 150 of #2128	MMC	7207	Support	Yes	No
Quantity 150 of #2138	MMC	7208	Support	Yes	No
AAP Software Pre-Inst.Indic.	MMC	7213	Support	Yes	No
I/O Drawer Mounting Enclosure	MMC	7305	Initial	N/A	No
On/Off, 1GB-1Day Billing	MMC	7314	Both	Yes	No
Quantity 150 of #4327	MMC	7377	MES	Yes	No
Quantity 150 of #4328	MMC	7509	Support	Yes	No
Quantity 150 of #4329	MMC	7510	Support	Yes	No
Quantity 150 of #5741	MMC	7511	Support	Yes	No
Quantity 150 of #3676	MMC	7514	Support	Yes	No
Quantity 150 of #3677	MMC	7517	Support	Yes	No
Quantity 150 of #3678	MMC	7518	Support	Yes	No
Quantity 150 of 3586	MMC	7519	Support	Yes	No
Quantity 150 of 3587	MMC	7535	Support	Yes	No
Quantity 150 of 3658	MMC	7536	Support	Yes	No
Quantity 150 of #1884	MMC	7538	Support	Yes	No
Quantity 150 of #1888	MMC	7543	Support	Yes	No
Quantity 150 of #1890	MMC	7544	Both	Yes	No
Quantity 150 of #1909	MMC	7545	Support	Yes	No
Quantity 150 of #1885	MMC	7546	Support	Yes	No
Quantity 150 of #1886	MMC	7547	Both	Yes	No
Quantity 150 of 3647	MMC	7548	Both	Yes	No
Quantity 150 of #1790	MMC	7549	Support	Yes	No
PCIe RAID SSD SAS Adapter 3Gb	MMC	7550	Both	Yes	No
Quantity 150 of 3648	MMC	7557	Both	Yes	No
Quantity 150 of 3649	MMC	7564	Support	Yes	No
Quantity 150 of #1916	MMC	7565	Support	Yes	No
QTY 150 177GB SFF-1 SSD 1775	MMC	7566	Both	Yes	No
QTY 150 177GB SFF-1 SSD IBM i	MMC	7578	Both	Yes	No
2.0m Rack Side Attach Kit	MMC	7582	Both	Yes	No
Eth Cbl 6M HW Management	MMC	7780	Support	Yes	No
Eth Cbl 15M HW Management	MMC	7801	Support	Yes	No
Side-by-Side for 1.8m Racks	MMC	7802	Both	Yes	No

Ruggedize Rack Kit	MMC	7840	Support	Yes	No
PCI Blind Swap Cassette Kit	MMC	7841	Support	Yes	No
PCI Blind Swap Cassette Kit	MMC	7862	Support	Yes	No
PowerVM Standard Edition	MMC	7863	MES	Yes	No
On/Off Processor Enablement	MMC	7942	Both	Yes	No
On/Off Memory Enablement	MMC	7951	MES	Yes	No
PowerVM Enterprise Edition	MMC	7954	MES	Yes	No
570toMMA Adv POWER Virt COI	MMC	7995	Both	Yes	No
Advanced POWER Virtualization	MMC	8018	MES	Yes	No
RJ-45 to DB-25 Converter Cable	MMC	8030	MES	Yes	No
Linux Software Preinstall	MMC	8133	Support	Yes	No
Linux Software Preinstall BP	MMC	8143	Initial	N/A	No
Activation of 1 GB DDR3 POWER7	MMC	8144	Initial	N/A	No
Act of 100 GB DDR3 POWER7	MMC	8212	Both	Yes	No
One Processor Activation for P	MMC	8213	Both	Yes	No
PWR Cord Carry Over Ind,#9802	MMC	8430	Support	Yes	No
PWR Cord Carry Over Ind,#9820	MMC	8431	Support	Yes	No
PWR Cord Carry Over Ind,#9821	MMC	8432	Support	Yes	No
PWR Cord Carry Over Ind,#9825	MMC	8433	Support	Yes	No
PWR Cord Carry Over Ind,#9827	MMC	8434	Support	Yes	No
PWR Cord Carry Over Ind,#9828	MMC	8435	Support	Yes	No
PWR Cord Carry Over Ind,#9829	MMC	8436	Support	Yes	No
PWR Cord Carry Over Ind,#9830	MMC	8437	Support	Yes	No
PWR Cord Carry Over Ind,#9831	MMC	8438	Support	Yes	No
PWR Cord Carry Over Ind,#9833	MMC	8439	Support	Yes	No
PWR Cord Carry Over Ind,#9834	MMC	8440	Support	Yes	No
Base Customer Spec Plcmnt	MMC	8441	Support	Yes	No
Carry-over Indicator for 5665	MMC	8453	Initial	N/A	No
Carry-over Indicator for 5652	MMC	8525	MES	No	No
Carry-over Indicator for 8212	MMC	8526	MES	No	No
Carry-over Indicator for 8213	MMC	8527	MES	Yes	No
Carry-over Indicator for 5662	MMC	8528	MES	Yes	No
Carry-over Indicator for 1853	MMC	8529	MES	No	No
Mouse-USB,Black KBD Att C	MMC	8532	MES	No	No
USB Mouse	MMC	8841	Support	Yes	No
Order Routing Indicator System	MMC	8845	Both	Yes	No
Language Group Spcf-US Eng	MMC	9169	Initial	N/A	No

specify mode-1 & (1)5901/5278	MMC	9300	NC	Initial	N/A	No
specify mode-1 & (2)5901/5278	MMC	9359		Initial	N/A	No
specify mode-2 & (2)5901/5278	MMC	9360		Both	Yes	No
specify mode-4 & (4)5901/5278	MMC	9361		Both	Yes	No
specify mode-2 & (4)5901/5278	MMC	9365		Both	Yes	No
specify mode-1 & (2)5903/5805	MMC	9366		Both	Yes	No
specify mode-2 & (4)5903/5805	MMC	9367		Both	Yes	No
specify mode-1 & (1)5904/6/8	MMC	9368		Both	Yes	No
specify mode-1 & (2) 5904/6/8	MMC	9382		MES	Yes	No
specify mode-1 & CEC SAS port	MMC	9383		MES	Yes	No
specify mode-1 & (2) 5913 EXP	MMC	9384		Both	Yes	No
specify mode-2 & (4) 5913 EXP	MMC	9385		Both	Yes	No
New AIX License Core Counter	MMC	9386		Both	Yes	No
New IBM i Lic Core Counter	MMC	9440	NC	Initial	N/A	No
New Red Hat Lic Core Counter	MMC	9441	NC	Initial	N/A	No
New SUSE Lic Core Counter	MMC	9442	NC	Initial	N/A	No
Other AIX Lic Core Counter	MMC	9443	NC	Initial	N/A	No
Other Linux Lic Core Counter	MMC	9444	NC	Initial	N/A	No
3rd Party Linux Lic Core Cnt	MMC	9445	NC	Initial	N/A	No
VIOS Core Counter	MMC	9446	NC	Initial	N/A	No
Month Indicator	MMC	9447	NC	Initial	N/A	No
Day Indicator	MMC	9461		Initial	N/A	No
Hour Indicator	MMC	9462		Initial	N/A	No
Minute Indicator	MMC	9463		Initial	N/A	No
Qty Indicator	MMC	9464		Initial	N/A	No
Countable Member Indicator	MMC	9465		Initial	N/A	No
Reserved Rack Space Indicator	MMC	9466		Initial	N/A	No
Language Group Spcf-Dutch	MMC	9570	NC	Initial	N/A	No
Language Group Spcf-French	MMC	9700	NC	Initial	N/A	No
Language Group Spcf-German	MMC	9703	NC	Initial	N/A	No
Language Group Spcf-Polish	MMC	9704	NC	Initial	N/A	No
Lang Group Specify - Norwegian	MMC	9705	NC	Initial	N/A	No
Lang.Group Spcf-Portuguese	MMC	9706	NC	Initial	N/A	No
Language Group Spcf-Spanish	MMC	9707	NC	Initial	N/A	No
Language Group Spcf-Italian	MMC	9708	NC	Initial	N/A	No
Langua Gr Speci Canadian Frenc	MMC	9711	NC	Initial	N/A	No
Language Group Spcf-Japanese	MMC	9712	NC	Initial	N/A	No

Language Group Specify Tr Chin	MMC	9714	NC	Initial	N/A	No
Language Group Spcf-Korean	MMC	9715	NC	Initial	N/A	No
Language Group Spcf-Turkish	MMC	9716	NC	Initial	N/A	No
Language Group Spcf-Hungarian	MMC	9718	NC	Initial	N/A	No
Language Group Spcf-Slovakian	MMC	9719	NC	Initial	N/A	No
Language Group Spcf-Russian	MMC	9720	NC	Initial	N/A	No
Lang Group Spcf Simpl Chinese	MMC	9721	NC	Initial	N/A	No
Language Group Spcf-Czech	MMC	9722	NC	Initial	N/A	No
Language Group Spcf-Romanian	MMC	9724	NC	Initial	N/A	No
Lang Group Specify - Croatian	MMC	9725	NC	Initial	N/A	No
Language Group Spcf-Slovenian	MMC	9726	NC	Initial	N/A	No
Lang Group Specify - Braz Port	MMC	9727	NC	Initial	N/A	No
Lang Group Specify - Thai	MMC	9728	NC	Initial	N/A	No
Carry-over Indicator for 4992	MMC	9729	NC	Initial	N/A	No
Carry-over Inicator for 4997	MMC	EH01		MES	Yes	No
Carry-over for AME #4791	MMC	EH02		MES	Yes	No
Trial Live Partition Mobility	MMC	EH03		MES	Yes	No
1m 10GbE Cable SFP+ Act Twinax	MMC	ELPM		Both	Yes	No
3m 10GbE Cable SFP+ Act Twinax	MMC	EN01		Both	Yes	No
5m 10GbE Cable SFP+ Act Twinax	MMC	EN02		Both	Yes	No
100 On/Off Prc-Days #4983 AIXL	MMC	EN03		Both	Yes	No
100 On/Off Prc-Days #4983 IBMi	MMC	EP2G		MES	Yes	No
100 On/Off Prc-Days #4984 AIXL	MMC	EP2H		MES	Yes	No
100 On/Off Prc-Days #4984 IBMi	MMC	EP2J		MES	Yes	No
1TB Removable Disk Cartridge	MMC	EP2K		MES	Yes	No
Service Processor-2	MMC	EU01		Both	Yes	No
	MMC	EU05		Both	No	No

The following are newly announced features on the specific models of the IBM Power Systems 1455, 9117, and 9179 machine type:

Description	Model	Feature	Purchase	Minimum Initial/ Monthly Maint. Charge	MES/ Both/ Support	RP CSU MES
1 yr. SW Update for 1455-48E	1455-48E	EB21			Both	Yes
1 yr. SW Update for 1455-64C	1455-64C	EB22			Both	Yes
1 yr. SW Update for 1455-24E	1455-24E	EB23			Both	Yes

Description	Model	Feature	Purchase	Minimum Initial/ Monthly MES/ Maint. Charge	Both/ Support	RP CSU MES
Machine type 9117	number	number	price			
On/Off, 999 GB-Days Billing	MMB	4710			MES	Yes No
100 On/Off Prc-Days #4980	AIXL				MES	Yes No
100 On/Off Prc-Days #4980	MMB	EP2A			MES	Yes No
100 On/Off Prc-Days #4981	AIXL				MES	Yes No
100 On/Off Prc-Days #4981	MMB	EP2C			MES	Yes No
100 On/Off Prc-Days #4981	MMB	EP2D			MES	Yes No

Description	Model	Feature	Purchase	Minimum Initial/ Monthly MES/ Maint. Charge	Both/ Support	RP CSU MES
Machine type 9179	number	number	price			
On/Off, 999 GB-Days Billing	MHB	4710			MES	Yes No
100 On/Off Prc-Days #4982	AIXL				MES	Yes No
100 On/Off Prc-Days #4982	MHB	EP2E			MES	Yes No
100 On/Off Prc-Days #4982	MHB	EP2F			MES	Yes No

Feature conversions

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

From FC:	To FC:	Parts returned	Purchase price
4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	4809 - PCIe Crypto Coprocessor Gen4 BSC 4765-001	Yes	
5904 - PCI-X DDR 1.5GB Cache SAS RAID Adapter	5908 - PCI-X DDR 1.5GB Cache SAS RAID Adapter (BSC)	Yes	

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

From FC:	To FC:	Parts returned	Purchase price
4495 - 4/8GB (4X2GB) DIMMS, 276 PIN 533 MHZ, DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHZ - POWER7 CoD Memory	Yes	
4496 - 8/16GB (4X4GB) DIMMS, 276 PIN, 533 MHZ DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHZ - POWER7 CoD Memory	Yes	
4497 - 16GB (4X4GB) DIMMS, 276 PIN, 533 MHZ, DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHZ - POWER7 CoD Memory	Yes	
4499 - 16GB (4X4GB) DIMMS, 276 pin, 400MHZ DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHZ - POWER7 CoD Memory	Yes	
5693 - 0/4GB DDR2 Memory (4X1GB) DIMMS- 667 MHZ- POWER6 CoD Memory	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHZ - POWER7 CoD Memory	Yes	
5694 - 0/8GB DDR2 Memory (4X2GB) DIMMS- 667 MHZ- POWER6 CoD Memory	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHZ - POWER7 CoD Memory	Yes	

5695 - 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 CoD Memory	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
7892 - 2GB (4x512MB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
7893 - 4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
7894 - 8GB (4x2GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5600 - 0/32GB DDR3 Memory (4X8GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
4495 - 4/8GB (4X2GB) DIMMs, 276 PIN 533 MHz, DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
4496 - 8/16GB (4X4GB) DIMMS, 276 PIN, 533 MHz DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
4497 - 16GB (4X4GB) DIMMs, 276 PIN, 533 MHz, DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
4498 - 32GB (4X8GB) DIMMs, 276 pin, 400MHz DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
4499 - 16GB (4X4GB) DIMMs, 276 pin, 400MHz DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
5693 - 0/4GB DDR2 Memory (4X1GB) DIMMs- 667 MHz- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
5694 - 0/8GB DDR2 Memory (4X2GB) DIMMs- 667 MHz- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
5695 - 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
5696 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
7892 - 2GB (4x512MB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
7893 - 4GB (4x1GB) DIMMs, 276-pin, 533MHz DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
7894 - 8GB (4x2GB) DIMMs, 276-pin, 533 MHz DDR2 SDRAM	5601 - 0/64GB DDR3 Memory (4X16GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
4496 - 8/16GB (4X4GB) DIMMs, 276 PIN, 533 MHz DDR2 SDRAM	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMS - 1066 MHz - POWER7 CoD Memory	Yes
4497 - 16GB (4X4GB) DIMMs, 276 PIN, 533 MHz,	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMS -	Yes

DDR2 SDRAM	1066 MHz - POWER7 CoD Memory	
4498 - 32GB (4X8GB) DIMMs, 276 pin, 400MHz DDR2 SDRAM	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
4499 - 16GB (4X4GB) DIMMs, 276 pin, 400MHz DDR2 SDRAM	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
5690 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
5695 - 0/16GB DDR2 Memory (4X4GB) DIMMs- 533 MHz- POWER6 CoD Memory	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
5696 - 0/32GB DDR2 Memory (4X8GB) DIMMs- 400 MHz- POWER6 CoD Memory	5602 - 0/128GB DDR3 Memory (4X32GB) DIMMs - 1066 MHz - POWER7 CoD Memory	Yes
5680 - Activation of 1GB DDR2 POWER6 Memory	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7272 - 2GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7273 - 4GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7274 - 8GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7275 - 16GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7276 - 32GB CUoD Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
7663 - 1GB DDR2 Memory Activation	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
8017 - 570 to MMA CoD Memory Activation Carry Over Indicator	8212 - Activation of 1 GB DDR3 POWER7 Memory	No
5681 - Activation of 256 GB DDR2 POWER6 Memory	8213 - Activation of 100 GB DDR3 POWER7 Memory	No

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

From FC:	To FC:	Parts returned	Purchase price
5620 - 3.5 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
5621 - 4.2 GHz Proc Card, 0/2 Core POWER6, 8 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
5622 - 4.2 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
7380 - 4.7 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
7387 - 4.4GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots.	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
7388 - 5.0 GHz Proc Card, 0/2 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
7540 - 4.2 GHz Proc Card, 0/4 Core POWER6, 12 DDR2 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
4990 - Single 5250 Enterprise Enablement	4992 - Single 5250 Enterprise Enablement	No	
4991 - Full 5250 Enterprise Enablement	4997 - Full 5250 Enterprise Enablement	No	
5403 - One Processor	5329 - 1-Core Activation	No	

Activation for Processor Feature #7380	for Processor Feature #4983	
5670 - One Processor	5329 - 1-Core Activation	No
Activation for Processor Feature #5620	for Processor Feature #4983	
5671 - One Processor	5329 - 1-Core Activation	No
Activation for Processor Feature #5621	for Processor Feature #4983	
5672 - One Processor	5329 - 1-Core Activation	No
Activation for Processor Feature #5622	for Processor Feature #4983	
7306 - One Processor	5329 - 1-Core Activation	No
Activation for Processor Feature #7388	for Processor Feature #4983	
7700 - One Processor	5329 - 1-Core Activation	No
Activation for Processor Feature #7540	for Processor Feature #4983	
7719 - One Processor	5329 - 1-Core Activation	No
Activation for Processor Feature #7387	for Processor Feature #4983	

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

From FC:	To FC:	Parts returned	Purchase price
5626 - System CEC Enclosure with IBM Bezel	5585 - System CEC Enclosure with IBM BEZEL, I/O Backplane, and System Midplane	Yes	
5683 - System Chassis - 4 EIA	5585 - System CEC Enclosure with IBM BEZEL, I/O Backplane, and System Midplane	Yes	
5627 - System CEC Enclosure with OEM Bezel + Labels	5586 - System CEC Enclosure with OEM BEZEL, I/O Backplane, and System Midplane	Yes	
6246 - 1.8m Rack Trim Kit	6263 - 1.8m Rack Trim Kit	No	
6247 - 2.0m Rack Trim Kit	6272 - 2.0m Rack Trim Kit	No	

Feature conversions for 9117-MMB to 9117-MMC adapter features

From FC:	To FC:	Parts returned	Purchase price
4808 - PCIe Crypto Coprocessor Gen3 BSC 4765-001	4809 - PCIe Crypto Coprocessor Gen4 BSC 4765-001	Yes	
5904 - PCI-X DDR 1.5GB Cache SAS RAID Adapter	5908 - PCI-X DDR 1.5GB Cache SAS RAID Adapter (BSC)	Yes	

Feature conversions for 9117-MMB to 9117-MMC processor features

From FC:	To FC:	Parts returned	Purchase price
4980 - 3.5 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
4981 - 3.1 GHz Proc Card, 0/16 Core POWER7, 16 DDR3 Memory Slots	4983 - 3.72 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	Yes	
4980 - 3.5 GHz Proc Card, 0/12 Core POWER7, 16 DDR3 Memory Slots	4984 - 3.30 GHz Proc Card, 0/16 Core POWER7, 16 DDR3 Memory Slots	Yes	
The conversion from #4980 in China or Taiwan.	to #4984 is not announced		
4981 - 3.1 GHz Proc Card, 0/16 Core POWER7, 16 DDR3 Memory Slots	4984 - 3.30 GHz Proc Card, 0/16 Core POWER7, 16 DDR3 Memory Slots	Yes	

The conversion from #4981 to #4984 is not announced in China or Taiwan.

5459 - One Processor Activation for Processor Feature #4980	5329 - 1-Core Activation for Processor Feature #4983	No
5468 - One Processor Activation for Processor Feature #4981	5329 - 1-Core Activation for Processor Feature #4983	No
5459 - One Processor Activation for Processor Feature #4980	5334 - 1-Core Activation for Processor Feature #4984	No

The conversion from #5459 to #5334 is not announced in China or Taiwan.

5468 - One Processor Activation for Processor Feature #4981	5334 - 1-Core Activation for Processor Feature #4984	No
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The conversion from #5468 to #5334 is not announced in China or Taiwan.

Feature conversions for 9117-MMB to 9117-MMC rack-related features

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

Feature conversions for 9117-MMB to 9117-MMC system unit base features

From FC:	To FC:	Parts returned	Purchase price
5659 - System CEC Enclosure with IBM BEZEL, I/O Backplane, and System Midplane	5585 - System CEC Enclosure with IBM BEZEL, I/O Backplane, and System Midplane	Yes	
5669 - System CEC Enclosure with OEM BEZEL, I/O Backplane, and System Midplane	5586 - System CEC Enclosure with OEM BEZEL, I/O Backplane, and System Midplane	Yes	

Feature conversions for 9117-MMC virtualization engine features

From FC:	To FC:	Parts returned	Purchase price
7942 - PowerVM -Standard Edition	7995 - PowerVM - Enterprise Edition	No	

ServicePac prices

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Model conversion purchase price

From	Model To	Model conversion purchase price*
9117-MMA	9117-MMC	
9117-MMB	9117-MMC	

* Parts removed or replaced become the property of IBM and must be returned.

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Corrections

(Corrected on January 19, 2012)

The Software requirements section was revised with additional APAR requirements.