IBM pSeries p5 Systems

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9111-520
IBM eServer p5-520
Deskside and Rack-mount Server Model 520

Available 2004/08/31

Deskside or 4U Rack-Mount Server available in 1-way or 2-way configurations, utilizing Symmetric MultiProcessor (SMP) 64-bit Copper-Based POWER5 Microprocessors.

Available Processor Cards:
==========
#5231: 1.5GHz 1-way POWER5 Processor 0MB L3 Cache
#5226: 1.5GHz 2-way POWER5 Processor 36MB L3 Cache
#5229: 1.65GHz 2-way POWER5 Processor 36MB L3 Cache

Only one processor card may be installed in the system.
Processor Cards are soldered (hard wired) to the planar.

Memory:
==========
512MB to 32GB DDR-I 266MHz ECC Base Memory (min 1.0GB per Processor for Value Pak Entitlement)

Max 8x Memory Slots

Available Memory FCs:
#4443: 512MB (2x256MB) DDR-1 DIMMs 208-pin 266MHz SDRAM
#4444: 1024MB (4x256MB) DDR-1 DIMMs 208-pin 266MHz SDRAM
#4445: 4096MB (4x1024MB) DDR-1 DIMMs 208-pin 266MHz SDRAM
#4447: 2048MB (4x512MB) DDR-1 DIMMs 208-pin 266MHz SDRAM
#4449: 8192MB (4x2048MB) DDR-1 DIMMs 208-pin 266MHz Stacked SDRAM
#4450: 16GB   (4x4096MB) DDR-1 DIMMs 208-pin 266MHz Stacked SDRAM

Memory Limitations:
#4443:   installed in pairs
#4444, #4445, #4447, #4449, #4450 installed in quads
Memory FCs may be mixed within a system

DASD and Media Bays:
==========
Up to 11 DASD and Media Bays:
 - 4x Hot-Swap DASD Bays (4-Pack Front Access) - expandable to 8x H/S DASD Bays
   (Up to 1174.4GB DASD Capacity at announcement)
 - 2x Slimline Media Bays for DVD-ROM / DVD-RAM
 - 1x Media Bay for Tape Drive

I/O Slots:
==========
6x 3.3V Hot swap PCI-X Slots
 - 3x 64-bit 3.3V 133MHz (Long)
 - 1x 64-bit 3.3V 133MHz (Short)
 - 2x 32-bit 3.3V 66MHz (Short)

Standard Components:
==========
1x Integrated Ultra320 SCSI Controller w/Dual Internal Ports (RAID via optional Adapter)
1x Dual Port 10/100/1000 Integrated Ethernet (2x Ports)
2x Serial Ports, USB Ports, HMC Ports, Remote I/O (RIO-2) Ports
Service Processor
850W Hot-Swap Power and Cooling (Optional Redundant P/S Available)
Redundant Fans for Cooling

Other Supported Capabilities:
==========
Dynamic Logical Partitioning (LPAR)
Up to two partitions are supported by AIX - and only in the Linux 2.6 kernel (currently available only in SUSE LINUX Enterprise Server 9 for POWER). The optional Advanced POWER Virtualization feature supports up to 10 partitions per processor.

Cluster 1600 Enhancements

The p5-520 is added to the hardware models supported with the pSeries Cluster 1600 running Cluster Systems Management (CSM) V1.4 (AIX or Linux). For hardware control using CSM, an HMC is required.

Included O/S (Choose one of):

AIX 5L V5.2 or V5.3 or
SUSE LINUX Enterprise Server 9 for POWER or
Red Hat Enterprise Linux AS for POWER V3

Default Minimum Configuration:

#5231: 1.5GHz 1-way Processor
#4443: 512MB Memory DIMM
#5158: 850W Base Power Supply
#3273: 36.4GB Hard Disk Drive
#6574: 4-Pack Disk Drive Enclosure
#7877: Media Backplane Card

Configuration Indicators:
#7919: IBM Deskside Cover Set for deskside system
#7918: IBM Rack-mount Drawer Bezel and Hardware and
#7160: IBM Rack-Mount Drawer Rail Kit for rack-mount system
Language Group Specify
Power Cord
A keyboard, mouse, graphics adapter, and monitor are available as options.

P5 520 Value Paks (only available as initial order)

Orders for a p5-520 with any of the available processors and a minimum config of memory, disks, media device etc. qualify for a processor entitlement at no additional charge. The number of processors, total memory, and quantity/size of disk, and presence of a media device are the only features that determine if a customer is entitled to processor entitlements at no charge. Customers are entitled to a discounted AIX operating system license or may choose to purchase the system with no operating system. The discounted AIX operating system license is processed via a feature code on AIX.

The minimum criteria for processor entitlements at no additional charge are 1GB of memory per active processor, 2x 36.4GB hard disk drives and a DVD-ROM. A DVD-RAM may be substituted for the DVD-ROM. Customers may make changes to the standard features as needed and still qualify for processor entitlements at no additional charge, and a discounted AIX operating system license. Selection of memory and/or disk drives smaller than those defined as the Value Pak minimums will disqualify the order as a Value Pak.

p5 520 Express Value Pak for 1.5GHz 1-way Processor
1x #5231: 1-way 1.5GHz Processor
1x #4444: 1GB Memory
2x #3273: 36.4GB Disk Drive
1x #2640: DVD-ROM
1x #8462: Processor Entitlement for 1x #5231 1.5GHz 1-way 0MB L3

p5 520 Express Value Pak for 1.5GHz 2-way Processor
1x #5226: 2-way 1.5GHz Processor
1x #4447: 2GB Memory
2x #3273: 36.4GB Disk Drive
1x #2640: DVD-ROM
1x #7602: Processor Entitlement for 1x #5226 1.5GHz 1-way 36MB L3
1x #8464: Processor Entitlement for 1x #5226 1.5GHz 1-way 36MB L3

p5 520 Value Pak for 1.65GHz 2-way Processor
1x #5229: 2-way 1.65GHz Processor
1x #4447: 2GB Memory
2x #3273: 36.4GB Disk Drive
1x #2640: DVD-ROM
1x #7606: Processor Entitlement for 1x #5229 1.65GHz 2-way 36MB L3
1x #8474: Processor Entitlement for 1x #5229 1.65GHz 2-way 36MB L3

Technical Specifications:

Physical Specifications:
Deskside/Desktop:
Width: 203 mm (08.0 in)
Depth: 584 mm (23.0 in)
Height: 537 mm (21.1 in)

Rack - Mount:
Width: 437 mm (17.2 in)
Depth: 508 mm (20.0 in)
Height: 178 mm (07.0 in)

Weight:
Minimum configuration: 35.5 Kg (78 lb)
Maximum configuration: 43.0 Kg (95 lb)

Operating Environment
Temperature: (nonoperating) 5 to 45 degrees C (41 to 113 F)
Recommended temperature (Operating) 5 to 35 degrees C (41 to 95 F)
Relative humidity: 8 % to 80 %
Maximum wet bulb: (Power Off) 27 degrees C (80 F)

Operating voltage: 100 to 127 or 200 to 240 V ac (auto-ranging)
Operating frequency: 47/63 Hz
Power consumption: 600 watts (maximum)
Thermal output: 2,046 Btu/hour (maximum)

Power-source loading:
- o 0.632 kVA (maximum configuration)
- o Maximum altitude: 3,048 m (10,000 ft)

System Limitations:

If #4270: External SCSI Port Enablement Cable is installed:
1x PCI-X slot is required.
2nd Four-Pack Disk Enclosure (2nd #6574 or 1st #6594) cannot be installed
Max external cable length supported by #4270 is 6 meters.

When an HMC is connected to the system the Integrated Serial Ports are rendered On/Functional. Consequently, a separate async adapter is required for serial port usage.

#6587 Acoustic Option Rear Muffler is only available with #7919 Deskside Cover Set

Graphics Adapters: Max: 2

I/O Adapters:
FC #5709 SCSI RAID Enablement Card does not use a PCI-X Slot - it has a dedicated slot

I/O Adapter Placement:

FC	I/O Adapter	Max	Priority	Size
#2738:	2-port USB PCI	2	1,4,2,3,5,6	Short
#2943:	8-Port Async	6	1,4,2,3,5,6	Short
#2944:	128-Port Async	6	1,4,2,3,5,6	Short
#2947:	Artic960 Hx 4-ports	3	4,5,6	Long
#2962:	2-Port Multiprotocol	6	1,4,2,3,5,6	Short
#2849:	GXT135P Graphics Accelerator	2	1,4,2,3,5,6	Short
#4959:	4/16 Token Ring	4	1,4,2,3,5,6	Short
#4962:	10/100 Ethernet	6	1,4,2,3,5,6	Short
#5700:	Gigabit Ethernet	6	1,4,5,6,2,3	Short
#5701:	10/100/1000 Ethernet	6	1,4,5,6,2,3	Short
#5703:	PCI-X Ultra320 SCSI RAID	3	4,5,6	Long
#5706:	2-port 10/100/1000 E/Net	6	1,4,5,6,2,3	Short
#5707:	2-port Gigabit E/Net-SX	6	1,4,5,6,2,3	Short
#5709:	SCSI RAID Enablement Card	1	N/A	N/A
#5712:	PCI-X Ultra320 SCSI	6	1,4,5,6,2,3	Short
#5716:	2GB Fibre Channel	6	1,4,5,6,2,3	Short
#5718:	10 Gigabit Ethernet PCI-X	2	1,4,5,6	Short
#6204:	Ultra SCSI Differential	2	1,4,2,3,5,6	Short
#6312:	Quad Digital Trunk	2	4,5,6	Long
#8244:	Audio PCI Adapter	1	2,3	Short

Storage devices/Bays:
==========
p5 520 supports 2x DASD 4-packs - 1x mandatory (#6574) 1x optional (#6574 or #6594)

If optional tape drive FC 6258, 6120 or 6134 installed, cable FC 4263 is required.
Cable FC 4263 requires 6258, 6120, or 6134

First optical device can only be installed in the top slimline media bay (Bay D2) in a rack config

If Linux O/S is being installed, a DVD optical device is required

DASD should be installed in order of ascending capacity (smallest to largest)
Boot DASD is placed in DASD slot 8.
For 1x 4-pack systems: DASD is filled in slots 7, 6, 5.
For 2x 4-pack systems: DASD is filled in slots 4, 7, 3, 6, 2, 5, 1

I/O Drawers
==========
The system can be attached to 7311-D20 I/O drawers using the standard RIO-2 ports
A max of 4x RIO-2 I/O Drawers and 1x RIO Loop are supported

p5 520 HA Solution Configuration - Rack Configuration
==========
The HA solution package must include the following, ordered together:

 2x model 520 servers, each incorporating a minimum of:
 1x 5229: 1.65GHz 2-way POWER5 Processor 36MB L3 Cache
 1x 4443: 512MB memory DIMM
 1x 3273: 36.4GB disk drive
 1x 6574: 4-pack disk drive enclosure
 1x 5158: 850W Base Power Supply
 1x 7877: Media Backplane Card
 2x Configuration indicators:
    #7918: IBM bezel
    #7160: IBM rack-mounting rails or
    #7161: OEM rack-mounting rails
 1x Power Cord
 1x Language Group Specify

 2x SCSI adapters or 1x SCSI adapter and FC 4270
 2x LAN adapters (1x integrated Ethernet port may be used)
 1x redundant CEC AC Power Supply (#5158)
 1x Asynchronous Adapter (#2943/#2944)
 1x Serial-to-Serial Port Cable for Drawer/Drawer (#3124 #3125)

Only 1x serial cable (#3124/#3125) is needed for the 2x model 520 systems.
Redundant dedicated heartbeat and messaging paths are required via LAN and asynchronous ports on each server.

Additional optional model 520 features can be added.
 1x AIX 5L V5.2 license
 1x HACMP license:
 1x 7014-T00 or 7014-T42 System Rack (additional 7014-T00/T42 FCs may be added)
 1x 2104-DS4 Expandable Storage Plus (additional 2104-DS4 FCs may be added)

RAID Support:

Internal RAID is available on the model 520. A number of options are available to customers wanting to install RAID on their systems:

Install FC 5709 Dual Channel SCSI RAID Enablement Card
Install 4x disk drives in FC 6574 Ultra320 SCSI 4-pack enclosure
This will allow RAID capabilities within a single 4-pack of DASD

Install FC 5709 Dual Channel SCSI RAID Enablement Card
Install a second FC 6574 Ultra320 SCSI 4-pack enclosure
This will allow RAID capabilities across two 4-packs of DASD

Install FC 5709 Dual Channel SCSI RAID Enablement Card
Install FC 6594 Ultra320 SCSI 4-Pack Enclosure for Disk Mirroring
Install FC 5703 PCI-X Dual Channel Ultra320 SCSI RAID Adapter
Install FC 4267 SCSI Cable which connects the PCI Adapter to FC 6594.

Software Requirements:

If installing AIX on the system (one of these):
AIX 5L for POWER: V5.2 w/5200-04 Maint Pack APAR IY56722 or V5.3 /or later
FC #7940 Advanced POWER Virtualization is not supported on AIX 5L for POWER V5.2

If installing Linux on the system (one of these):
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER V3
Not all p5-520 System features available on Linux O/S

Information on FCs and Devices supported by Linux can be found at:
http://www-1.ibm.com/servers/eserver/pseries/linux

If installing p5 520 server within the Cluster 1600:
CSM V1.4 (AIX or LINUX)

Publications:

SK3T-8159 IBM eServer Hardware Information Center CD-ROM
G229-9054 IBM eServer Safety Information
SA41-5156 Start Here for IBM eServer
Z125-4753 IBM Statement of Limited Warranty
Z125-5468 IBM License Agreement for Machine Code
GC52-1065 Pointer Sheet for Machine Internal Code License Agreement

Reliability, Availability, and Serviceability (RAS):

L3 cache and system memory ECC
System memory 4-bit packet error detection
System bus, I/O bus, PCI bus parity error detection.
Disk mirroring and disk controller duplexing capability are provided by the AIX operating system.
Linux supports DASD mirroring (RAID 1) via the md driver. Linux supported RAID adapters also support mirroring.
Journaled File System maintains file system consistency and reduces data loss when the system is abnormally halted due to a power failure.

PCI Extended Error Handling (EEH) (not supported under Linux)
Under AIX, a PCI EEH enabled adapter reporting a Bus Parity Error allows firmware to reset the affected adapter and continue without a system reboot. Currently, Linux does not support PCI EEH. In the event of a PCI error, the system will machine check and a reboot will be required to continue.

Memory error correction extensions
Standard memory has single error checking and double error detect ECC circuitry to correct single-bit memory failures. Double Bit Detection allows detecting and reporting multiple errors beyond ECC tolerances. p5 memory chips are organized such that the failure of any specific memory module only affects a single bit within an ECC word (bit scattering). This allows for error correction and continued operation in the presence of a complete chip failure (Chipkill recovery).

System memory also utilizes memory scrubbing and thresholding to determine when spare memory modules within each bank of memory should be used to replace ones that have exceeded their threshold value (dynamic bit steering).

Redundancy for array self-healing
For the L1, L2, and L3 Caches and their Directories, hardware and firmware keep track of whether permanent errors are being corrected beyond a threshold. If exceeded, a deferred repair error log is created. Additional run-time availability actions, such as CPU Vary Off (Linux running the 2.6 kernel) or L3 Cache Line Delete, are also initiated.

L1 and L2 caches and L2 and L3 directories on the POWER5 chip are manufactured with spare bits in their arrays that can be accessed via programmable steering logic to replace faulty bits in the respective arrays. The steering logic is activated during processor initialization and is initiated by the built-in self-test (BIST) at power-on time. L3 Cache redundancy is implemented at the cache line level. Exceeding correctable error thresholds while running causes a Dynamic L3 Cache line delete function to be invoked.

Service Processor
The Service Processor provides immediate diagnostics, check status, and sense operational conditions of a remote system, even when the main processor is inoperable. The SP also enables firmware and operating system surveillance, several remote power controls, environmental monitoring (only critical errors are supported under Linux), reset, boot features, remote maintenance, and diagnostic activities, including console mirroring. The SP can place calls to report surveillance failures, critical environmental faults, and critical processing faults.

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

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

Environmental monitoring functions
Temperature, Fan speed and Voltage are monitored to provide a warning and allow for orderly shutdown when operational specifications are exceeded.
Temperature monitoring also increases fan speed when ambient temp is above the normal operating range

Error handling and reporting
System run-time error capture capability systematically analyzes the hardware error signature to determine the cause of failure. The analysis will be stored in the system NVRAM. When the system can be successfully rebooted either manually or automatically, the error will be reported to the AIX or Linux operating system.

Error Log Analysis (ELA) can be used to display the failure cause and the physical location of failing hardware.

A hardware fault will turn on the two Attention Indicators (one on the front and one on the rear of the system). The indicator may also be turned on by the operator as a tool to allow system identification.

Availability enhancement functions
The auto-restart (reboot) option, when enabled, can reboot the system automatically following an unrecoverable software error, software hang, hardware failure, or environmentally induced (AC power) failure.

Serviceability & Service Agent
LEDs indicate parts needing to be replaced.

Support personnel can remotely log into a system to review error logs and perform remote maintenance.

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

The Service Agent is available at no additional charge and monitors and analyzes system errors. If needed, it can automatically place a service call to IBM without customer intervention.

This info brief is based upon various industry sources, including published IBM documentation, technical publications and marketing materials:

Reference URLs: (http://www.)

IBM Public Announcements:	ibm.com/common/ssi/OIAccess.wss
IBM SalesManual:	ibm.com/common/ssi/OIAccess.wss
eServerInfoCenter	http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/
pSeries Facts and Features	ibm.com/servers/eserver/pseries/hardware/factsfeatures.pdf
Various Whitepapers	redbooks.ibm.com
RISC Analysis	riscanalysis.com

Content derived from IBM documentation, technical publications and marketing materials has been modified to allow for technical corrections, reduced repetition and ease of comprehension.

9113-550
IBM eServer p5 550
Model 550

Available 2004/08/31

Deskside or 4U Rack-Mount Server available in 1-way, 2-way or 4-way configurations, utilizing Symmetric MultiProcessor (SMP) 64-bit Copper-Based POWER5 Microprocessors.

Processor Cards:

Each processor card contains 32KB of Data Cache and 64KB of Instruction Cache
Each processor card contains 1.9MB of Level 2 cache and 8x Memory DIMM Slots
Max of One 1-way Processor Card or Two 2-way Processor Cards

#5239: 1.5GHz 1-way Processor Card 0MB L3 Cache (Max: 1)
#5264: 1.5GHz 2-way Processor card 36MB L3 Cache (Max: 2)
#5237: 1.65GHz 2-way Processor Card 36MB L3 Cache (Max: 2)

#5239: 1.5GHz 1-way POWER5 Processor Card

Must be entitled via 1x #7601 or 1x #8463
#7601: One Processor Entitlement for Processor Feature #5239 1.5GHz 1-way
#8463: Zero-priced Value Pak Processor Entitlement for #5239 1.5GHz 1-way

#5264: 1.5GHz 2-way POWER5 Processor Card

Requires at least one #7603 Processor Entitlement Feature
Max: 2x Processor Entitlement Features (2x #7603 or 1x #7603 + 1x #8465) per Processor Card
#7603: One Processor Entitlement for Processor Feature #5264 1.5GHz 2-way
#8465: Zero-priced Value Pak Processor Entitlement for #5264 1.5GHz 2-way

#5237: 1.65GHz 2-way POWER5 Processor Card

Requires at least one #7871 Processor Activation Feature
Max: 2x Processor Activation Features (2x #7871 or 1x #7871 + 1x #8450) per Processor Card
1x #7871: One Processor Activation for CUoD Processor Feature #5237: 1.65GHz 2-way CUoD
1x #8450: Zero-priced Value Pak Processor Activation Code for #5237: 1.65GHz 2-way CUoD

Memory:

512MB to 64GB DDR-I 266MHz ECC memory
Min: 512MB Memory (2.0GB Min for base Value Pak Entitlement)
Max: 32GB System Memory with 1x Processor Card
Max: 64GB System Memory with 2x Processor Cards

8x Memory DIMM slots per Processor Card
Memory DIMMs #4443 must in pairs
Memory DIMMs (#4444, #4445, #4447, #4449, #4450) must be ordered and installed in quads
Memory FCs may be mixed within a system.

FC	Capacity / # DIMMs / Type	Config	FC Max
#4443:	512MB (2x 256MB) DDR 208-pin 266MHz	Pairs	2
#4444:	1GB (4x 256MB) DDR-1 208-pin 266MHz	Quads	4
#4445:	4GB (4x 1024MB) DDR-1 208-pin 266MHz	Quads	4
#4447:	2GB (4x 512MB) DDR-1 208-pin 266MHz	Quads	4
#4449:	8GB (4x 2048MB) DDR-1 208-pin 266MHz	Quads	4
#4450:	16GB (4x 4096MB) DDR-1 208-pin 266MHz	Quads	4

DASD and Media Bays:

Up to 11 DASD and Media Bays:
- 4x Hot-Swap DASD Bays (4-Pack Front Access) - expandable to 8x H/S DASD Bays
  (Up to 1174.4GB DASD Capacity at announcement)
- 2x Slimline Media Bays for DVD-ROM / DVD-RAM
- 1x Media Bay for Tape Drive

I/O Slots:
==========
5x 3.3V Hot-Swap PCI-X Slots:
 - 4x 64-bit 3.3V 133MHz (Long).
 - 1x 64-bit 3.3V 133MHz (Short) This slot can be used to support FC #1806 Dual Port RIO-2 I/O Hub

Standard Components:
==========
1x Integrated Ultra320 SCSI Controller w/Dual Internal Ports (RAID via optional Adapter)
1x Dual Port 10/100/1000 Integrated Ethernet (2x Ports)
2x Serial Ports, USB Ports, HMC Ports, Remote I/O (RIO-2) Ports
1x Media Backplane
Service Processor
1475W Hot-Swap Power and Cooling (Optional Redundant P/S Available)
Redundant Fans for Cooling

Other Supported Capabilities:
==========
Dynamic logical partitioning (LPAR), with micropartitioning and Capacity Upgrade on Demand (CUoD) are supported on the p5-550

Cluster 1600 enhancements
The p5-550 is added to the hardware models supported with the pSeries Cluster 1600 running Cluster Systems Management (CSM) for V1.4 (AIX or Linux). For hardware control using CSM, an HMC is required

Included O/S (Choose one of):
==========
AIX V5.2 or V5.3   or
SUSE LINUX Enterprise Server 9 for POWER or
Red Hat Enterprise Linux AS for POWER Version 3

Default Minimum Configuration
==========
1x #5237: 1.65GHz 2-Way POWER5 CUoD Processor Card 0-Way Active

2x #7871: One Processor Activation for CUoD Processor Feature #5237 or

1x #7871: One Processor Activation for CUoD Processor Feature #5237 and
1x #8450: Zero-priced Value Pak Processor Activation Code for #5237

1x #7876: Processor Power Regulator
1x #4444: 1GB Memory DIMM
1x #7889: 1475W Base AC Power Supply
1x #3273: 36.4GB Hard Drive
1x #6592: 4-pack Disk Drive Enclosure
1x #2640: DVD-ROM
1x #7877: Media Backplane

Configuration Indicators:
1x #7887: IBM Deskside Cover Set or
1x #7886: IBM Rack-mount Drawer Bezel and Hardware and
1x #7162: IBM Rack-Mount Drawer Rail Kit
    Language Group Specify
    Power Cord
    A keyboard, mouse, graphics adapter, and monitor are available as options.

P5 550 Value Paks (only available as Initial Order):

Orders for a p5-550 with any of the available processors and a minimum config of memory and disks, qualify for a processor entitlement or activation at no additional charge. The number of processors, total memory, and quantity/size of disk are the only features that determine if a customer is entitled to processor entitlements or activations at no charge. Customers are entitled to a discounted AIX operating system license or may choose to purchase the system with no operating system. The discounted AIX operating system license is processed via a feature code on AIX.

The minimum criteria for processor entitlements at no additional charge are 2GB of memory per active processor, 2x 73.4GB hard disk drives. Customers may make changes to the standard features as needed and still qualify for processor entitlements at no additional charge, and a discounted AIX operating system license. Selection of memory and/or disk drives smaller than those defined as the Value Pak minimums will disqualify the order as a Value Pak.

p5 550 Express Value Paks for 1.5GHz 1-way Processor:
1x #5239: 1.5GHz 1-way Processor
1x #4447: 2GB Memory
2x #3274: 73.4GB Disk Drive
1x #8463: Zero-priced Value Pak Processor Entitlement for #5239
(1x Processor Entitled)

p5 550 Express Value Paks for 1.5GHz 2-way Processor:
1x #5264: 1.5GHz 2-way Processor
2x #4447: 4GB Memory
2x #3274: 73.4GB Disk Drive
1x #7603: One Processor Entitlement for Processor Feature #5264
1x #8465: Zero-priced Value Pak Processor Entitlement for #5264
(2x Processors entitled)

p5 550 Express Value Paks for 1.5GHz 2-way Processor:
2x #5264: 1.5GHz 2-way Processor
4x #4447: 8GB Memory
2x #3274: 73.4GB Disk Drive
2x #7603: One Processor Entitlement for Processor Feature #5264
2x #8465: Zero-priced Value Pak Processor Entitlement for #5264
(4x Processors Entitled)

p5 550 Value Paks for 1.65GHz 2-way Processor:
1x #5237: 1.65GHz 2-way Processor
2x #4447: 4GB Memory
2x #3274: 73.4GB Disk Drive
1x #7871: One Processor Activation for CUoD Processor Feature #5237
1x #8450: Zero-priced Value Pak Processor Activation Code for #5237
(2x Processors Activated)

p5 550 Value Paks for 1.65GHz 2-way Processor:
2x #5237: 1.65GHz 2-way Processor
4x #4447: 8GB Memory
2x #3274: 73.4GB Disk Drive
2x #7871: One Processor Activation for CUoD Processor Feature #5237
2x #8450: Zero-priced Value Pak Processor Activation Code for #5237
(4x Processors Activated)

Technical Specifications

Physical Specifications
Deskside/Desktop:
Width: 201 mm (07.9 in)
Depth: 779 mm (30.7 in)
Weight: 533 mm (21.1 in)

Rack - Mount:
Width: 437 mm (17.2 in)
Depth: 731 mm (28.8 in)
Height: 178 mm (07.0 in)

Weight:
 + Minimum configuration: 41.4 Kg (91 lb)
 + Maximum configuration: 57.0 Kg (125 lb)

Operating Environment
Temperature: (Nonoperating) 5 to 45 degrees C (41 to 113 F)
Relative humidity: 8 % to 80 %
Maximum wet bulb: (Power Off) 27 degrees C (80 F)

Operating voltage: 1-to 2-way 100-127 or 200-240V AC (Auto-Ranging)
Operating voltage: 4-way 200 to 240 V ac.

Operating frequency: 47/63 Hz
Power consumption: 1100 watts (maximum)
Thermal output: 3,754 Btu/hour (maximum)

Power source loading:
1.158 kVA (maximum configuration)
Maximum altitude: 3,048 m (10,000 ft)

Noise Level and Sound Power
Sound Power: Model 550 rack-mount -- 6.0 Bels Idle/6.0 Bels Operating
Sound Power: Model 550 deskside -- 6.6 Bels Idle/6.8 Bels Operating

Dynamic Logical Partitioning

The dynamic logical partitioning (LPAR) function provides enhanced resource management for the p5-550 server. Dynamic LPAR allows available system resources to be quickly and easily configured across multiple logical partitions.

Dynamic LPAR also allows users to add new system resources such as newly activated CUoD processors or new hot-plug PCI adapters into the system's configuration without requiring a reboot. As many as four LPARs are supported in a 4-way model 550 without FC #7941 Advanced POWER Virtualization. If FC 7941 is installed in the system, up to 10 dynamic LPARs per processor (20 per 2-way processor card) are supported in the stand-alone SMP server configuration on the model p5-550. Dynamic LPAR requires the use of a Hardware Management Console (HMC).

Dynamic logical partitioning is supported by the following levels of the AIX and Linux operating systems:
AIX 5L for POWER V5.2
SUSE LINUX Enterprise Server 9 for POWER
Not supported by current version of Red Hat Enterprise Linux AS for POWER V3

An IBM 7310-CR2 Rack-Mounted HMC or 7310-C03 Desktop HMC is required to manage POWER5 processor-based servers implementing partitioning. Multiple partitions and multiple POWER5 processor-based servers can be supported by an HMC, located locally or remotely attached to the IBM eServer.

The HMC is not required for a partition to run, but is required for an IBM eServer p5-550 system to create, define, and change the partition.

Capacity On Demand (CoD)

Capacity on Demand (CoD) adds operational and configuration flexibility for IBM eServer pSeries systems. Available for a fee, CoD allows additional processors to be added as they are needed. Processors can be brought online to meet increasing workload demands. If the system is configured for dynamic LPAR, this can be accomplished without impacting operations. This feature has significant value for users who want to upgrade without disruption, enhance their system RAS (reliability, availability, serviceability) characteristics, or simply grow with a

finer level of granularity. The CoD features allow a system to be manufactured (or upgraded in your locale) with inactive processors. The hardware is delivered with the processors built in, ready to be activated when needed. It can turned on by ordering the type of activation desired, at which time the user is provided an activation code to enable the processors.

An additional benefit of the CoD offering is dynamic processor sparing. For environments with CoD, dynamic processor sparing allows inactive processors to act as dynamic spares. An inactive processor is activated if a failing processor reaches a predetermined error threshold, thus helping to maintain performance and improve system availability. Starting with AIX 5L v5.2, this capability is offered on pSeries servers with CoD to help minimize the impact to server performance caused by a failed processor. Dynamic processor sparing will happen dynamically and automatically when using dynamic logical partitioning (DLPAR) and the failing processor is detected prior to failure. If a failure is not detected DLPAR is not being used, a reboot of the system or partition activates an alternate processor from the inactive spares. The user can then reestablish required performance levels without waiting for parts to arrive on-site. Dynamic processor sparing does not require the purchase of an activation code; it requires only that the system have inactive CoD.

Types Of CoD
After a system with the CoD features is delivered, they can be activated in the following ways:
Permanent Capacity Upgrade on Demand (CUoD)
On/Off Capacity on Demand
Reserve Capacity on Demand
Trial Capacity on Demand

Permanent CUoD
The Capacity Upgrade on Demand (CUoD) (FC 7941) for processors on the p5-550 allows you to have inactive processors installed in your system that can be easily activated as your business needs require. You must install a 2-way processors and activate at least two processors. When you need additional processing power, you simply order activation features that increase the number of active processors in your system in increments of one. FC 7871 (minimum of 2, maximum of 4) is ordered as needed to activate processors. CUoD for processors on the 550 is implemented via a keyed approach. When an activation order is received, you will receive an encrypted key, which enables the system's machine code to activate the processors.

Capacity Upgrade on Demand is supported by the following levels of the AIX and Linux operating systems:
AIX 5L for POWER V5.2, or later
SUSE LINUX Enterprise Server 9 for POWER, or later

CUoD is NOT supported by Red Hat Enterprise Linux AS for POWER V3

An IBM 7310-CR2 Rack-Mounted HMC or 7310-C03 Desktop HMC is required to manage POWER5 processor-based servers implementing Capacity on Demand. Multiple POWER5 processor-based servers can be supported by an HMC, located locally or remotely attached to the IBM eServer.

On/Off CoD
On/off CoD (#7930 and #7931) enables users to temporarily activate processors. This offering provides a system manager an interface to manage the activation and deactivation of resources. A monitor that resides on the server logs the usage activity and periodically reports this information back to IBM. A usage bill is then generated based on the selected quantity and duration of processor and memory resources. Billing increments are in Processor Day and Memory (1GB) Days.

On/off CoD requires that a contract be signed by the customer the first time that the On/off CoD feature is ordered.

Reserve CoD
(#7934) represents an autonomic way to activate temporary capacity. Reserve CoD enables the user to place a quantity of inactive processors into the server's Shared Processor Pool which then become available to the pool's resource manager. When the server recognizes the number of base (purchased/active) processors assigned across uncapped partitions have been 100% utilized, and at least 10% of an additional processor is needed, then a Processor Day (good for a 24-hour period) is charged against the Reserve CoD account balance. Another Processor Day will be charged for each additional processor put into use based on the 10% utilization rule. After a 24-hour period elapses, and there is no longer a need for the additional performance, no Processor Days will be charged until the next performance spike. Reserve COD requires Advanced POWER Virtualization (#7941).

Reserve CoD is NOT supported by AIX 5L for POWER V5.2.

Trial CoD

Trial Capacity on Demand (Trial CoD) is a function delivered with all pSeries servers supporting CoD. Those servers with inactive CUoD processors or memory will be capable of using a one-time, no-cost activation for a maximum period of 30 consecutive days. This enhancement allows for benchmarking of CoD resources or can be used to provide immediate access to inactive resources when the purchase is pending.

Advanced POWER Virtualization:
Please refer to System FC #7941: Advanced POWER Virtualization

Limitations
==========
System Limitations:

SCSI Port Enablement Cable:
If FC #4273 External SCSI Port Enablement Cable is installed in the system:
1x PCI-X slot is required
2nd Four-Pack Disk Enclosure (2nd #6592 or 1st #6593) cannot be installed.
Max external cable length supported by #4273 is 6 meters.

HMC / Serial Ports:
When an HMC is connected to the system, the integrated serial ports are rendered non-functional. In this case, the customer must install a separate asynchronous adapter for serial port usage.

Power Supply:
The base machine contains one ac power supply with a second available for redundancy.

Dynamic Logical Partitioning:
Supported by AIX and the Linux 2.6 Kernel (currently available only in SUSE LINUX Enterprise Server 9 for POWER)

Power Cords:
A 4-way p5-550 System using 2x #5237 1.65GHz 2-way Processors requires a 220V Power Cord - Power Cord FCs #6460, #6470, #6471, #6488 are not supported.

I/O Drawers:
Model 550 systems can be attached to 7311-D20 I/O drawers using the standard RIO-2 ports and/or the optional Dual Port RIO-2 I/O Hub (#1806).
Max: 8 Drawers per System
Max: 2 RIO Loops

PCI Card Slots:
The model 550 has a maximum of five hot-plug PCI-X slots:
Slots 1 to 4 are long, 64-bit, 3.3 V, and run at 133MHz.
Slot 5 is utilized by either a PCI-X adapter or the Dual Port RIO-2 I/O Hub (#1806). The PCI-X adapter installed in slot 5 must be a short card.

Graphics adapters
Graphics adapter, keyboard, and mouse are not required in the minimum configuration.
The maximum number of graphics adapters supported in the model 550 is two.

Customer Setup (CSU)
The following are designated non CSU
#6312 Quad Digital Trunk Telephony PCI Adapter
#2877 H-100 4-Drop Cable
#4353 H-100 Bus 8-position Cable

I/O Adapters

#5709 SCSI RAID Enablement Card does not use a PCI-X Slot - it has a dedicated slot
A min of 2x Processor Cards are required with FC #1806 Dual Port RIO-2 I/O Hub
A min of 2x Processor Cards are required with FC #5718 10 Gigabit Ethernet PCI-X Adapter
Any Adapter installed in slot 5 must be short.

I/O Adapter Features:

FC	I/O Adapter	Max	Priority	Size
#2738:	2-port USB PCI	2	3,1,4,2,5	Short
#2943:	8-Port Async	2	3,1,4,2,5	Short
#2944:	128-Port Async	2	3,1,4,2,5	Short
#2947:	Artic960 Hx 4-ports	4	3,1,4,2	Long
#2962:	2-Port Multiprotocol	4	3,1,4,2,5	Short
#2849:	GXT135P Graphics Adapter	2	3,1,4,2,5	Short
#4959:	4/16 Token Ring	4	3,1,4,2,5	Short
#4962:	10/100 Ethernet	5	3,1,4,2,5	Short
#5700:	Gigabit Ethernet	5	3,4,1,5,2	Short
#5701:	10/100/1000 Ethernet	5	3,4,1,5,2	Short
#5703:	PCI-X Ultra320 SCSI RAID	4	3,1,4,2	Long
#5706:	2-port 10/100/1000 Ether.	5	3,4,1,5,2	Short
#5707:	2-port Gigabit Ether.-SX	5	3,4,1,5,2	Short
#5709:	SCSI RAID Enablement Card	1	N/A	N/A
#5712:	PCI-X Ultra320 SCSI	5	3,1,4,2,5	Short
#6204:	Ultra SCSI Differential	2	3,1,4,2,5	Short
#6312:	Quad Digital Trunk	4	3,1,4,2	Long
#5716:	2GB Fibre Channel PCI-X	5	3,1,4,2,5	Short
#5718:	10 Gigabit Ethernet PCI-X	1	3,4,5	Short

Storage Devices/Bays

The 550 supports 2x DASD 4-packs in the system:-
1x #6592 Ultra320 SCSI 4-Pack (mandatory) and either
1x #6592 Ultra320 SCSI 4-Pack or
1x #6593 Ultra320 SCSI 4-Pack for Disk Mirroring

Media Bays 2 and 3 may contain #2640 DVD-ROM or #5751 DVD-RAM
(either a #2640 DVD-ROM or #5751 DVD-RAM must be selected - the 1st Optical Device can only be installed in the top Slimline Bay in a Rack Config)

Media Bay 4 May contain one of the following Tape Drives:
  #6120: 80/160 GB Internal Tape Drive with VXA Technology
  #6134: 60/150 GB 16-bit 8mm Internal Tape Drive
  #6258: 36/72GB 4mm Internal Tape Drive

#4263 SCSI Cables (Power and Logic) - PCI Riser to SCSI LVD Media Device is required if Tape Drives #6120, #6134, #6258 are installed

HA Solution Rack Configuration

The p5 550 HA Solution Package must include a minimum of the following, ordered together

Two model 550 servers, each incorporating:
Minimum model 550 configuration:
- 1x 1.5GHz 1-way Processor Card (#5239)
- 1x processor power regulator (#7876)
- 1x processor entitlement (#7601)
- 1x 512MB memory DIMM (#4443)
- 1x 36.4GB disk drive (#3273)
- 1x 4-pack disk drive enclosure (#6592)
- 1x DVD-ROM (#2640) or DVD-RAM (#5751)
- 1x 1475W Base H/S AC Power Supply (#7889)
- 1x Media Backplane Card (#7877)
- 1x Redundant CEC AC Power Supply (#7889)
- 1x Asynchronous Adapter (#2943/#2944)
- 1x Serial-to-Serial Port Cable for Drawer/Drawer (#3124/#3125)
- 2x configuration Indicators:
  - #7886 for IBM Bezel
  - #7162 for IBM Rack Mounting Rails or
  - #7163 for OEM Rack Mounting Rails
- 2x SCSI Adapters or 1x SCSI Adapter & #4273
- 2x LAN adapters - 1x integrated Ethernet port may be used
- 1x power cord
- 1x language group specify

Only 1x Serial Cable (#3124/#3125) is needed for the 2x model 550 systems. Redundant dedicated heartbeat and messaging paths are required via LAN and asynch ports on each server.

- 1x 7014-T00 or T42 System Rack including:
- 2x Rack Content Specify: 9113-550 (#0230)
- 1x Rack Content Specify: 2104-DS4 (#0204)
- 1x Side Mount Power Distrib Unit (#6171, #6173, or #6174)
- Additional optional 7014-T00 or 7014-T42 features can be added.

- 1x 2104-DS4 Expandable Storage Plus, including:
- 4x Disk Drives
- 1x or 2x Ultra320 cables
- 1x Rochester Manufacturing Integration (#0987) or
- 1x Dublin Manufacturing Integration (#0970)
- Additional optional 2104-DS4 features can be added.

- 1x AIX 5L V5.2 or AIX V5.3, or later, license
- 1x HACMP license: HACMP V5.2

RAID

Internal RAID is available on the model 550. A number of options are available to customers wanting to install RAID on their systems:

1. Install FC 5709 Dual Channel SCSI RAID Enablement Card.
   Install four disk drives in FC 6592 Ultra320 SCSI 4-pack enclosure.
   This will allow RAID capabilities within a single 4-pack of DASD.

2. Install FC 5709.
   Install a second FC 6592.
   This will allow RAID capabilities across two 4-packs of DASD.

3. Install FC 5709.
   Install FC 6593 Ultra320 SCSI 4-Pack Enclosure for Disk Mirroring.
   Install FC 5703 PCI-X Dual Channel Ultra320 SCSI RAID Adapter.
   Install FC 4267 SCSI Cable which connects the PCI Adapter to FC 6593.

Software Requirements

If installing AIX - one of these:
   AIX Version 5L for POWER V5.2 with the 5200-04 (APAR IY56722) or
   AIX 5L for POWER V5.3
   (#7941 Advanced POWER Virtualization is not supported on AIX 5L for POWER V5.2)

If installing Linux - one of these:
   SUSE LINUX Enterprise Server 9 for POWER or
   Red Hat Enterprise Linux AS for POWER Version 3 (Planned Availability Date: September 30, 2004)

   Not all p5-550 FCs are supported by the Linux operating system
   Info on FCs and Devices supported by Linux can be found at:
   http://www-1.ibm.com/servers/eserver/pseries/linux

If installing the model 550 server within the Cluster 1600:
   CSM V1.4 (AIX or LINUX)

Publications

SK3T-8159 IBM eServer Hardware Information Center CD-ROM
G229-9054 IBM eServer Safety Information
SA41-5156 Start Here for IBM eServer
Z125-4753 IBM Statement of Limited Warranty
Z125-5468 IBM License Agreement for Machine Code
GC52-1065 Pointer Sheet for Machine Internal Code License Agreement

Reliability, Availability, and Serviceability (RAS):

L3 cache and system memory ECC
System memory 4-bit packet error detection
System bus, I/O bus, PCI bus parity error detection.
Disk mirroring and disk controller duplexing capability are provided by the AIX operating system.
Linux supports DASD mirroring (RAID 1) via the md driver. Linux supported RAID adapters also support mirroring.
Journaled File System maintains file system consistency and reduces data loss when the system is abnormally halted due to a power failure.

PCI Extended Error Handling (EEH) (not supported under Linux)
Under AIX, a PCI EEH enabled adapter reporting a Bus Parity Error allows firmware to reset the affected adapter and continue without a system reboot. Currently, Linux does not support PCI EEH. In the event of a PCI error, the system will machine check and a reboot will be required to continue.

Memory error correction extensions
Standard memory has single error checking and double error detect ECC circuitry to correct single-bit memory failures. Double Bit Detection allows detecting and reporting multiple errors beyond ECC tolerances. p5 memory chips are organized such that the failure of any specific memory module only affects a single bit within an ECC word (bit scattering). This allows for error correction and continued operation in the presence of a complete chip failure (Chipkill recovery).

System memory also utilizes memory scrubbing and thresholding to determine when spare memory modules within each bank of memory should be used to replace ones that have exceeded their threshold value (dynamic bit steering).

Redundancy for array self-healing
For the L1, L2, and L3 Caches and their Directories, hardware and firmware keep track of whether permanent errors are being corrected beyond a threshold. If exceeded, a deferred repair error log is created. Additional run-time availability actions, such as CPU Vary Off (Linux running the 2.6 kernel) or L3 Cache Line Delete, are also initiated.

L1 and L2 caches and L2 and L3 directories on the POWER5 chip are manufactured with spare bits in their arrays that can be accessed via programmable steering logic to replace faulty bits in the respective arrays. The steering logic is activated during processor initialization and is initiated by the built-in self-test (BIST) at power-on time. L3 Cache redundancy is implemented at the cache line level. Exceeding correctable error thresholds while running causes a Dynamic L3 Cache line delete function to be invoked.

Service Processor

The Service Processor provides immediate diagnostics, check status, and sense operational conditions of a remote system, even when the main processor is inoperable. The SP also enables firmware and operating system surveillance, several remote power controls, environmental monitoring (only critical errors are supported under Linux), reset, boot features, remote maintenance, and diagnostic activities, including console mirroring. The SP can place calls to report surveillance failures, critical environmental faults, and critical processing faults.

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

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

Environmental monitoring functions
Temperature, Fan speed and Voltage are monitored to provide a warning and allow for orderly shutdown when operational specifications are exceeded.
Temperature monitoring also increases fan speed when ambient temp is above the normal operating range

Error handling and reporting
System run-time error capture capability systematically analyzes the hardware error signature to determine the cause of failure. The analysis will be stored in the system NVRAM. When the system can be successfully rebooted either manually or automatically, the error will be reported to the AIX or Linux operating system.

Error Log Analysis (ELA) can be used to display the failure cause and the physical location of failing hardware.

A hardware fault will turn on the two Attention Indicators (one on the front and one on the rear of the system). The indicator may also be turned on by the operator as a tool to allow system identification.

Availability enhancement functions
The auto-restart (reboot) option, when enabled, can reboot the system automatically following an unrecoverable software error, software hang, hardware failure, or environmentally induced (AC power) failure.

Serviceability & Service Agent
LEDs indicate parts needing to be replaced.
Support personnel can remotely log into a system to review error logs and perform remote maintenance.
The diagnostics consist of Stand-alone Diagnostics, which are loaded from the DVD-ROM drive, and Online Diagnostics.
The Service Agent is available at no additional charge and monitors and analyzes system errors. If needed, it can automatically place a service call to IBM without customer intervention.

This info brief is based upon various industry sources, including published IBM documentation, technical publications and marketing materials:

Reference URLs: (http://www.)

IBM Public Announcements:	ibm.com/common/ssi/OIAccess.wss
IBM SalesManual:	ibm.com/common/ssi/OIAccess.wss
eServerInfoCenter	http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/
pSeries Facts and Features	ibm.com/servers/eserver/pseries/hardware/factsfeatures.pdf
Various Whitepapers	redbooks.ibm.com
RISC Analysis	riscanalysis.com

Content derived from IBM documentation, technical publications and marketing materials has been modified to allow for technical corrections, reduced repetition and ease of comprehension.

9117-570
IBM Mid-range Rack-mounted Server
Model 570

Available 2004/08/31

The p5-570 uses a 4U Rack-Mount Server Drawer, and can be configured with 1 to 4 Drawers in a single rack. Each Server Drawer supports up to two Processor Cards for a maximum 16-way configuration System (8x 2-way Processors).

Processor Cards:
==========
The p5 model 570 is available in 2-way, 4-way, 8-way, 12-way and 16-way configurations. All Processor Cards are 2-way with 0-way Active. At least two processors must be activated by ordering the appropriate activation features.

The Symmetric Multiprocessors (SMP) utilize 64-bit Copper Based POWER5 microprocessors running at either 1.5GHz, 1.65GHz or 1.9GHz. Each processor card has 36MB of Level 3 cache and 8 slots for memory DIMMs. There are two versions of the 1.9GHz Processor. #7832 Accepts only DDR1 type Memory DIMMs. #7833 supports DDR2 type DIMMs.

Each Processor Card feature is ordered in conjunction with its related activation/entitlement feature, as follows:

#7834: 1.50GHz Processor Card - DDR1 Memory Support
#7929: One Processor Entitlement for Processor Feature #7834
#8456: Zero-priced Value Pak Processor Entitlement for #7834

#7830: 1.65GHz Processor Card - DDR1 Memory Support
#7897: One Processor Activation for CUoD Processor Feature #7830
#8452: Zero-priced Value Pak Processor Activation Code for #7830

#7832: 1.90GHz Processor Card - DDR1 Memory Support
#7898: One Processor Activation for CUoD Processor Feature #7832
#8454: Zero-priced Value Pak Processor Activation Code for #7832

#7833: 1.90GHz Processor Card - DDR2 Memory Support
#7899: One Processor Activation for CUoD Processor Feature #7833
#8455: Zero-priced Value Pak Processor Activation Code for #7833

1.5GHz CPUs may be configured as 2-way, 4-way or 8-way systems
1.65GHz & 1.9GHz CPUs may be configured as 2-way, 4-way, 8-way, 12-way or 16-way systems

Processor Limitations:
A p5 570 system can have from 1 to 4 system drawers. Each drawer has two processor slots. A system with one drawer may have one or two processor cards installed. A system with 2, 3, or 4 drawers must have two processor cards in each drawer.

When two or more processor cards are installed, all cards must have the same processor frequency.

Each processor card has two processors and eight memory DIMM slots. The DIMM slots are different for DDR1 and DDR2 memory. All processor cards must support the same memory technology, either DDR1 or DDR2.

Systems configured with 1.5GHz processors have a maximum of eight processors and two drawers.

Memory Cards:

The 570 System uses either DDR1 or DDR2 memory, depending on the Processor. DDR2 memory is supported only on the FC #7833 1.90GHz Processor. All DIMMs on the #7833 1.90GHz Processor must use the same memory technology (either DDR1 or DDR2).

The minimum memory requirement for any 2-way system is 2GB of DDR1 via FC #4452: 2048MB Memory (4x 512MB DIMMs). This may be expanded to 512GB DDR1 memory or 64GB of DDR2 memory.

The following memory features are available:

DDR/DDR1 Based Memory:
#4452: 2048MB (4x512MB) DIMMs 208-pin 8NS DDR SDRAM
#4453: 4096MB (4x1024MB) DIMMs 208-pin 8NS Stacked DDR SDRAM
#4454: 8192MB (4x2048MB) DIMMs 208-pin 8NS Stacked DDR SDRAM

#4490: 4096MB (4x1024MB) DIMMs 208-pin 250MHz Stacked DDR1 SDRAM
#4491: 16384MB (4x4096MB) DIMMs 208-pin 250MHz Stacked DDR1 SDRAM
#4492: 32768MB (4x8192MB) DIMMs 208-pin 250MHz Stacked DDR1 SDRAM

DDR2 Based Memory:
#7892: 2048MB (4x512MB) DIMMs 276-pin 533MHz DDR2 SDRAM
#7893: 4096MB (4x1024MB) DIMMs 276-pin 533MHz DDR2 SDRAM

Express Config, CUoD, Enablement FCs:
#7890: 8192MB (4x2048MB) DIMMs CUoD 4096MB Active DDR1
#7950: 1024MB Activation for DDR1 Memory
#7954: On/Off Memory Enablement
#7957: On/Off Memory 1GB-Day Billing for DDR1
#8052: 4096MB (4x1024MB) DIMMs Express Config (equiv #4453)

Memory Limitations:
Memory is installed in Quads, mounted on the Processor Cards.
Each processor card has 8 DIMM slots
Each processor card must have at least 2GB of memory installed.

It is recommended that each processor card have an equal amount of memory installed. Balancing memory across the installed processor cards allows memory accesses in a coordinated parallel manner and can be utilized to provide optimal performance.

8GB DIMMS cannot be installed on the same processor card with smaller capacity DIMMS.

Other Attributes:

Each drawer of a p5-570 system contains:
6x Hot Swap Disk Drive Bays via a split 6-pack Backplane
6x 64-bit 3.3V 133MHz PCI-X Slots (5x Long, 1x Short)
2x Slimline Media Bays

1x Available Service Processor - a 2nd Service Processor is optional for multi-drawer configs
1x Dual Port Integrated 10/100/1000MBps Ethernet
1x Dual Port Internal Ultra320 SCSI Controller - supports optional RAID Daughter Card
2x Serial Ports (active only in the drawer that has #7881 Service Processor installed)
2x USB 2.0 Ports per Drawer
2x HMC Ports per System (only in the drawer with #7881 Service Processor installed)
2x RIO-2 ports per drawer for attaching external 7311 I/O drawers
Available Redundant Hot-Swap Power and Cooling (2x Hot-Swap Power Supplies per Drawer)

Dynamic logical partitioning (LPAR), with optional micro-partitioning, and Capacity on Demand (CoD) are supported on the p5 model 570.

The p5-570 is supported with the IBM eServer pSeries Cluster 1600 running Cluster Systems Management (CSM) V1.4 (AIX and LINUX). For hardware control using CSM, an HMC is required.

Minimum Configuration:

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The default minimum Model 570 Config - if no options chosen is:

1x System Drawer (4U) with the following:
1x #7879: System Drawer Enclosure
1x #7830: 1.65GHz 2-Way 0-Way Active
2x #7897: Processor activation for #7830
1x #4452: 2048MB Memory (4x 512MB DIMMs)
1x #3273: 36.4GB 10K RPM Ultra320 SCSI Disk
1x #7868: SCSI Disk Backplane
2x #7888: Power supplies
1x #7867: System Midplane
1x #1846: Operator Panel
1x #7866: I/O Backplane - 6 PCI-X Slots
1x #7865: Processor Enclosure and Backplane
1x #7870: Power Distribution Backplane
1x #7875: Processor Power Regulator
1x #7164: Rack-Mount Rail Kit
1x #9xxx: Language Group Specify
2x #64xx: Power Cords

Value Paks

Value Paks are available only for initial system orders. They provide a convenient way to order any of several configurations designed to meet typical customer requirements. Special reduced pricing is available when a system order satisfies specific configuration requirements for memory, disk drives, and processors. When a Value Pak is ordered, the configurator offers a choice of starting points that can be added onto.

Customers can configure systems with 2 to 16 processors and 2 to 16 processor activations. With the purchase of a Value Pak, for each paid processor activation, the customer is entitled to one processor activation at no additional charge, if the following requirements are met:

1. Minimum 2x #3274 73.4GB 10K RPM Ultra320 SCSI Disk Drive Assembly
2. Minimum 2.0GB Memory for each Activated Processor - either
   #4452: 2048MB (4x512MB) 208-pin 250MHz SDRAM for DDR1 Systems or
   #7892: 2048MB (4x512MB) 276-pin 533MHz SDRAM for DDR2 Systems

Configurator starting points:

n-way	1.50GHz CPU	DDR1 Memory Features	DASD Features	Entitlement/ Activation FCs	
2-way	1x 7834	2x 4452 4GB	2x 3274 73GB	1x 7929	1x 8456
4-way	2x 7834	4x 4452 8GB	2x 3274 73GB	2x 7929	2x 8456
8-way	4x 7834	8x 4452 16GB	2x 3274 73GB	4x 7929	4x 8456

#7929 = One Processor Entitlement for Processor Feature #7834
#8456 = Zero-priced Value Pak Processor Entitlement for #7834

n-way	1.65GHz CPU	DDR1 Memory Features	DASD Features	Entitlement/ Activation FCs	
2-way	1x 7830	2x 4452 4GB	2x 3274 73GB	1x 7897	1x 8452
4-way	2x 7830	4x 4452 8GB	2x 3274 73GB	2x 7897	2x 8452
8-way	4x 7830	8x 4452 16GB	2x 3274 73GB	4x 7897	4x 8452

#7897 = One Processor Activation for CUoD Processor Feature #7830
#8452 = Zero-priced Value Pak Processor Activation Code for #7830

n-way	1.90GHz CPU	DDR1 Memory Features	DASD Features	Entitlement/ Activation FCs	
4-way	2x 7832	4x 4452 8GB	2x 3274 73GB	2x 7898	2x 8454
8-way	4x 7832	8x 4452 16GB	2x 3274 73GB	4x 7898	4x 8454
16-way	8x 7832	16x 4452 32GB	2x 3274 73GB	8x 7898	8x 8454

#7898 = One Processor Activation for CUoD Processor Feature #7832
#8454 = Zero-priced Value Pak Processor Activation Code for #7832

n-way	1.90GHz CPU	DDR2 Memory Features	DASD Features	Entitlement/ Activation FCs	
4-way	2x 7833	4x 7893 8GB	2x 3274 73GB	2x 7899	2x 8455
8-way	4x 7833	8x 7893 16GB	2x 3274 73GB	4x 7899	4x 8455
16-way	8x 7833	16x 7893 32GB	2x 3274 73GB	8x 7899	8x 8455

#7899 = One Processor Activation for CUoD Processor Feature #7833
#8455 = Zero-priced Value Pak Processor Activation Code for #7833

Model Conversions

Model Conversions are supported from the 7038-6M2 to the 9117-570

Customers who own an IBM pSeries 650 (7038-6M2) may convert their system to an IBM eServer p5 570 system. System hardware for the new model will consist of one or more drawers to replace the old system chassis. Supported features from the old model will be transferred to the new system. The same configuration rules apply to model conversions and to new system orders.

Model conversions allow any valid number of processors in the new model, regardless of the number of processors in the old model. The valid processor quantities are 2, 4, 8, 12, 16

Any supported memory and disk drive features that are transferred from the old system can be counted toward the requirements for processor activations at no additional charge, using the same Value Pak rules that apply to new system orders.

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

Technical Description

Physical Specifications
p5 Model 570 System Unit:

Width: 483 mm (19.0 in)
Depth: 790 mm (31.1 in)
Height: 174.1 mm (6.85 in)
Weight: 63.6 kg (140 lb)

Dimensions and specifications shown are for a single drawer. Model 570 systems can have one to four drawers.

Operating Environment
Temperature: 5 to 35 degrees C (41 to 95 F)
Relative humidity: 8 % to 80 %
Maximum wet bulb: 23 degrees C (73 F) (operating)
Noise level: 6.5 bels (operating)

Power requirements
Operating voltage: 200 to 240 V ac 50/60 Hz
Power consumption: 1,300 watts (maximum per 4-way drawer)
Power source loading: 1.37 kVA (per drawer maximum configuration)
Thermal output: 1,349 joules/sec (4,437 Btu/hr) (per drawer maximum configuration)

Limitations

Customer Setup (CSU)
Customer Setup Box: No
Customer setup Model Conversion: No
Customer setup MES: Yes - Except the following FCs

#3124 Serial to Serial Port Cable for Drawer/Drawer
#3125 Serial to Serial Port Cable for Rack/Rack
#7867 System Midplane
#7868 Ultra320 SCSI 6-pack Backplane
#7870 Power Distribution Backplane

Racks

The p5 model 570 must be installed in a new or existing 7014-T00 or T42 Rack (7015-R00 and 7014-S00 Racks are not supported). Although an equivalent rack may be used, the design of the p5 model 570 is optimized for use in the 7014-T00 or T42. Both the front cover and the processor flex cables occupy space on the front left side of the rack. This may not be available in typical non-IBM racks.

Additionally, the SMP cables were specifically designed to support seamless (4-way Node) upgradability and future concurrent maintenance features of these POWER5 systems. The use of non-IBM racks may limit a customer's ability to exploit these ease-of-use upgradability and serviceability enhancements.

For p5-570 configurations with 2, 3 or 4 drawers, all drawers must be installed together in the same rack, in a continuous space of 8U, 12U, or 16U within the rack.

When a p5 570 system is installed in an IBM 7014-T00 or 7014-T42 rack that has no front door, a Thin Profile Front Trim Kit must ordered for the rack. The front bezel on a model 570 drawer is too wide to be used with the previously announced rack trim kits (features #6107 and #6081). The required trim kit for the 7014-T00 rack is feature #6246. The required trim kit for the 7014-T42 rack is feature #6247.

The IBM 7014-T42 rack is constructed with a small flange at the bottom of EIA location 37. This requires special placement rules when a model 570 system is installed near the top of a 7014-T42 rack, to avoid interference with the front bezel or with the front flex cable, depending on the system configuration. No system drawer can be installed in EIA positions 34, 35, or 36. A two-drawer system can not be installed above position 33. A three-drawer system can not be installed above position 25. A four-drawer system can not be installed above position 21. (The position number refers to bottom of the lowest drawer.)

Power

Two power supplies must be ordered to provide redundancy for enhanced system availability.

For p5 570s installed in to 7014-T00/T42 Racks the following Power Distribution Units are supported:
#7176/9176: PDU - Base/Side Mount Single Phase
#7177/9177: PDU - Base/Side Mount Single Phase IEC-309 Connector
#7178/9178: PDU - Base/Side Mount Three Phase IEC-309 Connector
9188: PDU - Base/Side Mount Universal UTG0247 Connector

Each pair of PDUs can power up to 3 p570 server drawers (3 drawers per 2 PDUs).

For PDU features 9178, 7178:
Each pair of PDUs can power up to 6 p570 server drawers (6 drawers per 2 PDUs)

Power Cord FCs 6654, 6655, 6656, 6657, 6658:
  Each pair of PDUs can power up to 3x p570 Server Drawers (3 Drawers per 2 PDUs)

Power Cord FCs 6489, 6491, 6492, 6653:
  Each pair of PDUs can power up to 6 p570 Server Drawers (6 Drawers per 2 PDUs)

Each server drawer has two power supplies, which must be connected to separate PDUs to provide full redundancy.

Server power cords should be evenly spread across the available PDU power outlets, to distribute the current across multiple circuit breakers.

I/O Drawers

Model 570 systems can be attached to 7311-D10, 7311-D11, or 7311-D20 I/O drawers, using the standard and optional RIO-2 ports.

The maximum number of attached RIO-2 I/O drawers depends on the number of system drawers, as follows:
 1x Drawer Systems support up to 8 I/O Drawers
 2x Drawer Systems support up to 12 I/O Drawers
 3x Drawer Systems support up to 16 I/O Drawers
 4x Drawer Systems support up to 20 I/O Drawers

When a 7311-D10 or 7311-D20 I/O drawer is attached to a model 570 system, the I/O drawer must be configured with a RIO-2 Remote I/O adapter. The supported RIO-2 adapter for 7311-D10 is feature #6431. The supported RIO-2 adapter for 7311-D20 is feature #6417. The previous RIO adapters, #6414 and #6413, can not be used for attachment to a model 570 system.

When a 7311-D10 or a 7311-D20 I/O drawer is attached to a model 570 system, some PCI adapters are not supported. The following 7311-D10 and/or 7311-D20 features must not be installed in an I/O drawer if it is attached to a model 570 system. If they are present in a previously configured I/O drawer, they must be removed prior to attachment to a p5 570.

 #2732: Short-wave Serial HIPPI PCI Adapter for RS/6000
 #2733: Long-wave Serial HIPPI PCI Adapter for RS/6000
 #2751: S/390 ESCON Channel PCI Adapter
 #6310: ARTIC960RxD Quad Digital Trunk PCI Adapter
 #8398: SP Switch2 PCI-X Attachment Adapter

I/O Drawer Attachment

It is recommended that any attached I/O drawers be located in the same rack as the p5-570 server for ease of service, but they can be installed in separate racks, if desired.

I/O drawers are connected to the p5-570 drawer via the following cables:
 RIO Cables for data transfer
 Power Control Cables

RIO cable connections are always made in loops to help protect against a single point-of-failure resulting from an open, missing, or disconnected cable. Model 570 systems with non-looped configurations could experience degraded performance and serviceability. If a non-loop connection is detected, a problem is reported.

Each p5-570 system drawer has two integrated RIO-2 ports, which support a single RIO loop. If a second RIO loop is required, two additional RIO-2 ports can be configured by ordering the #1800 RIO-2 adapter.

When the #1800 RIO-2 adapter is installed in a system drawer, no adapter cards can be installed in PCI-X slot #6. The #1800 RIO-2 adapter is supported only in system drawers that have two processor cards.

Up to eight RIO loops are available, each supporting up to four I/O drawers and up to a maximum of twenty I/O drawers per system. A minimum of two RIO cables are required to attach the first I/O drawer on each RIO loop. A third drawer-to-drawer RIO cable is required to complete the loop when an additional I/O drawer is attached to the loop. RIO cables are available in various lengths to attach I/O drawers within a single rack or across multiple racks, if desired.
 #3146 = 1.2 meters
 #3147 = 3.5 meters
 #3148 = 10 meters
 #3156 = 1.75 meters
 #3168 = 2.5 meters

Power control for the I/O drawers is provided via one loop per drawer. The number of power control (SPCN) cables required is equal to one plus the number of I/O drawers attached to the system drawer. A minimum of two power control cables (#6006 = 3 meters, #6029 = 30 meters) are required for attachment of the first I/O drawer. Each additional I/O drawer requires one additional power control cable to complete the loop attachment.

Integrated I/O Ports
==========
Each system has only two HMC ports, regardless of the number of system drawers. For systems configured with more than one system drawer, the HMC ports are in the same drawer as the Service Processor (#7881).

Although each system drawer is equipped with two integrated serial port external connectors, only two serial ports are activated in a multi-drawer configuration. Integrated serial ports are activated in the drawer that has the Service Processor (#7881) installed. Integrated serial ports in other system drawers are not functional.

Integrated serial ports are not supported when the HMC ports are connected to a Hardware Management Console. Either the HMC ports or the integrated serial ports can be used, but not both.

The integrated serial ports are supported only for modem and async terminal connections. Any other applications using serial ports require a separate serial port adapter to be installed in a PCI slot. The integrated serial ports do not support HACMP configurations.

Disks, Media, and Boot Devices
==========
Boot is supported via SCSI adapters, or from a network via LAN adapters.

The minimum configuration requires at least one disk drive having a capacity of 36.4GB or greater.

Each system drawer can support up to two media devices when the optional #7869 media Backplane is ordered. Any combination of DVD-ROM and DVD-RAM drives can be installed, up to eight media devices in a four-drawer system.

PCI Slots and Adapters
==========
Each p5-570 system drawer has six PCI-X slots. All slots operate at 3.3 volts. There are five full-length 64-bit slots and one short 64-bit slot.

The p5-570 PCI slot population rules are complex. The following PCI slot and adapter limitations are provided for general guidance. Extensive configuration rules and checking procedures are incorporated into the ECFGRS6000 configurator to help ensure valid system configurations. Configurations generated without utilizing the ECFGPWR configurator may create orders that cannot be manufactured, resulting in possible order rejection and delayed delivery.

System maximum limits for adapters and devices may not provide optimal system performance. These limits are given to assist with connectivity and functional assurance.

When the model 570 is attached to one or more I/O drawers, additional rules apply for some PCI adapters regarding the maximum supported adapter quantities for the combined system. For adapters not shown in the list below, the combined maximum quantity is determined by the maximum quantities for each attached I/O drawer. The adapters in the following list are limited to the combined maximum quantity shown.

#2943: 8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus	42
#2944: 128-Port Asynchronous Controller, PCI bus	42
#6204: PCI Universal Differential Ultra SCSI Adapter	42
#2849: POWER GXT135P Graphics Accelerator w/Digital Support	8
#4959: Token-Ring PCI Adapter	20
#4960: e-business Cryptographic Accelerator	32

Hot-Plug Options
==========
The following options are hot-plug capable:
System Power Supplies
Disk Drives
Most PCI Adapters
Service Processors
Processor Power Regulators

Any PCI adapter supporting the system boot device or system console is not hot-plugged.

The following adapters are not hot-plug capable:
#2849: POWER GXT135P Graphics Accelerator with Digital Support
#2962: 2-Port Multiprotocol PCI Adapter

Software Requirements

If installing AIX - one of these:
   AIX Version 5L for POWER V5.2 with the 5200-04 (APAR IY56722) or
   AIX 5L for POWER V5.3
   (#7941 Advanced POWER Virtualization is not supported on AIX 5L for POWER V5.2)

If installing Linux - one of these:
   SUSE LINUX Enterprise Server 9 for POWER or
   Red Hat Enterprise Linux AS for POWER Version 3 (Planned Availability Date: September 30, 2004)

   Not all p5-550 FCs are supported by the Linux operating system
   Info on FCs and Devices supported by Linux can be found at:
   http://www-1.ibm.com/servers/eserver/pseries/linux

If installing the model 550 server within the Cluster 1600:
   CSM V1.4 (AIX or LINUX)

Publications

SK3T-8159 IBM eServer Hardware Information Center CD-ROM
G229-9054 IBM eServer Safety Information
SA41-5156 Start Here for IBM eServer
Z125-4753 IBM Statement of Limited Warranty
Z125-5468 IBM License Agreement for Machine Code
GC52-1065 Pointer Sheet for Machine Internal Code License Agreement

Capacity on Demand

The Capacity on Demand (CoD) suite of offerings provides permanent nondisruptive growth as well as temporary additional capacity for short term processing needs. Available for a fee, CoD allows additional processors and memory to be brought on line as they are needed to meet increasing workload demands. If the system is configured for dynamic LPAR, this can be accomplished without impacting operations and avoiding costly down time. These features have significant value for users who want to upgrade without disruption, enhance their system RAS (reliability, availability, serviceability) characteristics, or simply grow with a finer level of granularity. The CoD features allow a system to be manufactured (or upgraded) with inactive processors and memory. The hardware is delivered with these features built in, ready to be activated when needed. It can turned on by ordering processor or memory activation features. These features deliver an activation code which is entered at the HMC to enable the resource either permanently or temporarily, depending on which activation feature is ordered.

Types of CoD Activations
Permanent CUoD for Processors and Permanent CUoD for Memory are activations which permanently enable inactive processors or memory for future use.

On/Off CoD enables users to temporarily activate processors and memory. Processors and Memory may be activated and turned off an unlimited number of times whenever the client desires additional processing resources. This offering provides a system administrator an interface at the HMC to manage the activation and de-activation of resources. A monitor which resides on the server logs the usage activity. Clients 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 (1GB) Days.

Reserve CoD represents an autonomic way to activate temporary capacity. Reserve CoD enables the user to place a quantity of inactive processors into the server's Shared Processor Pool which then become available to the pool's resource manager. When the server recognizes the number of base (purchased/active) processors assigned across uncapped partitions have been 100% utilized, and at least 10% of an additional processor is needed, then a Processor Day (good for a 24 hour period) is charged against the Reserve CoD account balance. Another Processor Day will be charged for each additional processor put into use based on the 10% utilization rule. After a 24-hour period elapses, and there is no longer a need for the additional performance, no Processor Days will be charged until the next performance spike.

Trial Capacity on Demand (Trial CoD) is a function delivered with all pSeries servers having inactive CoD processors or memory. Those servers with inactive CoD processors or memory will be capable of using a one-time, no-cost activation for a maximum period of 30 consecutive days. This enhancement allows for benchmarking of CoD resources or can be used to provide immediate access to inactive resources while the purchase of permanent or temporary activations is pending.

Logical Partitioning (LPAR)

Dynamic LPAR allows up to one partition per processor.
Up to ten partitions per processor are supported when Advanced POWER Virtualization (#7942) is ordered. This function requires AIX 5L V5.3 or SUSE SLES 9 for POWER.

A Hardware Management Console is required for all LPAR configurations.

For Linux partitions, a DVD-ROM or DVD-RAM and a Media Enclosure and Backplane (#7869) are required.

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This info brief is based upon various industry sources, including published IBM documentation, technical publications and marketing materials:

Reference URLs: (http://www.)

IBM Public Announcements:	ibm.com/common/ssi/OIAccess.wss
IBM SalesManual:	ibm.com/common/ssi/OIAccess.wss
eServerInfoCenter	http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/
pSeries Facts and Features	ibm.com/servers/eserver/pseries/hardware/factsfeatures.pdf
Various Whitepapers	redbooks.ibm.com
RISC Analysis	riscanalysis.com

9119-590
IBM eServer p5
Model 590

Available 2004/11/19

The p5-590 is a 42U tall, 24-inch Rack System Server.
16-way and 32-way configurations using 64-bit Copper-Based POWER5 Symmetric Microprocessors (SMP) running at 1.65GHz

Up to 8x I/O Drawers can be configured on a p5-590 server. Each I/O Drawer contains 20x 3.3V PCI-X adapter slots and up to 16 Disk Bays. Fully configured, the p5-590 supports up to 1024GB of DDR1 or 128GB of DDR2 System Memory, 160x Hot-Swap PCI-X Adapters and 128x Hot-Swap 15K RPM Disk Drives.

Processors:
==========
The p5-590 server can be configured with 1 or 2 Standard 16-way Processor Books. Each 16-way Processor Book contains two 8-way Multi-Chip Modules (MCMs). Each 8-way MCM contains four Dual Core Processor Chips. Each pair of processors within an MCM is supported by 1.9MB of Level 2 cache and 36MB of Level 3 cache.

Each 16-way Processor Book also includes 16 slots for memory cards and 6x RIO-2 attachment cards for connection of the system I/O Drawers.

The initial Processor Features are:
#7981: 1.65 GHz 16-Way POWER5 Standard CUoD Processor Book 0-Way Active
#7925: One Processor Activation for #7981 CUoD Processor Book

The 16-way Processor Books have 0 Processors Activated. Activation is enabled via FC #7925, which must be ordered a minimum of 8 times.

CUoD Processors are:
#7839: On/Off Processor Enablement for #7981
#7926: 30 Days Prepaid Reserve Capacity for #7981
#7993: On/Off Processor Billing for Feature #7981
CUoD is discussed towards the end of this document

Memory:
==========
The p5-590 utilizes Type 1 or Type 2, Dual Data Rate (DDR) DRAM Memory Cards.
Each Processor Book provides 16 Memory Card Slots for a max of 32 Memory Cards per Server

Minimum system memory is 8GB
Maximum system memory is 1024GB with DDR1 Memory or 128GB with DDR2 Memory

Available Memory Cards (DDR1)
#7816: 4GB 266MHz DDR1 CUoD Card with 2GB Active
#7835: 8GB 266MHz DDR1 CUoD Card with 4GB Active
#7828: 16GB Fully Activated 266MHz DDR1 Card
#7829: 32GB Fully Activated 200MHz DDR1 Card
#8195: 256GB Package of 32 Fully Activated 8GB DDR1 Cards
#8197: 512GB Package of 32 Fully Activated 16GB DDR1 Cards
#8198: 512GB Package of 16 Fully Activated 32GB DDR1 Cards

Available Memory Cards (DDR2)
#7814: 4GB 533MHz Fully Activated Memory DDR2 Card

DDR1 and DDR2 cannot be mixed within a p5-590 server
Memory must be installed in identical pairs

Each Processor Book Contains 2 MCMs
p5-590 servers w/ 1x Processor Book must have min 2x Memory Cards installed
p5-590 servers w/ 2x Processor Books must have min 4x Memory Cards installed per Processor Book (2 per MCM)

The following memory configuration guidelines are recommended:
The same amount of memory should be used for each MCM in the system
Each 8-way MCM should have some memory
No more than two different sizes of memory cards should be used in each Processor Book
All MCMs in the system should have the same aggregate memory size
At least half of the available memory slots in the system should contain memory
It is better to install more cards of smaller capacity than fewer cards of larger capacity

For p5-590 servers being used for high-performance computing, the following are strongly recommended:
 Use DDR2 memory.
 Install some memory in support of each 8-way MCM
 Use the same sized memory cards across all MCMs and Processor Books

Other features include:

Integrated service processor
Integrated redundant power subsystem
Two integrated Ultra3 dual SCSI controllers per I/O Drawer
Battery backup option
Expansion Rack option
DLPAR with up to 254 partitions supported
Acoustic or slim line front and rear covers
Support for Redundant power subsystem
Support for Dynamic logical partitioning (DLPAR) and CUoD
Support for Advanced POWER Virtualization technology

The p5-590 supports AIX 5L V5.2, AIX 5L V5.3, Linux, and i5/OS V5R3 Operating Systems. These operating systems can run simultaneously in different partitions within the p5-590 server. Note, not all FC are supported under the Linux O/S.

Hardware Requirements

The minimum config for a p5-590 includes the following items:

1x eServer p5 590 (9119-590
1x #7981 16-Way POWER5 Processor Book - 0-Way Active
8x #7925 1-Way Processor Activations
2x Memory Cards w/min 8GB of Activated Memory
2x #7810 Processor Clock Cards, Programmable
1x #7821 Power Cable Group, Bulk Power to CEC and Fans
3x #7809 Power Converter Assemblies, Central Electronics Complex
1x #7822 Power Cable Group, First Processor Book
2x #7811 System Service Processor
1x #7812 Multiplexer Card
2x #7818 Single Loop RIO-2 Loop Adapters
1x I/O Drawer: #5791 or #5794
1x #7924 0.6m Remote I/O Cable (between drawer halves)
2x #3168 Remote I/O Cables, 2.5 M
2x #3277 36.4GB 15K RPM U320 SCSI Disk Drives
1x #6122 I/O Drawer Attachment Cable Group
1x Door Kit: #6251 Slim Line or #6252 Acoustic
2x #6186 Bulk Power Regulators
2x #7803 Bulk Power Controller Assemblies
2x #7837 Bulk Power Distribution Assemblies
2x #86xx Line Cords
1x #9xxx Language Specify
1x 7310-C03 Hardware Management Console

Customer Setup (CSU)

Customer setup box: No
Customer setup model conversion: No
Customer setup MES: No, except for keyboards, displays, CUoD activations

Technical Description

IBM eServer p5 590 (9119-590) Primary System Rack

The IBM eServer p5 590 system includes a 42U 24-inch primary system rack with space for:
18U CEC Assembly supporting up to 2x 16-way Processor Books
Primary and redundant Bulk Power Assembly (BPA) in the top 8U of the rack
Up to 8x I/O Drawers, each containing 20 PCI-X slots and either 8 or 16 Hot-Swap Disk Bays
Primary and redundant optional Integrated Battery Backup (IBB) feature
Covers, front and rear (option for either slim line or acoustic)

Bulk Power Assembly (BPA)

The BPA is mounted in the front (primary) and rear (redundant) sections of the top 8U of the system rack. Each BPA provides a maximum power of 22.7kW through either a 200V, 380V, or 480V AC (3-phase) dual ac line cord. The CEC rack has an option for an Integrated Battery Backup feature mounted in the front (primary) and rear (redundant) sections of the rack.

Central electronics complex

The p5-590 CEC is a 18U-tall, 24-inch, Rack-Mounted device. It houses the system processors, memory, service support processor, I/O Drawer connection capability, and associated components. It is installed immediately below the power subsystem.

1x #7812 Multiplexer Card is required for each Processor Book. The Multiplexer Card provides communication between the individual Processor Book and the System Service Processor.

Expansion Rack (#8691)

The p5-590 system includes a second bolt-on Expansion Rack (#8691). The bolt-on rack is a 24-inch rack with 42U of rack space for mounting a maximum of eight I/O Drawers. This rack bolts onto the CEC system rack. The bolt-on Expansion Rack (#8691) rack contains I/O Drawers only and receives power from the CEC rack. Both the CEC and bolt-on Expansion Racks have an option for either slim line or acoustic front and rear covers.

Rack Dimensions

All racks support either Slim-Line or Acoustic Front and Rear Covers.

One frame & two frame dimensions (Slim-Line and Acoustic Covers)

	Slim line		Acoustic	
	1 Frame	2 Frame	1 Frame	2 Frame
	mm (in)	mm (in)	mm (in)	mm (in)
Height	2,025 (79.7)	2,025 (79.7)	2,025 (79.2)	2,025 (79.2)
Width	785 (30.9)	1,575 (62.0)	785 (30.9)	1,575 (62.0)
Depth	1,326 (52.2)	1,326 (52.2)	1,681 (66.2)	1,681 (66.2)

Maximum weight configuration

Max weight config - Primary CEC Rack joined with #8691 Bolt-on Expansion Rack.
The options for this configuration include:

1. 2x Processor Books
2. 8x I/O Drawers
3. Integrated Battery Backup (IBB) with redundancy
4. Slim line or acoustic covers

The following weights include the bulk power assembly (BPA).

p5-590 CEC rack with bolt-on Expansion Rack (#8691)			
With Acoustic Doors		With Slim Line Doors	
With IBB kg (lb)	Without IBB kg (lb)	With IBB kg (lb)	Without IBB kg (lb)
2,248 (4,956)	1,917 (4,359)	2,230 (4,917)	1,960 (4,320)

The maximum stand-alone weight of a fully populated IBM eServer p5 590 CEC rack with two Processor Books and four I/O Drawers without IBB and two I/O Drawers with IBB is:

p5-590 CEC rack			
With Acoustic Doors		With Slim Line Doors	
With IBB kg (lb)	Without IBB kg (lb)	With IBB kg (lb)	Without IBB kg (lb)
1,310 (2,887)	1,249 (2,754)	1,301 (2,688)	1,241 (2,735)

Operating Environment

Temperature: 10-32C (50-90F): 16 to 32-way
Max Altitude: 3,048m (10,000 ft): 16-way & 32-way
Max temp at 3,048m (10,000 ft) 24C (46.4F)

Relative humidity: 8 % to 80 %
Maximum wet bulb: 23 degrees C (73 F) (operating)

Sound power:
 8.3 bels (operating with slim line covers)
 7.6 bels (operating with acoustic covers)

Sound pressure:
 66 dBa (operating with slim line covers)
 59 dBa (operating with acoustic covers)

Power requirements
 Operating voltage (3-phase V ac at 50/60 Hz): 200 to 240 V; 380 to 415 V; 480 V
 Rated current (A per phase): 60 A; 32 A; 24 A
 Inrush current: 163 A (max)
 Power consumption: 16,700 watts (maximum)
 Power source loading: 16.7 kVA
 Thermal output: 16,702 joules/sec (57,000 Btu/hr) maximum

Limitations

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Racks, Power and Cooling

==========

The Primary System Rack contains an integrated Power Subsystem

#8691 Unpowered Expansion Rack is available if additional 24-inch rack space is required. To install the Expansion Rack feature, the side cover of the system rack is removed, the Expansion Rack is bolted to the side, and the side cover is placed on the exposed side of the Expansion Rack. Power for components in the Expansion Rack is provided from the bulk power assemblies in the powered Expansion Rack.

All p5-590 racks and Expansion Rack features must have door assemblies installed. Doors kits containing front and rear doors are available in either slim line or acoustic styles.

Power for the p5-590 CEC is supplied from DC bulk power assemblies in the system rack. The bulk power is converted to the power levels required for the CEC via DC Power Converters.

The primary system rack always incorporates two bulk power assemblies for redundancy. These provide 350V DC power for devices located in those racks and associated nonpowered Expansion Racks. These bulk power assemblies are mounted in front and rear positions and occupy the top 8U of the rack. To help provide optimum system availability, these bulk power assemblies should be powered from separate power sources with separate line cords.

3x #7809 DC Power Converters are required for CEC components and the first 16-way Processor Book
An additional 3x #7809 DC Power Converters must be added for each additional 16-way Processor Book

The base CEC contains 4 Cooling Fans. Cooling Group FC #7807 is required for p5-590 servers with 2x 16-way Processor Modules

Power cable groups are used to connect the DC Power Converters to the Bulk Power Assembly (BPA)
#7821 provides power for the CEC and four cooling fans
#7822 provides power for the first Processor Book
#7823 provides power for the second Processor Book
#7826 provides power for Cooling Group FC 7807

#6186 Bulk Power Regulators (BPR) is used to interface to the Bulk Power Assemblies to help ensure proper power is supplied to the systems components. Bulk Power Regulators are always installed in pairs in the front and rear bulk power assemblies to provide redundancy. The number of Bulk Power Regulators required is configuration-dependent based on the number of processor MCMs and I/O Drawers installed.

#7803 Redundant Bulk Power Controller (BPC) assemblies are required for the bulk power assemblies. In addition to providing power control, each BPC provides six power connectors for attaching system components.

#7837 Redundant Power Distribution Assemblies are required for all p5-590 systems - one per bulk power assembly. Each power controller provides power connections to support the system cooling fan's DC Power Converters contained in the CEC and the I/O Drawers. Ten connector locations are provided by each Power Distribution Assembly.

Additional Power Distribution Assemblies are added to provide more connections for larger system configurations.

The number of #6186 Bulk Power Regulators (BPR) and #7837 Bulk Power Distribution (BPD) Assemblies varies, depending on the number of Processor Books and I/O Drawers installed in the p5-590 server. The following table provides the number of BPRs and BPDs required for each combination:

	1 Proc Book		2 Proc Books	
	BPR	BPD	BPR	BPD
1 Drawer	2	2	4	4
2-3 Drawers	4	2	6	4
3 Drawers	4	2	6	4
4-6 Drawers	4	4	6	4
7-8 Drawers	N/A	N/A	6	6

An optional Integrated Battery Backup is available, if desired. The battery backup features are designed to protect against power line disturbances and provide sufficient power to allow an orderly system shutdown in the event that the power sources fail. The battery backup features each require 2U of space in the primary system rack or in the #8691 Expansion Rack.

#6200 Primary Battery Backup is used to back up the front-mounted power subsystem. It interfaces to the power regulators with the FC 6240 cable. If battery backup is desired, one battery backup (#6200) should be ordered for each power regulator in the front power subsystem.

#6201 Redundant Battery Backup is used for the rear-mounted power subsystem if redundancy is desired. It interfaces to the power regulators via the #6240 Cable. If redundant battery backup is desired, 1x #6201 Redundant Battery Backup should be ordered for each power regulator in the rear power subsystem.

#6200 Primary Battery Backup is a prerequisite to ordering #6201 Redundant Battery Backup

If additional external communication and storage devices are required, 7014-T00 or T42 racks should be ordered. There is no limit on the quantity of 7014 racks allowed.

Logical partitioning

Logical partitioning (LPAR) allows the p5-590 server resources to be allocated and to simultaneously run multiple instances of the supported operating systems on a single server.

LPAR allocation, monitoring and control is provided by the HMC
Each LPAR functions under its own instance of the operating system
A minimum of 128MB of memory is required per LPAR

Advanced POWER Virtualization technology and Partition Load Manager

Advanced POWER Virtualization allows the creation of partitions that are in units of less than one CPU (sub-CPU LPARs) and allows the same system I/O to be virtually allocated to these partitions. With Advanced POWER Virtualization feature, the processors on the system can be partitioned into as many as 10 LPARs per processor. Advanced POWER Virtualization feature includes Partition Load Manager, which provides cross-partition workload management across the system LPARs.

An encrypted key is supplied to the customer and installed on the system, authorizing the partitioning at the subprocessor level.

Using Advanced POWER Virtualization feature, the p5-590 can be divided into as many as 254 LPARs. System resources can be dedicated to each LPAR.

Advanced POWER Virtualization feature requires AIX 5L V5.3 or SUSE LINUX Enterprise Server 9 for POWER

System Control

Each p5-590 server must be connected to a Hardware Management Console (HMC) for system control, LPAR, Capacity Upgrade on Demand, and service functions. The HMC is capable of supporting multiple POWER5 servers.

Each p5-590 server can be connected to two HMCs for redundancy, if desired.

The p5-590 is connected to the HMC through Ethernet connections.

I/O Drawers

The p5-590 uses 4U-tall Remote I/O Drawers for directly attached PCI or PCI-X adapters and SCSI disk capabilities.

Each I/O Drawer is divided into two separate halves. Each half contains 10 blind-swap PCI-X slots and one or two Ultra3 SCSI 4-pack backplanes for a total of 20 PCI slots and up to 16 hot-swap disk bays per drawer.

A minimum of one I/O Drawer (#5791 or #5794) is required per system.
I/O Drawer FC 5791 contains 20 PCI-X slots and 16 disk bays
I/O Drawer FC 5794 contains 20 PCI-X slots and 8 disk bays

Existing 7040-61D I/O Drawers may be attached to a p5-590 server as additional I/O Drawers, if available.

Only 7040-61D I/O Drawers containing FC 6571 PCI-X planars are supported. Any FC 6563 PCI planars must be replaced with FC 6571 PCI-X planars before the drawer can be attached.

Only adapters supported on the p5-590 feature I/O Drawers are supported in 7040-61D I/O Drawers, if attached. Unsupported adapters must be removed before attaching the drawer to the p5-590 server.

A maximum of eight I/O Drawers can be connected to a p5-590 server.

One single-wide, blind-swap cassette (equivalent to those in #4599) is provided in each PCI or PCI-X slot of the I/O Drawer. Cassettes not containing an adapter will be shipped with a Dummy card installed to help ensure proper environmental characteristics for the drawer. If additional single-wide, blind-swap cassettes are needed, FC 4599 should be ordered.

All 10 PCI-X slots on each I/O Drawer planar are capable of supporting either 64-bit or 32-bit PCI or PCI-X adapters. Each I/O Drawer planar provides 10 PCI-X slots capable of supporting 3.3 V signaling PCI or PCI-X adapters operating at speeds up to 133MHz.

Each I/O Drawer planar incorporates two integrated Ultra3 SCSI adapters for direct attachment of the two 4-pack hot-swap backplanes in that half of the drawer. These adapters do not support external SCSI device attachments.

Each half of the I/O Drawer is powered separately

I/O Drawer Attachment

System I/O Drawers are always connected to the p5-590 CEC via RIO-2 loops. Drawer connections are always made in loops to help protect against a single point-of-failure resulting from an open, missing, or disconnected cable. Systems with non-looped configurations could experience degraded performance and serviceability.

RIO-2 loop connections operate at 1GHz. RIO-2 loops connect to the system CEC via #7818 RIO-2 Loop Attachment Adapters. Each of these adapters has two ports and can support one RIO-2 loop. Up to six of the adapters can be installed in each 16-way Processor Book.

Up to eight I/O Drawers can be attached to the p5-590, depending on the server and attachment configuration.

I/O Drawers may be connected to the CEC in either single-loop or dual-loop mode. Dual-loop mode is recommended whenever possible as it provides the maximum bandwidth between the I/O Drawer and the CEC.

Single-Loop Mode connects an entire I/O Drawer to the CEC via one RIO-2 loop (2 ports). The two I/O planars in the I/O Drawer are connected together via a short RIO-2 cable. Single-loop connection requires one loop (2 ports) per I/O Drawer.

Dual-Loop Mode connects each I/O planar in the drawer to the CEC separately. Each I/O planar is connected to the CEC via a separate RIO-2 loop. Dual-loop connection requires two loops (4 ports) per I/O Drawer.

The following indicates the number of Single-Looped and Double-Looped I/O Drawers that can be connected to a p5-590 server based on the number of Processor Books installed:

# Processor Books	Single Looped	Dual Looped
1	6	3
2	8	6

On initial orders of p5-590 servers, IBM manufacturing will place dual-loop-connected I/O Drawers as the lowest numerically designated drawers followed by any single-looped I/O Drawers.

Disks, Boot Devices, Media Devices

The p5-590 server must have access to a device capable of reading CD media or to a NIM server.

The recommended devices for reading CD media are the 7212-102, 7210-025, or 7210-030. These devices attach via a PCI SCSI adapter in one of the system I/O Drawers.

If a NIM server is used, it must attach via a PCI LAN adapter in one of the system I/O Drawers. An Ethernet adapter is recommended.

A minimum of two internal SCSI hard disks are required per p5-590 server. It is recommended that these disks be used as mirrored boot devices. These disks should be mounted in the first I/O Drawer whenever possible. This configuration provides service personnel the maximum amount of diagnostic information if the system encounters errors in the boot sequence.

Boot support is also available from local SCSI, SSA, and Fibre Channel adapters, or from networks via Ethernet or token-ring adapters.

Consideration should also be given to the placement of the AIX rootvg volume group in the first I/O Drawer. This allows AIX to boot any time other I/O Drawers are found offline during boot.

If the boot source other than internal disk is configured, the supporting adapter should also be in the first I/O Drawer.

The p5-590 server incorporates an Early Power Off Warning (EPOW) capability that assists in performing an orderly system shutdown in the event of a sudden power loss. IBM recommends use of the Integrated Battery Backup features or an uninterruptible power system (UPS) to help ensure against loss of data due to power failures.

PCI and PCI-X slots and adapters

System maximum limits for adapters and devices may not provide optimal system performance. These limits are given for connectivity and function information.

Configuration limitations have been established to help ensure appropriate PCI or PCI-X bus loading, adapter addressing, and system and adapter functional characteristics when ordering I/O Drawers. These I/O Drawer limitations are in addition to individual adapter limitations shown in the feature descriptions section of the Sales Manual.

Adapters

Most PCI and PCI-X adapters for the p5-590 system are capable of being hot-plugged. Any PCI adapter supporting a boot device or system console should not be hot-plugged.

The following adapters are not hot-plug-capable:
#2849 POWER GXT135P Graphics Accelerator with Digital Support
#2962 2-Port Multiprotocol PCI Adapter

The maximum number of a specific PCI or PCI-X adapter allowed per p5-590 server may be less than the number allowed per I/O Drawer multiplied by the maximum number of I/O Drawers.

On-Demand Computing - Capacity Upgrade on Demand

Processors:
Capacity Upgrade on Demand (CUoD) for processors is available for the p5-590 servers. CUoD for processors allows inactive processors to be installed in the p5-590 server and can be permanently activated by the customer as required.

All Processor Books available on the p5-590 are initially implemented as 16-way CUoD offerings with zero active processors.

A minimum of eight permanently activated processors are required on the p5-590 server.

The number of permanently activated processors is based on the number of Processor Books installed as follows:
- 1x Processor Book installed requires 8 permanently activated processors.
- 2x Processor Books installed requires 16 permanently activated processors.

Additional processors on the CUoD MCMs are activated in increments of one by ordering the appropriate activation FC. If more than one processor is to be activated at the same time, the activation code should be ordered in multiples.

After receiving an order for a CUoD for processors activation code, IBM will provide the customer with a 32-character encrypted key. This key is entered into the system to activate the desired number of additional processors.

CUoD processors that have not been activated are available to the p5-590 server for dynamic processor sparing when running the AIX 5L operating system. If the server detects the impending failure of an active processor, it will attempt to activate one of the unused CUoD processors and add it to the system configuration. This helps to keep the server's processing power at full strength until a repair action can be scheduled.

On/Off Capacity on Demand (On/Off CoD)

On/Off Capacity on Demand (On/Off CoD) is available for p5-590 servers. On/Off CoD for processors allows customers to temporarily activate installed CUoD processors and memory resources and later deactivate the resources as desired.

Customers with installed but inactive CUoD processor and memory resources can order On/Off CoD activation features. Each On/Off CoD activation ordered authorizes activation of one processor or 1GB of memory for 30 days of usage. These activations may be used for 30 consecutive days or turned on and off over a longer period of time, if desired.

On/Off processor resources can be implemented via a prepaid plan, if desired. The 30 Days Prepaid Reserve Capacity features allow use of processors for up to 30 days as required at the customer's discretion without further contracts or authorization. Prepaid Reserve Capacity requires the Advanced POWER Virtualization feature.

On/Off processor and memory resources can be implemented on a pay-as-you-go basis.

On/Off Processor and Memory Enablement features can be used. Signing an On/Off Capacity on Demand contract is required. An Enablement code will be supplied to activate the Enablement feature.

After the On/Off Enablement feature is ordered and the associated Enablement code is entered into the system, the customer must report their on/off usage to IBM at least monthly. This information, which is used to compute the billing data, is provided to the sales channel. The sales channel will place an order for a quantity of On/Off Memory Day Billing features used and invoice the customer.

Customers may order multiples of the On/Off CoD activation features, if desired. The HMC controlling the p5-590 server will be used to set the parameters desired when using multiple On/Off CoD activation features.

Each On/Off CoD (Capacity on Demand) activation feature provides 30 days of usage for CUoD processor or memory feature. Each On/Off CoD feature applies to any of the inactive CUoD processors or memory installed in the system. The following are examples of the usage calculation:

A processor day is measured each time a processor is activated in a 24-hour period or any fraction thereof. If four processors are activated for two hours of testing or production, the result is four processor usage days.

Each time processors are activated starts a new measurement day. If a customer activates four processors for a two-hour test and later in the same 24-hour period activates two processor for two hours to meet a peak workload, the result is six processor days usage.

Capacity Upgrade on Demand for Memory

Capacity Upgrade on Demand (CUoD) for memory is available for p5-590 servers. CUoD for memory allows inactive memory to be installed in the p5-590 server, which can be permanently activated by the customer as required.

CUoD for memory may be used in any available memory position.

Additional CUoD memory cards are activated in increments of 1GB by ordering the appropriate activation FC. If more than one 1GB memory increment is to be activated at the same time, the activation code should be ordered in multiples.

After receiving an order for a CUoD for memory activation feature, IBM will provide the customer a 32-character encrypted key. This key is entered into the system to activate the desired number of additional 1GB memory increments.

Memory configuration rules for the p5-590 server apply to CUoD for memory cards as well as conventional memory cards. The memory configuration rules are applied based upon the maximum capacity of the memory card:

4GB Config rules apply to 4GB CUoD for Memory Cards with less than 4GB of active memory
8GB Config rules apply to 8GB CUoD for Memory Cards with less than 8GB of active memory.

Trial Capacity on Demand

Trial Capacity on Demand (Trial CoD) is a function delivered with all pSeries servers supporting CUoD resources beginning May 30, 2003. Those servers with standby CUoD processors or memory will be capable of using a one-time, no-cost activation for a maximum period of 30 consecutive days. This enhancement allows for benchmarking of CUoD resources or can be used to provide immediate access to standby resources when the purchase of a permanent activation is pending.

Trial CoD is a complimentary service offered by IBM. Although IBM intends to continue it for the foreseeable future, IBM reserves the right to withdraw Trial CoD at any time with or without notice.

Dynamic logical partitioning

Dynamic logical partitioning (DLPAR) allows system resources to be easily and quickly configured across multiple LPARs on the p5-590 server. DLPAR can be used to add newly activated Capacity Upgrade on Demand processors and memory into the p5-590 configuration without requiring a system reboot.

This function is supported by AIX 5L and the Linux 2.6 kernel which is currently available only in SUSE LINUX Enterprise Server 9 for POWER.

Software Requirements:

If installing AIX - one of these:
   AIX Version 5L for POWER V5.2 with the 5200-04 (APAR IY56722) or
   AIX 5L for POWER V5.3
   (#7941 Advanced POWER Virtualization is not supported on AIX 5L for POWER V5.2)

If installing Linux - one of these:
   SUSE LINUX Enterprise Server 9 for POWER or
   Red Hat Enterprise Linux AS for POWER Version 3 (Planned Availability Date: Sept 30, 2004)

   Not all p5-550 FCs are supported by the Linux operating system
   Info on FCs and Devices supported by Linux can be found at:
   http://www-1.ibm.com/servers/eserver/pseries/linux

Publications:

SK3T-8159 IBM eServer Hardware Information Center CD-ROM
G229-9054 IBM eServer Safety Information
SA41-5156 Start Here for IBM eServer
Z125-4753 IBM Statement of Limited Warranty
Z125-5468 IBM License Agreement for Machine Code
GC52-1065 Pointer Sheet for Machine Internal Code License Agreement

This info brief is based upon various industry sources, including published IBM documentation, technical publications and marketing materials:

Reference URLs: (http://www.)

IBM Public Announcements:	ibm.com/common/ssi/OIAccess.wss
IBM SalesManual:	ibm.com/common/ssi/OIAccess.wss
eServerInfoCenter	http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/
pSeries Facts and Features	ibm.com/servers/eserver/pseries/hardware/factsfeatures.pdf
Various Whitepapers	redbooks.ibm.com
RISC Analysis	riscanalysis.com

Content derived from IBM documentation, technical publications and marketing materials has been modified to allow for technical corrections, reduced repetition and ease of comprehension.

9119-595
IBM eServer p5
Model 595

Available 2004/11/19

The p5-595 is a 42U tall, 24-inch Rack System Server.
It is available in 16-way, 32-way, 48-way, and 64-way configurations, using 64-bit Copper-Based POWER5 Symmetric Microprocessors (SMP) running at 1.65GHz (Standard) and 1.90GHz (Turbo) speeds.

The p5-595 supports memory expansion up to 2048GB (2.0TB) of DDR1 memory or 256GB of DDR2 memory

Up to 12x I/O Drawers can be configured on a p5-595 server. Each I/O Drawer contains 20x 3.3V PCI-X Adapter Slots and up to 16x Disk Bays. Fully configured, the p5-595 can support up to 240x Hot Swap PCI-X Adapters, up to 192x Hot Swap Disk Drives and up to 24x RIO-2 Adapters.

Processors:
==========
The server can be configured with from 1 to 4, Standard or Turbo, 16-way Processor Books.
Each 16-way Processor Book contains two 8-way Multi-Chip Modules (MCMs). Each 8-way MCM contains four Dual Core Processor Chips. Each pair of processors within an MCM is supported by 1.9MB of Level 2 cache and 36MB of Level 3 cache.

Each 16-way Processor Book also includes 16 slots for memory cards and 6x RIO-2 attachment cards for connection of the system I/O Drawers.

The initial Processor Features are:
#7813: 1.90GHz 16-Way POWER5 Turbo CUoD Processor Book 0-Way Active
#7988: 1.65GHZ 16-Way POWER5 Standard CUoD Processor Book 0-Way Active

Activation Features are:
#7815: One Processor Activation #7813 1.90GHz CUoD Processor Book
#7990: One Processor Activation #7988 1.65GHz CUoD Processor Book

The 16-way Processor Books have 0 Processors Activated. Activation is enabled via the appropriate FC.

CUoD Processors are:
#7971: On/Off Processor Enablement for #7813 1.90GHz
#7972: On/Off Processor Billing for Feature #7813 1.90GHz
#7975: 30 Days Prepaid Reserve Capacity for #7813 1.90GHz
#7991: 30 Days Prepaid Reserve Capacity for #7988 1.65GHz
#7994: On/Off Processor Enablement for #7988 1.65GHz
#7996: On/Off Processor Billing for CoD for #7988 1.65GHz
CUoD is discussed towards the end of this document

Memory
==========
The p5-595 utilizes Type 1 or Type 2 Dual Data Rate (DDR) DRAM memory cards.
Each Processor Book provides 16 memory card slots for a maximum of 64 memory cards per server.

Minimum system memory is 8GB
Maximum system memory is 2048GB with DDR1 Memory or 256GB with DDR2 memory

Available Memory Cards (DDR1)
#7816: 4GB 266MHz DDR1 CUoD Card with 2GB Active
#7835: 8GB 266MHz DDR1 CUoD Card with 4GB Active
#7828: 16GB Fully Activated 266MHz DDR1 Card
#7829: 32GB Fully Activated 200MHz DDR1 Card
#8195: 256GB Package of 32 Fully Activated 8GB DDR1 Cards
#8197: 512GB Package of 32 Fully Activated 16GB DDR1 Cards
#8198: 512GB Package of 16 Fully Activated 32GB DDR1 Cards

Available Memory Cards (DDR2)
#7814: 4GB 533MHz Fully Activated Memory DDR2 Card

DDR1 and DDR2 cannot be mixed within a p5-590 server
Memory must be installed in identical pairs

Each Processor Book Contains 2 MCMs
p5-590 servers w/ 1x Processor Book must have min 2x Memory Cards installed
p5-590 servers w/ 2x Processor Books must have min 4x Memory Cards installed per Processor Book (2 per MCM)

The following memory configuration guidelines are recommended:
The same amount of memory should be used for each MCM in the system

Each 8-way MCM should have some memory
No more than two different sizes of memory cards should be used in each Processor Book
All MCMs in the system should have the same aggregate memory size
At least half of the available memory slots in the system should contain memory
It is better to install more cards of smaller capacity than fewer cards of larger capacity

For p5-590 servers being used for high-performance computing, the following are strongly recommended:
 Use DDR2 memory.
 Install some memory in support of each 8-way MCM
 Use the same sized memory cards across all MCMs and Processor Books

Other features include:
==========
 Integrated service processor
 Integrated redundant power subsystem
 Two integrated Ultra3 dual SCSI controllers per I/O Drawer
 Battery backup option
 Powered and nonpowered Expansion Rack options
 Dynamic logical partitioning (DLPAR) with up to 254 partitions supported
 Support for Redundant power subsystem
 Support for Dynamic LPAR and CUoD
 Support for Advanced POWER Virtualization technologies

The p5-595 supports AIX 5L V5.2, AIX 5L V5.3, Linux and i5/OS V5R3 Operating Systems that can run simultaneously in different partitions within the p5-595 server. Note, not all features are supported under the Linux O/S.

Customer Setup (CSU)
==========
Customer setup box: No
Customer setup model conversion: No
Customer setup MES: No, except for keyboards, displays, CUoD activations, etc.

Technical Description
==========

System Racks
The p5 595 system offers three separate 42U, 24-inch Racks:
 p5-595 pSeries Primary Powered System Rack
 #5792: pSeries Powered Expansion Rack
 #8691: pSeries non-Powered Expansion Rack

	System Rack	5792 Rack	8691 Rack
18U CEC Assy (1-4 Proc Books)	Yes	No	No
Primary and Redundant Bulk Power Assembly (BPA)	Yes	Yes	No
Primary & Redundant Optional Integrated Batt Backup (IBB)	Yes	Yes	No
RIO-2 I/O Drawers	4	8	8

(p5-595 supports up to 12 RIO-2 Drawers)

The Powered Racks incorporate a BPA which provides a maximum power of 22.7kW through either a 200, 380, or 480V AC (3-phase) Dual AC Line Cord. The BPA is mounted in the Front (Primary) and Rear (Redundant) sections of the top 8U of the rack. The racks have an option for an Integrated Battery Backup (IBB) feature mounted in the Front (Primary) and Rear (Redundant) sections of the rack.

The #8691 non-Powered rack bolts onto either the CEC System Rack or the #5792 Powered Expansion Rack. The bolt-on rack contains I/O Drawers only and receives power from either the CEC Rack or the Powered Expansion Rack.

All racks support either Slim-Line or Acoustic Front and Rear Covers.

One frame & two frame dimensions (Slim-Line and Acoustic Covers)

	Slim line mm (in)		Acoustic mm (in)	
	1 Frame	2 Frame	1 Frame	2 Frame
Height	2,025 (79.7)	2,025 (79.7)	2,025 (79.2)	2,025 (79.2)
Width	785 (30.9)	1,575 (62.0)	785 (30.9)	1,575 (62.0)
Depth	1,326 (52.2)	1,326 (52.2)	1,681 (66.2)	1,681 (66.2)

(Dims are identical for the 595 System Rack, #5791 Exp Rack and #8691 Exp Rack)

Maximum weight configuration

The maximum weight configuration of a p5-595 rack assembly occurs when the primary CEC Rack is joined with #8691 Bolt-On Expansion Rack. The options for this configuration include:

Processor Books (2)
I/O Drawers (12 without IBB, 10 with IBB)
Integrated Battery Backup (IBB) feature with redundancy
Slim line or acoustic covers

The following weights include the required bulk power assembly (BPA).

p5-595 CEC rack with bolt-on Expansion Rack (#8691)			
With acoustic doors		With slim line doors	
With IBB kg (lb)	Without IBB kg (lb)	With IBB kg (lb)	Without IBB kg (lb)
2,458 (5,420)	2,398 (5,287)	2,441 (5,381)	2,380 (5,248)

The maximum stand-alone weight of a fully populated p5-595 CEC rack with two Processor Books and four I/O Drawers without IBB and two I/O Drawers with IBB is:

p5-595 CEC rack			
With acoustic doors		With slim line doors	
With IBB kg (lb)	Without IBB kg (lb)	With IBB kg (lb)	Without IBB kg (lb)
1,310 (2,887)	1,249 (2,754)	1,301 (2,868)	1,241 (2,735)

The maximum weight configuration of the powered Expansion Rack (#5792) occurs when it is joined with a bolt-on Expansion Rack (#8691). The options for this configuration include:

I/O Drawers (10 with IBB)
Integrated Battery Backup (IBB) feature with redundancy
Slim line or acoustic doors

The following weights include the required bulk power assembly (BPA).

Powered Expansion Rack (#5792) with bolt-on Expansion Rack (#8691)			
With acoustic doors		With slim line doors	
With IBB kg (lb)	Without IBB kg (lb)	With IBB kg (lb)	Without IBB kg (lb)
1,960 (4,322)	N/A(1)	1,943 (4,284)	N/A(1)

Note: (1) Maximum weight occurs only with IBB. Without IBB, system configuration does not require a #8691. The above table assumes full IBB of the Bulk Power Assembly.

The maximum stand-alone weight of a fully populated powered Expansion Rack (#5792) includes the following options:

 I/O Drawers (8 without IBB, 6 with IBB)
 Integrated Battery Backup (IBB) feature with redundancy
 Slim line or acoustic doors

Powered Expansion Rack (#5792)			
With acoustic doors		With slim line doors	
With IBB kg (lb)	Without IBB kg (lb)	With IBB kg (lb)	Without IBB kg (lb)
1,142 (2,517)	1,273 (2,806)	1,131 (2,494)	1,264 (2,786)

For a Site Hardware Planning Guide, visit the IBM eServer Hardware Information Center and select [Planning]
http://publib.boulder.ibm.com/infocenter/ eserver/v1r2s/en_US/index.ht m

Operating Environment
Temperature:
 10-32C (50-90F) for 16-way to 32-way
 + Max altitude for 16-way and 32-way systems is 3,048m (10,000 ft)
   Max temp at 3,048m (10,000 ft) is 24C (46.4F)

 10-28C (50-82F) for 48-to 64-way
 + Max altitude for 48-way and 64-way systems is 2,133m (7000 ft)
   Max temp at 2,133m (7000 ft) is 24C (46.4F)

 Relative humidity: 8 % to 80 %
 Maximum wet bulb: 23 degrees C (73 F) (operating)
 Sound power:
  8.3 bels (operating with slim line covers)
  7.6 bels (operating with acoustic covers)
 Sound pressure:
  66 dBa (operating with slim line covers)
  59 dBa (operating with acoustic covers)
  Noise level of a single A-Frame with thin covers is about
  the same as five A-Frames with acoustic covers.

Power requirements
 Operating voltage (3-phase AC at 50/60 Hz): 200-240V; 380-415V; 480V
 Rated current (A per phase): 60A; 32A; 24A
 Inrush current: 163A (maximum)
 Power consumption: 22,710W (maximum)
 Power source loading: 22.7kVA
 Thermal output: 22,710 joules/sec (77,500 Btu/hr) maximum

Limitations
==========

Central electronics complex
==========
The p5-595 CEC is an 18U-tall, 24-inch rack-mounted device. It houses the system processors, memory, system support processor, I/O Drawer connection capability, and associated components. It is installed immediately below the power subsystem.

Processor Books are available in Standard (1.65GHz) and Turbo (1.9GHz) speeds.
All Processor Books in a p5-595 must operate at the same speed.

1x #7812 Multiplexer Card is required for each Processor Book.
The Multiplexer Card provides communication between the Processor Books and the Service Processor

Racks, Power and Cooling
==========
The p5-595 server must be installed in a raised floor environment.

All p5-595 racks and expansion feature racks must have door assemblies installed. Door kits containing front and rear doors are available in either slim line or acoustic styles.

The p5-595 uses redundant power throughout its design. It implements redundant bulk power assemblies, bulk power regulators, power controllers, power distribution assemblies, DC Power Converters, and associated cabling.

Power for the p5-595 CEC is supplied from DC bulk power assemblies in the system rack. The bulk power is converted to the power levels required for the CEC via DC Power Converters.

The primary system rack and powered Expansion Rack always incorporate two bulk power assemblies for redundancy. These provide 350V DC power for devices located in those racks and associated nonpowered Expansion Racks. These bulk power assemblies are mounted in front and rear positions and occupy the top 8U of the rack. To help provide optimum system availability, these bulk power assemblies should be powered from separate power sources with separate line cords.

Three DC Power Converters (#7809) are always required for miscellaneous CEC components and the first 16-way Processor Book.
Three additional DC Power Converters must be added for each additional 16-way Processor Book (second, third, or fourth).

The base CEC contains four cooling fans. Cooling group FC 7807 is required for p5-595 servers configured with:
- One or more turbo Processor Books (#7813)
- Two or more standard Processor Books (#7988)

Power cable groups are used to connect the DC Power Converters to the bulk power assembly.
- FC 7821 provides power for the CEC and four cooling fans.
- FC 7822 provides power for the first Processor Book.
- FC 7823 provides power for the second Processor Book.
- FC 7824 provides power for the third Processor Book.
- FC 7825 provides power for the fourth Processor Book.
- FC 7826 provides power for cooling group FC 7807.

Redundant Bulk Power Regulators (BPR) (#6186) interface to the bulk power assemblies to help ensure proper power is supplied to the system components. Bulk power regulators are always installed in pairs in the front and rear bulk power assemblies to provide redundancy. The number of bulk power regulators required is configuration-dependent based on the number of processor MCMs and I/O Drawers installed.

Redundant Bulk Power Controller (BPC) (#7803) assemblies are required for the bulk power assemblies. In addition to providing power control, each BPC provides six power connectors for attaching system components.

Redundant Bulk Power Distribution (BPD) Assemblies (#7837) provide additional power connections to support the system cooling fans DC Power Converters contained in the CEC and the I/O Drawers. Ten connector locations are provided by each power distribution assembly.

When p5-595 servers contain three or four Processor Books, the power subsystem in the primary system rack can support only the CEC and any I/O Drawers that can be mounted in the system rack itself. In such configurations, additional I/O Drawers must be mounted in the powered Expansion Rack (#5792). In very large configurations, which include battery backup, the unpowered Expansion Rack (#8691) is attached to the powered Expansion Rack (#5792).

The power subsystem in the primary system rack is capable of supporting p5-595 servers with one or two Processor Books installed and up to twelve attached I/O Drawers. In such configurations, some I/O Drawers are mounted in the unpowered Expansion Rack (#8691), which is attached directly to the system rack. The I/O Drawers in the FC 8691 rack receive their power from the power subsystem in the system rack.

p5-595 servers with one or two Processor Books installed can also use the powered Expansion Rack for mounting any I/O Drawers that cannot be mounted in the primary system rack. Customers purchasing p5-595 servers with only one or two Processor Books and more I/O Drawers than can be configured in the primary system rack should carefully consider their future system growth requirements to determine which rack combination to purchase.

The number of Bulk Power Regulators (BPR) (#6186) and Bulk Power Distribution (BPD) Assemblies (#7837) varies, depending on the number of Processor Books, I/O Drawers, and battery backup features installed, as well as the racking configurations. The following tables provide the number of BPRs and BPDs required for each combination:

p5-595 Servers w/ #5792 Powered Expansion Rack:

	w/FC #6200 IBB	1 Proc Book		2 Proc Books		3 Proc Books		4 Proc Books	
		BPR	BPD	BPR	BPD	BPR	BPD	BPR	BPD
1 Drawer	No	2	4	4	4	6	4	6	4
5-6 Drawers	No	6	4	8	6	8	4	8	4
2-4 Drawers	No	4	4	6	4	6	4	6	4
7-8 Drawers	No	N/A	N/A	8	6	8	6	8	6
9-12 Drawers	No	N/A	N/A	8	8	10	6	10	6
1 Drawer	Yes	2	4	4	4	6	4	6	4
2 Drawers	Yes	4	4	6	4	6	4	6	4
3 Drawers	Yes	4	4	8	4	8	4	8	4
4-5 Drawers	Yes	6	4	8	4	8	4	8	4
6 Drawers	Yes	6	4	8	6	8	6	8	6
7 Drawers	Yes	N/A	N/A	8	6	8	6	8	6
8-10 Drawers	Yes	N/A	N/A	10	6	10	6	10	6
11-12 Drawers	Yes	N/A	N/A	10	8	10	8	10	8

595 Server w/ #8691 Unpowered Exp Rack - with or w/out #6200 Battery Backup

	1 Proc Book		2 Proc Books	
	BPR	BPD	BPR	BPD
1 Drawer	2	4	4	4
2-6 Drawers	4	4	6	4
7-12 Drawers	N/A	N/A	6	6

An optional Integrated Battery Backup is available, if desired. The battery backup features are designed to protect against power line disturbances and provide sufficient power to allow an orderly system shutdown in the event that the power sources fail. The battery backup features each require 2U of space in the primary system rack or in the powered Expansion Rack (#5792). The battery backup features attach to the system bulk power regulators.

The primary Integrated Battery Backup (#6200) is used to back up the power subsystem mounted in the front of the system or powered Expansion Racks. If battery backup is desired, one FC 6200 should be ordered for each BPR in the front power subsystem. The primary battery backup features mount in the front of the rack. The first and second battery backup units are mounted in the 13U and 15U locations within the rack. If a third primary backup feature is required it will be mounted at the 11U location.

The redundant Integrated Battery Backup (#6201) is used to backup the power subsystem mounted in the back of the system or powered Expansion Racks. If redundant battery backup is desired, one FC 6201 should be ordered for each BPR in the rear power subsystem. The primary battery backup features mount in the back of the rack behind the primary batter backup features. The first and second battery backup units are mounted in the 13U and 15U locations within the rack. If a third primary backup feature is required, it will be mounted at the 11U location.

If additional external communication and storage devices are required, 7014-T00 or T42 racks should be ordered. There is no limit on the number of 7014 racks allowed.

Logical partitioning

Logical partitioning (LPAR) allows the p5-595 server resources to be allocated and to simultaneously run multiple instances of the supported operating systems on a single server.

LPAR allocation, monitoring, and control is provided by the Hardware Management Console.
Each LPAR functions under its own instance of the operating system.
A minimum of 128MB of memory is required per LPAR.

Advanced POWER Virtualization technology and Partition Load Manager

Advanced POWER Virtualization feature allows partitions to be created that are in units of less than one CPU (sub-CPU LPARs) and allows the same system I/O to be virtually allocated to these partitions. With Advanced POWER Virtualization feature, the processors on the system can be partitioned into as many as 10 LPARs per processor.

Advanced POWER Virtualization feature includes Partition Load Manager, which provides cross-partition workload management across the system LPARs. An encrypted key is supplied to the customer and installed on the system, authorizing the partitioning at the subprocessor level.

Using Advanced POWER Virtualization feature, the p5-595 can be divided into as many as 254 LPARs. System resources can be dedicated to each LPAR. Advanced POWER Virtualization feature requires AIX 5L V5.3 or SUSE LINUX Enterprise Server 9 for POWER.

System control

Each p5-595 server must be connected to a Hardware Management Console (HMC) for system control, LPAR, Capacity Upgrade on Demand, and service functions. The HMC is capable of supporting multiple POWER5 servers.

Each p5-595 server can be connected to two HMCs for redundancy, if desired. The p5-595 is connected to the HMC through Ethernet connections to the Front and Rear Bulk Power Controllers (#7803).

I/O Drawers

The p5-595 utilizes 4U-tall remote I/O Drawers for directly attached PCI or PCI-X adapters and SCSI disk capabilities.

Each I/O Drawer is divided into two separate halves. Each half contains 10 blind-swap PCI-X slots and one or two Ultra3 SCSI 4-pack backplanes for a total of 20 PCI slots and up to 16 hot-swap Disk Bays per drawer.

A minimum of one I/O Drawer (#5791 or #5794) is required per system. I/O Drawer FC 5791 contains 20 PCI-X slots and 16 Disk Bays, and FC 5794 contains 20 PCI-X slots and 8 Disk Bays.

Existing 7040-61D I/O Drawers may be attached to a p5-595 server as additional I/O Drawers, if available.

Only 7040-61D I/O Drawers containing FC 6571 PCI-X planars are supported. Any FC 6563 PCI planars must be replaced with FC 6571 PCI-X planars before the drawer can be attached.

Only adapters supported on the p5-595 feature I/O Drawers are supported in 7040-61D I/O Drawers, if attached. Unsupported adapters must be removed before attaching the drawer to the p5-595 server.

A maximum of 12 I/O Drawers can be connected to a p5-595 server.

One single-wide, blind-swap cassette (equivalent to those in #4599) is provided in each PCI or PCI-X slot of the I/O Drawer. Cassettes not containing an adapter will be shipped with a Dummy card installed to help ensure proper environmental characteristics for the drawer. If additional single-wide, blind-swap cassettes are needed, FC 4599 should be ordered.

All 10 PCI-X slots on each I/O Drawer planar are capable of supporting either 64-bit or 32-bit PCI or PCI-X adapters. Each I/O Drawer planar provides 10 PCI-X slots capable of supporting 3.3-V signaling PCI or PCI-X adapters operating at speeds up to 133MHz.

Each I/O Drawer planar incorporates two integrated Ultra3 SCSI adapters for direct attachment of the two 4-pack hot-swap backplanes in that half of the drawer. These adapters do not support external SCSI device attachments.

Each half of the I/O Drawer is powered separately.

I/O Drawer attachment

System I/O Drawers are always connected to the 595 CEC via RIO-2 loops. Drawer connections are always made in loops to help protect against a single point-of-failure resulting from an open, missing, or disconnected cable. Systems with nonlooped configurations could experience degraded performance and serviceability.

RIO-2 loop connections operate at 1GHz. RIO-2 loops connect to the system CEC via RIO-2 loop attachment adapters (#7818). Each adapter has two ports and can support one RIO-2 loop. Up to six of the adapters can be installed in each 16-way Processor Book.

Up to 12 I/O Drawers can be attached to the p5-595, depending on the server and attachment configuration.

I/O Drawers may be connected to the CEC in either single-loop or dual-loop mode. Dual-loop mode is recommended whenever possible as it provides the maximum bandwidth between the I/O Drawer and the CEC.

Single-loop mode connects an entire I/O Drawer to the CEC through one RIO-2 loop (two ports). The two I/O planars in the I/O Drawer are connected with a short RIO-2 cable. Single-loop connection requires one loop (two ports) per I/O Drawer.

Dual-loop mode connects each I/O planar in the drawer to the CEC separately. Each I/O planar is connected to the CEC through a separate RIO-2 loops. Dual-loop connection requires two loops (four ports) per I/O Drawer.

The following table indicates the number of single-looped and double-looped I/O Drawers that can be connected to a p5-595 server based on the number of Processor Books installed:

# Processor Books	Single Looped	Dual Looped
1	6	3
2	12	6
3	12	9
4	12	12

On initial orders of p5-595 servers, IBM manufacturing will place dual-loop-connected I/O Drawers as the lowest numerically designated drawers followed by any single-looped I/O Drawers.

Disks, boot devices, and media devices

The p5-595 server must have access to a device capable of reading CD media or to a NIM server.

The recommended devices for reading CD media are the 7212-102, 7210-025, or 7210-030. These devices attach via a PCI SCSI adapter in one of the system I/O Drawers.

If a NIM server is used, it must attach through a PCI LAN adapter in one of the system I/O Drawers. An Ethernet connection is recommended.

A minimum of two internal SCSI hard disks are required per p5-595 server. It is recommended that these disks be used as mirrored boot devices. These disks should be mounted in the first I/O Drawer whenever possible. This configuration provides service personnel the maximum amount of diagnostic information if the system encounters errors in the boot sequence.

Boot support is also available from local SCSI, SSA, and Fibre Channel adapters, or from networks via ENET or token-ring adapters.

Consideration should also be given to the placement of the AIX rootvg volume group in the first I/O Drawer. This allows AIX to boot any time other I/O Drawers are found offline during boot.

If the boot source other than internal disk is configured, the supporting adapter should also be in the first I/O Drawer.

The p5-595 incorporates an Early Power Off Warning (EPOW) capability that assists in performing an orderly system shutdown in the event of a sudden power loss. IBM recommends use of the Integrated Battery Backup features or an uninterruptible power system (UPS) to help ensure against loss of data due to power failures.

PCI and PCI-X slots and adapters

System maximum limits for adapters and devices may not provide optimal system performance. These limits are given to help assure connectivity and function.

Configuration limitations have been established to help ensure appropriate PCI or PCI-X bus loading, adapter addressing, and system and adapter functional characteristics when ordering I/O Drawers. These I/O Drawer limitations are in addition to individual adapter limitations shown in the feature descriptions section of the Sales Manual.

Adapters

Most PCI and PCI-X adapters for the p5-590 system are capable of being hot-plugged. Any PCI adapter supporting a boot device or system console should not be hot-plugged.

The following adapters are not hot-plug-capable:
 #2849 POWER GXT135P Graphics Accelerator with Digital Support
 #2962 2-Port Multiprotocol PCI Adapter

The maximum number of a specific PCI or PCI-X adapter allowed per p5-590 server may be less than the number allowed per I/O Drawer multiplied by the maximum number of I/O Drawers.

On Demand Computing - Capacity Upgrade on Demand

Processors
Capacity Upgrade on Demand (CUoD) for processors is available for the p5-595 servers. CUoD for processors allows inactive processors to be installed in the p5-595 server and can be permanently activated by the customer as required.

All Processor Books available on the p5-595 are initially implemented as 16-way CUoD offerings with zero active processors.

A minimum of 16 permanently activated processors are required on the p5-595 server.

The number of permanently activated processors is based on the number of Processor Books installed as follows:
 1x Processor Book installed requires 16 permanently activated processors.
 2x Processor Books installed requires 16 permanently activated processors.
 3x Processor Books installed requires 24 permanently activated processors.
 4x Processor Books installed requires 32 permanently activated processors.

Additional processors on the CUoD MCMs are activated in increments of one by ordering the appropriate activation FC. If more than one processor is to be activated at the same time, the activation feature should be ordered in multiples.

After receiving an order for a CUoD for processors activation feature, IBM will provide the customer with a 32-character encrypted key. This key is entered into the system to activate the desired number of additional processors.

CUoD processors that have not been activated are available to the p5-595 server for dynamic processor sparing when running the AIX 5L operating system. If the server detects the impending failure of an active processor, it will attempt to activate one of the unused CUoD processors and add it to the system configuration. This helps to keep the server's processing power at full strength until a repair action can be scheduled.

On/Off Capacity on Demand (On/Off CoD)

On/Off Capacity on Demand (On/Off CoD) is available for p5-595 servers. On/Off CoD allows customers to temporarily activate installed CUoD processors and memory resources and later deactivate the resources as desired.

Customers with installed but inactive CUoD processor and memory resources can order On/Off CoD activation features. Each On/Off CoD activation ordered authorizes activation of one processor or 1GB of memory for 30 days of usage. These activations may be used for 30 consecutive days or turned on and off over a longer period of time, if desired.

On/Off processor resources can be implemented via a prepaid plan if desired. The 30 Days Prepaid Reserve Capacity features allow use of processors for up to 30 days as required at the customer's discretion without further contracts or authorization. Prepaid Reserve Capacity requires Advanced POWER Virtualization feature.

On/Off processor and memory resources can be implemented on a Pay-As-You-Go basis. Signing an On/Off Capacity on Demand contract is required. An Enablement code will be supplied to activate the Enablement feature.

After the On/Off Enablement feature is ordered and the associated Enablement code is entered into the system, the customer must report on/off usage to IBM at least monthly. This information, which is used to compute the billing data, is provided to the sales channel, which will place an order for the quantity of On/Off Memory Day Billing features used and invoice the customer.

Customers may order multiples of the On/Off CoD activation features if desired. The HMC controlling the p5-595 server will be used to set the parameters desired when using multiple On/Off CoD activation features.

Each On/Off CoD (Capacity on Demand) activation feature provides 30 days of usage for CUoD processor or memory feature. Each On/Off CoD feature applies to any of the inactive CUoD processors or memory installed in the system.

The following are examples of the usage calculation:
A processor day is measured each time a processor is activated in a 24-hour period or any fraction thereof. If four processors are activated for two hours of testing or production, the result is four processor usage days.

Each time processors are activated starts a new measurement day. If a customer activates four processors for a two-hour test and later in the same 24-hour period activates two processors for two hours to meet a peak workload, the result is six processor days usage.

Capacity Upgrade on Demand for Memory
==========
Capacity Upgrade on Demand (CUoD) for memory is available for p5-595 servers. CUoD for memory allows inactive memory to be installed in the p5-595 server and can be permanently activated by the customer as required.

CUoD for memory may be used in any available memory position.

Additional CUoD memory cards are activated in increments of 1GB by ordering the appropriate activation FC. If more than one 1GB memory increment is to be activated at the same time, the activation code should be ordered in multiples.

After receiving an order for a CUoD for memory activation feature, IBM will provide the customer a 32-character encrypted key. This key is entered into the system to activate the desired number of additional 1GB memory increments.

Memory configuration rules for the p5-595 server apply to CUoD for memory cards as well as conventional memory cards. The memory configuration rules are applied based upon the maximum capacity of the memory card.
- 4GB Config rules apply to 4GB CUoD with less than 4GB of active memory
- 8GB config rules apply to 8GB CUoD with less than 8GB of active memory.

Trial Capacity on Demand
==========
Trial Capacity on Demand (Trial CoD) is a function delivered with all pSeries servers supporting CUoD resources beginning May 30, 2003. Those servers with standby CUoD processors or memory will be capable of using a one-time, no-cost activation for a maximum period of 30 consecutive days. This enhancement allows for benchmarking of CUoD resources or can be used to provide immediate access to standby resources when the purchase of a permanent activation is pending.

Trial CoD is a complimentary service offered by IBM. Although IBM intends to continue it for the foreseeable future, IBM reserves the right to withdraw Trial CoD at any time, with or without notice.

Dynamic logical partitioning
==========
DLPAR allows system resources to be easily and quickly configured across multiple LPARs on the p5-595 server. DLPAR can be used to add newly activated CUoD processors and memory into the p5-595 configuration without requiring a system reboot. This function is supported by AIX 5L and the Linux 2.6 kernel which is currently available only in SUSE LINUX Enterprise Server 9 for POWER.

Hardware Requirements

```
Minimum system configuration - IBM eServer p5 595
  1x 9119-595 eServer p5 595
  1x #7813 or #7988 - 16-Way POWER5 Processor Book 0-Way Active
     #7813 Requires:
           1x #7807 Cooling Group
           1x #7826  Power Cable Group
 16x #7815 or #7990 1-Way Processor Activations
  1x #5791 or #5794 I/O Drawer
  1x #6251 or #6252 Door Kit - Slim Line or Acoustic
  2x Memory cards with a min 8GB of activated memory
  1x PCI SCSI or PCI LAN Adapter for attachment of CD/DVD Device or a NIM Server
  2x #7810 Programmable Processor Clock Cards
  1x #7821 Power Cable Group - Bulk Power to CEC and Fans
  3x #7809 Power Converter Assemblies - Central Electronics Complex
  1x #7822 Power Cable Group - First Processor Book
  2x #7811 Service Processors
  1x #7812 Multiplexer Card
  2x #7818 Single Loop RIO-2 Loop Adapter
  1x #7924 0.6m RIO Cable - between drawer halves
  2x #3147 3.5m RIO Cables
  2x #3277 36.4GB 15K RPM Ultra3 SCSI Disk Drive Assembly
  1x #6122 I/O Drawer Attachment Cable Group
  2x #6186 Bulk Power Regulators
  2x #7803 Power Controller Assemblies
  2x #7837 Power Distribution Assemblies
  2x #86xx Line Cords
  1x #9xxx  Language Specify
```

Model conversion

```
IBM eServer p5 590 to p5 595 (9119-590 to 9119-595)
Customers with installed p5-590 servers can increase their computing power by ordering a model
conversion to the p5-595 server.
Ordering model conversion provides:

Change in model designation from p5-590 to p5-595 (9119-590 to 9119-595)
p5-595 labels with same serial number as existing p5-590 server
Any model-specific system documentation that ships with a new 595 server

Each model conversion order also requires feature conversions to:
 Update machine configuration records
 Ship system components as necessary

Feature conversions must be processed as follows for each 0/16-way Processor Book and CUoD
activation feature on the existing p5-590 server, if installed:

If the resulting p5-595 is a standard system:
 7981 to 7988 - p5-590 Standard Processor Book to p5-595 Standard Processor Book
 7925 to 7990 - Permanent Processor Activations
 7993 to 7996 - On/Off Processor Billing
 7839 to 7994 - On/Off Processor Enablement
 7926 to 7991 - 30 Days Prepaid Reserve Capacity

If the resulting p5-595 is a turbo system:
 7981 to 7813 - p5-590 Standard Processor Book to p5-595 Turbo Processor Book
 7925 to 7815 - Permanent Processor Activations
 7993 to 7972 - On/Off Processor Billing
 7839 to 7971 - On/Off Processor Enablement
 7926 to 7975 - Prepaid Reserve Capacity

The existing model 590 components replaced during model conversions and feature conversions
become the property of IBM and must be returned.

FC conversions are always implemented on a One for 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 system racks, power components, cables, memory, I/O Drawers, and adapter cards from the
existing p5-590 server may be utilized with the resulting p5-595 server.
```

Software Requirements

==========

If installing AIX - one of these:
   AIX Version 5L for POWER V5.2 with the 5200-04 (APAR IY56722) or
   AIX 5L for POWER V5.3
   (#7941 Advanced POWER Virtualization is not supported on AIX 5L for POWER V5.2)

If installing Linux - one of these:
   SUSE LINUX Enterprise Server 9 for POWER or
   Red Hat Enterprise Linux AS for POWER Version 3 (Planned Availability Date: September 30, 2004)

   Not all p5-550 FCs are supported by the Linux operating system
   Info on FCs and Devices supported by Linux can be found at:
   http://www-1.ibm.com/servers/eserver/pseries/linux

Publications

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SK3T-8159 IBM eServer Hardware Information Center CD-ROM
G229-9054 IBM eServer Safety Information
SA41-5156 Start Here for IBM eServer
Z125-4753 IBM Statement of Limited Warranty
Z125-5468 IBM License Agreement for Machine Code
GC52-1065 Pointer Sheet for Machine Internal Code License Agreement

This info brief is based upon various industry sources, including published IBM documentation, technical publications and marketing materials:

Reference URLs: (http://www.)

IBM Public Announcements:	ibm.com/common/ssi/OIAccess.wss
IBM SalesManual:	ibm.com/common/ssi/OIAccess.wss
eServerInfoCenter	http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/
pSeries Facts and Features	ibm.com/servers/eserver/pseries/hardware/factsfeatures.pdf
Various Whitepapers	redbooks.ibm.com
RISC Analysis	riscanalysis.com

Content derived from IBM documentation, technical publications and marketing materials has been modified to allow for technical corrections, reduced repetition and ease of comprehension.

IBM eServer OpenPower 9124-720 for Direct Sales (Feature Code/AAS version)

Available 2004/09/24

The 9124 eServer OpenPower family of servers is a new category of POWER processor-based servers tuned for Linux. Based on the 9113-550, the 9124-720 is the first offering in this family.

Deskside or 4U Rack-Mount Server available in 1-way, 2-way or 4-way configurations, utilizing Symmetric MultiProcessor (SMP) 64-bit Copper-Based POWER5 Microprocessors.

Processor Cards:

Each processor card contains 32KB of Data Cache and 64KB of Instruction Cache
Each processor card contains 1.9MB of Level 2 cache and 8x Memory DIMM Slots
Max of One 1-way Processor Card or Two 2-way Processor Cards

Processor Cards with different FCs may not be intermixed in a system
#7876 Processor Power Regulator is required for each processor card installed in the system

Processor FC:s
#1960 1.50GHz 1-way POWER5 Processor Card 0MB L3 Cache 8 DIMM Slots
#1961 1.50GHz 2-way POWER5 Processor Card 36MB L3 Cache 8 DIMM Slots
#5262 1.65GHz 2-Way POWER5 Processor Card 36MB L3 Cache 8 DIMM Slots

System Memory

Min 512MB w/ Processor #1960 1.50GHz 1-way
Min 1024MB W/ Processors #1961 1.50GHz 2-way or #5262 1.65GHz 2-way
Max 32GB w/ 1x Processor FC, Max 64GB w/ 2x Processor FCs

8x Memory DIMM Slots per processor card
Memory FCs may be mixed within a system.

Memory FC #1936 2x 256MB DIMMs may be installed as a pair for a maximum of 2 Pairs. All other Memory FCs must be installed in Quads. If FC #1936 exists on a system, an additional FC #1936 must be added to the original pair to make a Quad before additional memory is installed.

Memory FCs:

FC	Capacity	Max	Config
#1936	512MB (2x 256MB DIMMs)	2	Paired
#1937	1024MB (4x 256MB DIMMs)	4	Quad
#1938	2048MB (4x 512MB DIMMs)	4	Quad
#1940	4096MB (4x 1024MB DIMMs)	4	Quad
#1942	8192MB (4x 2048MB DIMMs)	4	Quad
#1945	16384MB (4x 4096MB DIMMs)	4	Quad

DASD and Media Bays:

Up to 11 DASD and Media Bays:
- 4x Hot-Swap DASD Bays (4-Pack Front Access) - expandable to 8x H/S DASD Bays
  (Up to 1174.4GB DASD Capacity at announcement)
- 2x Slimline Media Bays for DVD-ROM / DVD-RAM
- 1x Media Bay for Tape Drive

I/O Slots:

5x 3.3V Hot-Swap PCI-X Slots:
- 4x 64-bit 3.3V 133MHz (Long).
- 1x 64-bit 3.3V 133MHz (Short) This slot can be used to support FC #1806 Dual Port RIO-2 I/O Hub

Standard Components:

1x Integrated Ultra320 SCSI Controller w/Dual Internal Ports (RAID via optional Adapter)
1x Dual Port 10/100/1000 Integrated Ethernet (2x Ports)
2x Serial Ports, USB Ports, HMC Ports, Remote I/O (RIO-2) Ports
1x Media Backplane
Service Processor
1475W Hot-Swap Power and Cooling (Optional Redundant P/S Available)
Redundant Fans for Cooling

Default minimum 9124-720 Config - if no choice is made:
#1960 1.50GHz 1-way Processor
#7876 Processor Power Regulator
#1936 512MB Memory DIMM
#7889 1475W AC Base Power Supply
#3273 36.4GB Disk Drive
#6592 4-pack Disk Drive Enclosure
#2640 DVD-ROM
#7877 Media Backplane
 Configuration indicator:
 Deskside (#7912) or
 Rack Mount (#7914 and #7162/#7163)
 Language Group Specify
 Power Cord

A keyboard, mouse, graphics adapter, and monitor are available as options.

Technical Specifications
==========
Physical Specifications
Deskside/Desktop:
Width: 201 mm (07.9 in)
Depth: 779 mm (30.7 in)
Weight: 533 mm (21.1 in)

Rack - Mount:
Width: 437 mm (17.2 in)
Depth: 731 mm (28.8 in)
Height: 178 mm (07.0 in)

Weight:
 + Minimum configuration: 41.4 Kg (91 lb)
 + Maximum configuration: 57.0 Kg (125 lb)

Operating Environment
Temperature: (Nonoperating) 5 to 45 degrees C (41 to 113 F)
Relative humidity: 8 % to 80 %
Maximum wet bulb: (Power Off) 27 degrees C (80 F)

Operating voltage: 1-to 2-way 100-127 or 200-240V AC (Auto-Ranging)
Operating voltage: 4-way 200 to 240 V ac.

Operating frequency: 47/63 Hz
Power consumption: 1100 watts (maximum)
Thermal output: 3,754 Btu/hour (maximum)

Power source loading:
1.158 kVA (maximum configuration)
Maximum altitude: 3,048 m (10,000 ft)

Noise Level and Sound Power
Sound Power: Model 720 rack-mount -- 6.0 Bels Idle/6.0 Bels Operating
Sound Power: Model 720 deskside -- 6.6 Bels Idle/6.8 Bels Operating

Limitations
==========
System Limitations:

SCSI Port Enablement Cable:
If FC #4273 External SCSI Port Enablement Cable is installed in the system:
1x PCI-X slot is required
2nd Four-Pack Disk Enclosure (2nd #6592 or 1st #6593) cannot be installed.
Max external cable length supported by #4273 is 6 meters.

HMC / Serial Ports:
When an HMC is connected to the system, the integrated serial ports are rendered non-functional. In this case, the customer must install a separate asynchronous adapter for serial port usage.

Power Cords
On a 4-way OpenPower 720 system (2x #5262) a 220V Power Cord - Power Cord FCs #6460, #6470, #6471, #6488 are not supported.

I/O Drawers:
Model 720 systems can be attached to 7311-D20 I/O drawers using the standard RIO-2 ports and/or the optional Dual Port RIO-2 I/O Hub (#1806).
Max: 8 Drawers per System
Max: 2 RIO Loops

PCI Card Slots:
The model 720 has a maximum of five hot-plug PCI-X slots:
Slots 1 to 4 are long, 64-bit, 3.3 V, and run at 133MHz.
Slot 5 is utilized by either a PCI-X adapter or the Dual Port RIO-2 I/O Hub (#1806). The PCI-X adapter installed in slot 5 must be a short card.

Graphics adapters
Graphics adapter, keyboard, and mouse are not required in the minimum configuration.
The maximum number of graphics adapters supported in the model 720 is two.

I/O Adapters
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#5709 SCSI RAID Enablement Card does not use a PCI-X Slot - it has a dedicated slot
A min of 2x Processor Cards are required with FC #1806 Dual Port RIO-2 I/O Hub
Any Adapter installed in slot 5 must be short.

I/O Adapter Features:

FC	I/O Adapter	Max	Priority	Size
#2738:	2-port USB PCI	2	3,1,4,2,5	Short
#2849:	GXT135P Graphics Adapter	2	3,1,4,2,5	Short
#4962:	10/100 Ethernet	5	3,1,4,2,5	Short
#5700:	Gigabit Ethernet	5	3,4,1,5,2	Short
#5701:	10/100/1000 Ethernet	5	3,4,1,5,2	Short
#5703:	PCI-X Ultra320 SCSI RAID	4	3,1,4,2	Long
#5706:	2-port 10/100/1000 Ether.	5	3,4,1,5,2	Short
#5707:	2-port Gigabit Ether.-SX	5	3,4,1,5,2	Short
#5709:	SCSI RAID Enablement Card	1	N/A	N/A
#5712:	PCI-X Ultra320 SCSI	5	3,1,4,2,5	Short
#5716:	2GB Fibre Channel PCI-X	5	3,1,4,2,5	Short

Storage Devices/Bays
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The 720 supports 2x DASD 4-packs in the system:-
1x #6592 Ultra320 SCSI 4-Pack (mandatory) and either
1x #6592 Ultra320 SCSI 4-Pack or
1x #6593 Ultra320 SCSI 4-Pack for Disk Mirroring

Media Bays 2 and 3 may contain #2640 DVD-ROM or #5751 DVD-RAM
(either a #2640 DVD-ROM or #5751 DVD-RAM must be selected - the 1st Optical Device can only be installed in the top Slimline Bay in a Rack Config)

Media Bay 4 May contain one of the following Tape Drives:
  #6120: 80/160 GB Internal Tape Drive with VXA Technology
  #6134: 60/150 GB 16-bit 8mm Internal Tape Drive
  #6258: 36/72GB 4mm Internal Tape Drive

#4263 SCSI Cables (Power and Logic) - PCI Riser to SCSI LVD Media Device is required if Tape Drives #6120, #6134, #6258 are installed

Linux operating system
For customers installing SUSE LINUX Enterprise Server 9 for POWER or Red Hat Enterprise Linux AS for POWER V3, refer to the following Web site for information on supported I/O adapters and storage devices:
  http://www.ibm.com/servers/eserver/openpower

RAID

Internal RAID is available on the model 720. A number of options are available to customers wanting to install RAID on their systems:

1. Install FC 5709 Dual Channel SCSI RAID Enablement Card.
   Install four disk drives in FC 6592 Ultra320 SCSI 4-pack enclosure.
   This will allow RAID capabilities within a single 4-pack of DASD.

2. Install FC 5709.
   Install a second FC 6592.
   This will allow RAID capabilities across two 4-packs of DASD.

3. Install FC 5709.
   Install FC 6593 Ultra320 SCSI 4-Pack Enclosure for Disk Mirroring.
   Install FC 5703 PCI-X Dual Channel Ultra320 SCSI RAID Adapter.
   Install FC 4267 SCSI Cable which connects the PCI Adapter to FC 6593.

Software Requirements

SUSE LINUX Enterprise Server 9 for POWER, or later
or
Red Hat Enterprise Linux AS for POWER V3 or later (planned availability date: September 30, 2004)

Information on features and external devices supported by Linux on the model 720 can be found at:
http://www.ibm.com/servers/eserver/openpower/

The system is capable of running other operating systems, including AIX, if enabled. Upon request, IBM may consider RPQs for installed systems to enable that capability.

Publications

SK3T-8159	IBM eServer Hardware Information Center CD-ROM
G229-9054	IBM eServer Safety Information
SA41-5156	Start Here for IBM eServer
Z125-4753	IBM Statement of Limited Warranty
Z125-5468	IBM License Agreement for Machine Code

Reliability, Availability, and Serviceability (RAS):

L3 cache and system memory ECC
System memory 4-bit packet error detection
System bus, I/O bus, PCI bus parity error detection.
Disk mirroring and disk controller duplexing capability are provided by the AIX operating system.
Linux supports DASD mirroring (RAID 1) via the md driver. Linux supported RAID adapters also support mirroring.
Journaled File System maintains file system consistency and reduces data loss when the system is abnormally halted due to a power failure.

PCI Extended Error Handling (EEH) (not supported under Linux)
Under AIX, a PCI EEH enabled adapter reporting a Bus Parity Error allows firmware to reset the affected adapter and continue without a system reboot. Currently, Linux does not support PCI EEH. In the event of a PCI error, the system will machine check and a reboot will be required to continue.

Memory error correction extensions
Standard memory has single error checking and double error detect ECC circuitry to correct single-bit memory failures. Double Bit Detection allows detecting and reporting multiple errors beyond ECC tolerances. p5 memory chips are organized such that the failure of any specific memory module only affects a single bit within an ECC word (bit scattering). This allows for error correction and continued operation in the presence of a complete chip failure (Chipkill recovery).

System memory also utilizes memory scrubbing and thresholding to determine when spare memory modules within each bank of memory should be used to replace ones that have exceeded their threshold value (dynamic bit steering).

Redundancy for array self-healing
For the L1, L2, and L3 Caches and their Directories, hardware and firmware keep track of whether permanent errors are being corrected beyond a threshold. If exceeded, a deferred repair error log is created. Additional run-time availability actions, such as CPU Vary Off (Linux running the 2.6 kernel) or L3 Cache Line Delete, are also initiated.

L1 and L2 caches and L2 and L3 directories on the POWER5 chip are manufactured with spare bits in their arrays that can be accessed via programmable steering logic to replace faulty bits in the respective arrays. The steering logic is activated during processor initialization and is initiated by the built-in self-test (BIST) at power-on time. L3 Cache redundancy is implemented at the cache line level. Exceeding correctable error thresholds while running causes a Dynamic L3 Cache line delete function to be invoked.

Service Processor
The Service Processor provides immediate diagnostics, check status, and sense operational conditions of a remote system, even when the main processor is inoperable. The SP also enables firmware and operating system surveillance, several remote power controls, environmental monitoring (only critical errors are supported under Linux), reset, boot features, remote maintenance, and diagnostic activities, including console mirroring. The SP can place calls to report surveillance failures, critical environmental faults, and critical processing faults.

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

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

Environmental monitoring functions
Temperature, Fan speed and Voltage are monitored to provide a warning and allow for orderly shutdown when operational specifications are exceeded.
Temperature monitoring also increases fan speed when ambient temp is above the normal operating range

Error handling and reporting
System run-time error capture capability systematically analyzes the hardware error signature to determine the cause of failure. The analysis will be stored in the system NVRAM. When the system can be successfully rebooted either manually or automatically, the error will be reported to the AIX or Linux operating system.

Error Log Analysis (ELA) can be used to display the failure cause and the physical location of failing hardware.

A hardware fault will turn on the two Attention Indicators (one on the front and one on the rear of the system). The indicator may also be turned on by the operator as a tool to allow system identification.

Availability enhancement functions
The auto-restart (reboot) option, when enabled, can reboot the system automatically following an unrecoverable software error, software hang, hardware failure, or environmentally induced (AC power) failure.

Serviceability & Service Agent
LEDs indicate parts needing to be replaced.
Support personnel can remotely log into a system to review error logs and perform remote maintenance.
The diagnostics consist of Stand-alone Diagnostics, which are loaded from the DVD-ROM drive, and Online Diagnostics.
The Service Agent is available at no additional charge and monitors and analyzes system errors. If needed, it can automatically place a service call to IBM without customer intervention.

This info brief is based upon various industry sources, including published IBM documentation, technical publications and marketing materials:

Reference URLs: (http://www.)

IBM Public Announcements:	ibm.com/common/ssi/OIAccess.wss
IBM SalesManual:	ibm.com/common/ssi/OIAccess.wss
eServerInfoCenter	http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/
pSeries Facts and Features	ibm.com/servers/eserver/pseries/hardware/factsfeatures.pdf
Various Whitepapers	redbooks.ibm.com
RISC Analysis	riscanalysis.com

Content derived from IBM documentation, technical publications and marketing materials has been modified to allow for technical corrections, reduced repetition and ease of comprehension.

p5-520 Available FCs

p5-520 Available FCs

MT	MD	FC	S/A	Description
9111-520		0265	A	AIX Partition Specify
9111-520		0266	A	Linux Partition Specify
9111-520		0705	A	Integrate with DR400 -- IBM TotalStorage Retention Solution
9111-520		0986	A	CCS Customer Service Specify (US)
9111-520		2114	A	PCI SCSI Adapter 16-Bit Differential External Y Cable
9111-520		2118	A	Converter Cable, VHDCI to P, Mini-68 pin to 68 pin, 0.3M
9111-520		2424	S	0.6M 16-bit SCSI-2 System to System Cable
9111-520		2425	A	2.5M 16-bit SCSI-2 System to System Cable
9111-520		2456	A	LC-SC 50 Micron Fiber Converter Cable
9111-520		2459	A	LC-SC 62.5 Micron Fiber Converter Cable
9111-520		2591	A	External USB 1.44 MB Diskette Drive
9111-520		2640	A	IDE Slimline DVD-ROM Drive
9111-520		2738	A	2 Port USB PCI Adapter
9111-520		2849	A	POWER GXT135P Graphics Accelerator with Digital Support
9111-520		2861	A	ARTIC960Hx 4-Port EIA-232 Cable
9111-520		2863	A	ARTIC960Hx 4-Port X.21 Cable
9111-520		2864	A	ARTIC960Hx 4-Port V.35 (DTE) Cable
9111-520		2877	A	IBM ARTIC960RxD Quad DTA, H.100, 4-Drop Cable
9111-520		2934	A	Asynchronous Terminal/Printer Cable EIA-232
9111-520		2936	A	Asynchronous Cable EIA-232/V.24
9111-520		2943	A	8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus
9111-520		2944	A	128-Port Asynchronous Controller, PCI bus
9111-520		2947	A	IBM ARTIC960Hx 4-Port Multiprotocol PCI Adapter
9111-520		2951	A	Cable, V.24 / EIA-232
9111-520		2952	A	Cable, V.35
9111-520		2953	A	Cable, V.36 / EIA-499
9111-520		2954	A	Cable, X.21
9111-520		2962	A	2-Port Multiprotocol PCI Adapter
9111-520		3124	A	Serial to Serial Port Cable for Drawer/Drawer
9111-520		3125	A	Serial to Serial Port Cable for Rack/Rack
9111-520		3146	A	RIO-2 (Remote I/O-2) Cable, 1.2M
9111-520		3147	A	RIO-2 (Remote I/O-2) Cable, 3.5M
9111-520		3148	A	RIO-2 (Remote I/O-2) Cable, 10M
9111-520		3156	A	RIO-2 (Remote I/O-2) Cable, 1.75M
9111-520		3168	A	RIO-2 (Remote I/O-2) Cable, 2.5M
9111-520		3273	A	36.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9111-520		3274	A	73.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9111-520		3275	A	146.8 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9111-520		3277	A	36.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9111-520		3278	A	73.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9111-520		3636	A	L200P Flat Panel Monitor
9111-520		3637	A	IBM T541H /L150p 15" TFT Color Monitor
9111-520		3638	A	IBM C220p 21-inch Color Monitor, Business Black, and Cable
9111-520		3639	A	IBM ThinkVision L170p Flat Panel Monitor
9111-520		3752	A	Service Package
9111-520		3925	A	Serial Port Converter Cable, 9-Pin to 25-Pin
9111-520		3926	A	Asynch Printer/Terminal Cable, 9-pin to 25-pin, 4M
9111-520		4242	A	6 Foot Extender Cable for Displays (15 pin D-shell to 15 pin D-shell)
9111-520		4256	A	Extender Cable - USB Keyboards, 2M
9111-520		4263	A	SCSI Cables (Power and Logic) PCI Riser to SCSI LVD Media Device/Mounting Tray
9111-520		4267	A	SCSI Cable, PCI Adapter to Hot-Swap Disks
9111-520		4270	A	External SCSI Port Enablement Cable
9111-520		4353	S	H-100 Bus 8-position Cable
9111-520		4443	A	512MB (2x256MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9111-520		4444	A	1024MB (4x256MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9111-520		4445	A	4096MB (4x1024MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9111-520		4447	A	2048MB (4x512MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9111-520		4449	A	8192MB (4x2048MB) DIMMs, 208-pin, 266 MHz DDR Stacked SDRAM
9111-520		4450	A	16GB (4x4096MB) DIMMs, 208-pin, 266 MHz DDR Stacked SDRAM
9111-520		4691	A	Rack Status Beacon Cable, Junction Box To Drawer Or Status Beacon
9111-520		4692	A	Rack Status Beacon Cable, Junction Box Daisy Chain
9111-520		4693	A	Rack Status Beacon Junction Box
9111-520		4959	A	IBM Token-Ring PCI Adapter
9111-520		4962	A	10/100 Mbps Ethernet PCI Adapter II
9111-520		5001	A	Customer Service Specify
9111-520		5005	A	Software Preinstall
9111-520		5158	A	Power Supply, 850 Watt AC, Hot-swap, Base and Redundant
9111-520		5226	A	2-way 1.5 GHz POWER5 Processor Card, 36MB L3 Cache
9111-520		5229	A	2-way 1.65 GHz POWER5 Processor Card, 36MB L3 Cache
9111-520		5231	A	1-way 1.5 GHz POWER5 Processor Card, No L3 Cache
9111-520		5700	A	IBM Gigabit Ethernet-SX PCI-X Adapter
9111-520		5701	A	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter
9111-520		5703	A	PCI-X Dual Channel Ultra320 SCSI RAID Adapter
9111-520		5706	A	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter

p5-520 Available FCs

MT	MD	FC	S/A	Description
9111-520		5707	A	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter
9111-520		5709	A	Dual Channel SCSI RAID Enablement Card
9111-520		5712	A	PCI-X Dual Channel Ultra320 SCSI Adapter
9111-520		5716	A	2 Gigabit Fibre Channel PCI-X Adapter
9111-520		5718	A	10 Gigabit Ethernet PCI-X Adapter
9111-520		5751	A	IBM 4.7 GB IDE Slimline DVD-RAM Drive
9111-520		6001	A	Power Control Cable (SPCN) - 2 meter
9111-520		6006	A	Power Control Cable (SPCN) - 3 meter
9111-520		6007	A	Power Control Cable (SPCN) - 15 meter
9111-520		6008	A	Power Control Cable (SPCN) - 6 meter
9111-520		6029	A	Power Control Cable (SPCN) - 30 meter
9111-520		6120	A	IBM 80/160 GB Internal Tape Drive with VXA Technology
9111-520		6134	A	60/150 GB 16-bit 8mm Internal Tape Drive
9111-520		6204	A	PCI Universal Differential Ultra SCSI Adapter
9111-520		6258	A	36/72GB 4mm Internal Tape Drive
9111-520		6312	A	Quad Digital Trunk Telephony PCI Adapter
9111-520		6458	A	Power Cable -- Drawer to IBM PDU, 14-foot, 250V/10A
9111-520		6460	A	Power Cord (14-foot), Drawer to OEM PDU (125V, 15A), Plug Type #4
9111-520		6469	A	Power Cord (14-foot), Drawer to OEM PDU (250V, 15A), United States, Plug Type #5
9111-520		6470	A	Power Cord (6-foot), To Wall (125V, 15A), Plug Type #4
9111-520		6471	A	Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A), Plug Type #70
9111-520		6472	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #18
9111-520		6473	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type 19
9111-520		6474	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 13A), Plug Type #23
9111-520		6475	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #32
9111-520		6476	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #24
9111-520		6477	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #22
9111-520		6478	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #25
9111-520		6479	A	Power Cord (9-foot) , To Wall/OEM PDU, (250V, 10A), Plug Type #6
9111-520		6487	A	Power Cord (6-foot) ,To Wall, (250V, 15A), United States, Plug Type #5
9111-520		6488	A	Power Cord (9-foot) , To Wall/OEM PDU, (125V, 15A or 250V, 10A), Plug Type #2
9111-520		6493	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #62
9111-520		6494	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #69
9111-520		6495	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #64
9111-520		6496	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #66
9111-520		6497	S	Power Cord (6-foot), To Wall/OEM PDU, (250V, 15A), Plug Type #10
9111-520		6498	S	Power Cord (6-foot), To Wall/OEM PDU, (250V, 15A), Plug Type #34
9111-520		6574	A	Ultra320 SCSI 4-Pack
9111-520		6594	A	Ultra320 SCSI 4-Pack for Disk Mirroring
9111-520		6587	A	Acoustic Option -- Rear Muffler
9111-520		7160	A	IBM Rack-mount Drawer Rail Kit
9111-520		7161	A	OEM Rack-mount Drawer Rail Kit
9111-520		7305	A	AAP Software Pre-Install Indicator
9111-520		7600	A	One Processor Entitlement for Processor Feature #5231
9111-520		7602	A	One Processor Entitlement for Processor Feature #5226
9111-520		7606	A	One Processor Entitlement for Processor Feature #5229
9111-520		7801	A	Ethernet Cable, 6M, Hardware Management Console to System Unit
9111-520		7802	A	Ethernet Cable, 15M, Hardware Management Console to System Unit
9111-520		7877	A	Media Backplane
9111-520		7918	A	IBM Rack-mount Drawer Bezel and Hardware
9111-520		7919	A	IBM Deskside Cover Set
9111-520		7940	A	Advanced POWER Virtualization
9111-520		8131	A	128-Port Asynchronous Controller Cable, 4.5 Meter
9111-520		8132	A	128-Port Asynchronous Controller Cable, 23cm (9-Inch)
9111-520		8133	A	RJ-45 to DB-25 Converter Cable
9111-520		8136	A	Rack Mountable Remote Asynchronous Node 16-Port EIA-232
9111-520		8137	A	Enhanced Remote Asynchronous Node 16-Port EIA-232
9111-520		8227	A	Tie-down Strap Security Device
9111-520		8244	A	Audio PCI Adapter for Workstations
9111-520		8462	A	Zero-priced Value Pak Processor Entitlement for #5231
9111-520		8464	A	Zero-priced Value Pak Processor Entitlements for #5226
9111-520		8474	A	Zero-priced Value Pak Processor Entitlements for #5229
9111-520		8800	A	Quiet Touch Keyboard - USB, Business Black, US English, #103P
9111-520		8801	A	Quiet Touch Keyboard - USB, Business Black, French, #189
9111-520		8802	A	Quiet Touch Keyboard - USB, Business Black, Italian, #142
9111-520		8803	A	Quiet Touch Keyboard - USB, Business Black, German/Austrian, #129
9111-520		8804	A	Quiet Touch Keyboard - USB, Business Black, UK English, #166
9111-520		8805	A	Quiet Touch Keyboard - USB, Business Black, Spanish, #172
9111-520		8806	A	Quiet Touch Keyboard - USB, Business Black, Japanese, #194
9111-520		8807	A	Quiet Touch Keyboard - USB, Business Black, Brazilian/Portuguese, #275
9111-520		8808	A	Quiet Touch Keyboard - USB, Business Black, Canadian French, #058
9111-520		8810	A	Quiet Touch Keyboard - USB, Business Black, Belgian/Dutch, #120
9111-520		8811	A	Quiet Touch Keyboard - USB, Business Black, Swedish/Finnish, #153
9111-520		8812	A	Quiet Touch Keyboard - USB, Business Black, Danish, #159

MT	MD	FC	S/A	Description
9111-520	8813	A	Quiet Touch Keyboard - USB, Business Black, Bulgarian, #442
9111-520	8814	A	Quiet Touch Keyboard - USB, Business Black, Swiss/French/German, #150F/G
9111-520	8816	A	Quiet Touch Keyboard - USB, Business Black, Norwegian, #155
9111-520	8817	A	Quiet Touch Keyboard - USB, Business Black, Dutch, #143
9111-520	8818	A	Quiet Touch Keyboard - USB, Business Black, Portuguese, #163
9111-520	8819	A	Quiet Touch Keyboard - USB, Business Black, Greek, #319
9111-520	8820	A	Quiet Touch Keyboard - USB, Business Black, Hebrew, #212
9111-520	8821	A	Quiet Touch Keyboard - USB, Business Black, Hungarian, #208
9111-520	8823	A	Quiet Touch Keyboard - USB, Business Black, Polish, #214
9111-520	8825	A	Quiet Touch Keyboard - USB, Business Black, Slovakian, #245
9111-520	8826	A	Quiet Touch Keyboard - USB, Business Black, Czech, #243
9111-520	8827	A	Quiet Touch Keyboard - USB, Business Black, Turkish, #179
9111-520	8829	A	Quiet Touch Keyboard - USB, Business Black, LA Spanish, #171
9111-520	8830	A	Quiet Touch Keyboard - USB, Business Black, Arabic, #238
9111-520	8833	A	Quiet Touch Keyboard - USB, Business Black, Korean, #413
9111-520	8834	A	Quiet Touch Keyboard - USB, Business Black, Chinese/US, #467
9111-520	8835	A	Quiet Touch Keyboard - USB, Business Black, French Canadian, #445
9111-520	8836	A	Quiet Touch Keyboard - USB, Business Black, Thai, #191
9111-520	8838	A	Quiet Touch Keyboard - USB, Business Black, Russian, #443
9111-520	8839	A	Quiet Touch Keyboard - USB, Business Black, Yugoslavian/Latin, #105
9111-520	8840	A	Quiet Touch Keyboard - USB, Business Black, US English (EMEA), #103P
9111-520	8841	A	Mouse - Business Black with Keyboard Attachment Cable

p5-550 Available FCs

p5-550 Available FCs

MT	MD	FC	S/A	Description
9113-550		0265	A	AIX Partition Specify
9113-550		0266	A	Linux Partition Specify
9113-550		0986	A	CCS Customer Service Specify (US)
9113-550		1806	A	Dual Port RIO-2 I/O Hub
9113-550		2114	A	PCI SCSI Adapter 16-Bit Differential External Y Cable
9113-550		2118	A	Converter Cable, VHDCI to P, Mini-68 pin to 68 pin, 0.3M
9113-550		2424	S	0.6M 16-bit SCSI-2 System to System Cable
9113-550		2425	A	2.5M 16-bit SCSI-2 System to System Cable
9113-550		2456	A	LC-SC 50 Micron Fiber Converter Cable
9113-550		2459	A	LC-SC 62.5 Micron Fiber Converter Cable
9113-550		2591	A	External USB 1.44 MB Diskette Drive
9113-550		2640	A	IDE Slimline DVD-ROM Drive
9113-550		2738	A	2 Port USB PCI Adapter
9113-550		2849	A	POWER GXT135P Graphics Accelerator with Digital Support
9113-550		2861	A	ARTIC960Hx 4-Port EIA-232 Cable
9113-550		2863	A	ARTIC960Hx 4-Port X.21 Cable
9113-550		2864	A	ARTIC960Hx 4-Port V.35 (DTE) Cable
9113-550		2877	A	IBM ARTIC960RxD Quad DTA, H.100, 4-Drop Cable
9113-550		2934	A	Asynchronous Terminal/Printer Cable EIA-232
9113-550		2936	A	Asynchronous Cable EIA-232/V.24
9113-550		2943	A	8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus
9113-550		2944	A	128-Port Asynchronous Controller, PCI bus
9113-550		2947	A	IBM ARTIC960Hx 4-Port Multiprotocol PCI Adapter
9113-550		2951	A	Cable, V.24 / EIA-232
9113-550		2952	A	Cable, V.35
9113-550		2953	A	Cable, V.36 / EIA-499
9113-550		2954	A	Cable, X.21
9113-550		2962	A	2-Port Multiprotocol PCI Adapter
9113-550		3124	A	Serial to Serial Port Cable for Drawer/Drawer
9113-550		3125	A	Serial to Serial Port Cable for Rack/Rack
9113-550		3146	A	RIO-2 (Remote I/O-2) Cable, 1.2M
9113-550		3147	A	RIO-2 (Remote I/O-2) Cable, 3.5M
9113-550		3148	A	RIO-2 (Remote I/O-2) Cable, 10M
9113-550		3156	A	RIO-2 (Remote I/O-2) Cable, 1.75M
9113-550		3168	A	RIO-2 (Remote I/O-2) Cable, 2.5M
9113-550		3273	A	36.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9113-550		3274	A	73.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9113-550		3275	A	146.8 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9113-550		3277	A	36.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9113-550		3278	A	73.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9113-550		3636	A	L200P Flat Panel Monitor
9113-550		3637	A	"IBM T541H /L150p 15"" TFT Color Monitor"
9113-550		3638	A	IBM C220p 21-inch Color Monitor, Business Black, and Cable
9113-550		3639	A	IBM ThinkVision L170p Flat Panel Monitor
9113-550		3752	A	Service Package
9113-550		3925	A	Serial Port Converter Cable, 9-Pin to 25-Pin
9113-550		3926	A	Asynch Printer/Terminal Cable, 9-pin to 25-pin, 4M
9113-550		4242	A	6 Foot Extender Cable for Displays (15 pin D-shell to 15 pin D-shell)
9113-550		4256	A	Extender Cable - USB Keyboards, 2M
9113-550		4263	A	SCSI Cables (Power and Logic), PCI Riser to SCSI LVD Media Device; Mounting Tray
9113-550		4267	A	SCSI Cable, PCI Adapter to Hot-Swap Disks
9113-550		4273	A	External SCSI Port Enablement Cable
9113-550		4353	S	H-100 Bus 8-position Cable
9113-550		4443	A	512MB (2x256MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9113-550		4444	A	1024MB (4x256MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9113-550		4445	A	4096MB (4x1024MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9113-550		4447	A	2048MB (4x512MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9113-550		4449	A	8192MB (4x2048MB) DIMMs, 208-pin, 266 MHz DDR Stacked SDRAM
9113-550		4450	A	16GB (4x4096MB) DIMMs, 208-pin, 266 MHz DDR Stacked SDRAM
9113-550		4691	A	Rack Status Beacon Cable, Junction Box To Drawer Or Status Beacon
9113-550		4692	A	Rack Status Beacon Cable, Junction Box Daisy Chain
9113-550		4693	A	Rack Status Beacon Junction Box
9113-550		4959	A	IBM Token-Ring PCI Adapter
9113-550		4962	A	10/100 Mbps Ethernet PCI Adapter II
9113-550		5001	A	Customer Service Specify
9113-550		5005	A	Software Preinstall
9113-550		5237	A	2-way 1.65 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 Memory DIMM Slots
9113-550		5239	A	1-way 1.5 GHz POWER5 Processor Card, No L3 Cache
9113-550		5264	A	2-way 1.5 GHz POWER5 Processor Card, 36MB L3 Cache, DDR 1 Memory DIMMs
9113-550		5700	A	IBM Gigabit Ethernet-SX PCI-X Adapter
9113-550		5701	A	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter
9113-550		5703	A	PCI-X Dual Channel Ultra320 SCSI RAID Adapter
9113-550		5706	A	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter
9113-550		5707	A	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter
9113-550		5709	A	Dual Channel SCSI RAID Enablement Card

p5-550 Available FCs

MT	MD	FC	S/A	Description
9113-550		5712	A	PCI-X Dual Channel Ultra320 SCSI Adapter
9113-550		5716	A	2 Gigabit Fibre Channel PCI-X Adapter
9113-550		5718	A	10 Gigabit Ethernet PCI-X Adapter
9113-550		5751	A	IBM 4.7 GB IDE Slimline DVD-RAM Drive
9113-550		6001	A	Power Control Cable (SPCN) - 2 meter
9113-550		6006	A	Power Control Cable (SPCN) - 3 meter
9113-550		6007	A	Power Control Cable (SPCN) - 15 meter
9113-550		6008	A	Power Control Cable (SPCN) - 6 meter
9113-550		6029	A	Power Control Cable (SPCN) - 30 meter
9113-550		6120	A	IBM 80/160 GB Internal Tape Drive with VXA Technology
9113-550		6134	A	60/150 GB 16-bit 8mm Internal Tape Drive
9113-550		6204	A	PCI Universal Differential Ultra SCSI Adapter
9113-550		6258	A	36/72GB 4mm Internal Tape Drive
9113-550		6312	A	Quad Digital Trunk Telephony PCI Adapter
9113-550		6458	A	Power Cable -- Drawer to IBM PDU, 14-foot, 250V/10A
9113-550		6460	A	Power Cord (14-foot), Drawer to OEM PDU (125V, 15A), Plug Type #4
9113-550		6469	A	Power Cord (14-foot), Drawer to OEM PDU (250V, 15A), United States, Plug Type #5
9113-550		6470	A	Power Cord (6-foot), To Wall (125V, 15A), Plug Type #4
9113-550		6471	A	Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A), Plug Type #70
9113-550		6472	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #18
9113-550		6473	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type 19
9113-550		6474	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 13A), Plug Type #23
9113-550		6475	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #32
9113-550		6476	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #24
9113-550		6477	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #22
9113-550		6478	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #25
9113-550		6479	A	Power Cord (9-foot) , To Wall/OEM PDU, (250V, 10A), Plug Type #6
9113-550		6487	A	Power Cord (6-foot) ,To Wall, (250V, 15A), United States, Plug Type #5
9113-550		6488	A	Power Cord (9-foot) , To Wall/OEM PDU, (125V, 15A or 250V, 10A), Plug Type #2
9113-550		6493	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #62
9113-550		6494	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #69
9113-550		6495	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #64
9113-550		6496	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #66
9113-550		6497	S	Power Cord (6-foot), To Wall/OEM PDU, (250V, 15A), Plug Type #10
9113-550		6498	S	Power Cord (6-foot), To Wall/OEM PDU, (250V, 15A), Plug Type #34
9113-550		6592	A	Ultra320 SCSI 4-Pack
9113-550		6593	A	Ultra320 SCSI 4-Pack for Disk Mirroring
9113-550		7162	A	IBM Rack-mount Drawer Rail Kit
9113-550		7163	A	OEM Rack-mount Drawer Rail Kit
9113-550		7305	A	AAP Software Pre-Install Indicator
9113-550		7601	A	One Processor Entitlement for Processor Feature #5239
9113-550		7603	A	One Processor Entitlement for Processor Feature #5264
9113-550		7801	A	Ethernet Cable, 6M, Hardware Management Console to System Unit
9113-550		7802	A	Ethernet Cable, 15M, Hardware Management Console to System Unit
9113-550		7871	A	One Processor Activation for CUoD Processor Feature #5237
9113-550		7876	A	Processor Power Regulator
9113-550		7877	A	Media Backplane
9113-550		7886	A	IBM Rack-mount Drawer Bezel and Hardware
9113-550		7887	A	IBM Deskside Cover Set
9113-550		7889	A	Power Supply, 1475 watt AC, Hot-swap, Base and Redundant
9113-550		7930	A	On/Off Processor Enablement for CoD
9113-550		7931	A	On/Off Processor Billing for CoD
9113-550		7934	A	Reserve Capacity Prepaid for CoD
9113-550		7941	A	Advanced POWER Virtualization
9113-550		8131	A	128-Port Asynchronous Controller Cable, 4.5 Meter
9113-550		8132	A	128-Port Asynchronous Controller Cable, 23cm (9-Inch)
9113-550		8133	A	RJ-45 to DB-25 Converter Cable
9113-550		8136	A	Rack Mountable Remote Asynchronous Node 16-Port EIA-232
9113-550		8137	A	Enhanced Remote Asynchronous Node 16-Port EIA-232
9113-550		8450	A	Zero-priced Value Pak Processor Activation Code for #5237
9113-550		8463	A	Zero-priced Value Pak Processor Entitlement for #5239
9113-550		8465	A	Zero-priced Value Pak Processor Entitlement Code for #5264
9113-550		8800	A	Quiet Touch Keyboard - USB, Business Black, US English, #103P
9113-550		8801	A	Quiet Touch Keyboard - USB, Business Black, French, #189
9113-550		8802	A	Quiet Touch Keyboard - USB, Business Black, Italian, #142
9113-550		8803	A	Quiet Touch Keyboard - USB, Business Black, German/Austrian, #129
9113-550		8804	A	Quiet Touch Keyboard - USB, Business Black, UK English, #166
9113-550		8805	A	Quiet Touch Keyboard - USB, Business Black, Spanish, #172
9113-550		8806	A	Quiet Touch Keyboard - USB, Business Black, Japanese, #194
9113-550		8807	A	Quiet Touch Keyboard - USB, Business Black, Brazilian/Portuguese, #275
9113-550		8808	A	Quiet Touch Keyboard - USB, Business Black, Canadian French, #058
9113-550		8810	A	Quiet Touch Keyboard - USB, Business Black, Belgian/Dutch, #120
9113-550		8811	A	Quiet Touch Keyboard - USB, Business Black, Swedish/Finnish, #153
9113-550		8812	A	Quiet Touch Keyboard - USB, Business Black, Danish, #159
9113-550		8813	A	Quiet Touch Keyboard - USB, Business Black, Bulgarian, #442

MT	MD	FC	S/A	Description
9113-550	8814	A	Quiet Touch Keyboard - USB, Business Black, Swiss/French/German, #150F/G
9113-550	8816	A	Quiet Touch Keyboard - USB, Business Black, Norwegian, #155
9113-550	8817	A	Quiet Touch Keyboard - USB, Business Black, Dutch, #143
9113-550	8818	A	Quiet Touch Keyboard - USB, Business Black, Portuguese, #163
9113-550	8819	A	Quiet Touch Keyboard - USB, Business Black, Greek, #319
9113-550	8820	A	Quiet Touch Keyboard - USB, Business Black, Hebrew, #212
9113-550	8821	A	Quiet Touch Keyboard - USB, Business Black, Hungarian, #208
9113-550	8823	A	Quiet Touch Keyboard - USB, Business Black, Polish, #214
9113-550	8825	A	Quiet Touch Keyboard - USB, Business Black, Slovakian, #245
9113-550	8826	A	Quiet Touch Keyboard - USB, Business Black, Czech, #243
9113-550	8827	A	Quiet Touch Keyboard - USB, Business Black, Turkish, #179
9113-550	8829	A	Quiet Touch Keyboard - USB, Business Black, LA Spanish, #171
9113-550	8830	A	Quiet Touch Keyboard - USB, Business Black, Arabic, #238
9113-550	8833	A	Quiet Touch Keyboard - USB, Business Black, Korean, #413
9113-550	8834	A	Quiet Touch Keyboard - USB, Business Black, Chinese/US, #467
9113-550	8835	A	Quiet Touch Keyboard - USB, Business Black, French Canadian, #445
9113-550	8836	A	Quiet Touch Keyboard - USB, Business Black, Thai, #191
9113-550	8838	A	Quiet Touch Keyboard - USB, Business Black, Russian, #443
9113-550	8839	A	Quiet Touch Keyboard - USB, Business Black, Yugoslavian/Latin, #105
9113-550	8840	A	Quiet Touch Keyboard - USB, Business Black, US English (EMEA), #103P
9113-550	8841	A	Mouse - Business Black with Keyboard Attachment Cable

p5-570 Available FCs

p5-570 Available FCs

MT	MD	FC	S/A	Description
9117-570		0265	A	AIX Partition Specify
9117-570		0266	A	Linux Partition Specify
9117-570		0267	A	i5/OS Partition Specify
9117-570		0530	A	i5/OS Version V5R3 Specify
9117-570		0986	A	CCS Customer Service Specify (US)
9117-570		1800	A	RIO-2 Remote I/O Loop Adapter
9117-570		1846	A	Operator Panel
9117-570		1847	A	Processor Cable, Two-Drawer System
9117-570		1848	A	Processor Cable, Three-Drawer System
9117-570		1849	A	Processor Cable, Four-Drawer System
9117-570		1857	A	SP Flex Cable, Two-Drawer System
9117-570		1858	A	SP Flex Cable, Three-Drawer System
9117-570		1859	A	SP Flex Cable, Four-Drawer System
9117-570		2114	A	PCI SCSI Adapter 16-Bit Differential External Y Cable
9117-570		2118	A	Converter Cable, VHDCI to P, Mini-68 pin to 68 pin, 0.3M
9117-570		2424	S	0.6M 16-bit SCSI-2 System to System Cable
9117-570		2425	A	2.5M 16-bit SCSI-2 System to System Cable
9117-570		2456	A	LC-SC 50 Micron Fiber Converter Cable
9117-570		2459	A	LC-SC 62.5 Micron Fiber Converter Cable
9117-570		2498	S	PCI 4-Channel Ultra3 SCSI RAID Adapter
9117-570		2591	A	External USB 1.44 MB Diskette Drive
9117-570		2640	A	IDE Slimline DVD-ROM Drive
9117-570		2737	S	Keyboard/Mouse Attachment Card - PCI
9117-570		2738	A	2 Port USB PCI Adapter
9117-570		2848	S	POWER GXT135P Graphics Accelerator
9117-570		2849	A	POWER GXT135P Graphics Accelerator with Digital Support
9117-570		2861	A	ARTIC960Hx 4-Port EIA-232 Cable
9117-570		2863	A	ARTIC960Hx 4-Port X.21 Cable
9117-570		2864	A	ARTIC960Hx 4-Port V.35 (DTE) Cable
9117-570		2877	A	IBM ARTIC960RxD Quad DTA, H.100, 4-Drop Cable
9117-570		2934	A	Asynchronous Terminal/Printer Cable EIA-232
9117-570		2936	A	Asynchronous Cable EIA-232/V.24
9117-570		2943	A	8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus
9117-570		2944	A	128-Port Asynchronous Controller, PCI bus
9117-570		2946	S	Turboways 622 Mbps PCI MMF ATM Adapter
9117-570		2947	A	IBM ARTIC960Hx 4-Port Multiprotocol PCI Adapter
9117-570		2951	A	Cable, V.24 / EIA-232
9117-570		2952	A	Cable, V.35
9117-570		2953	A	Cable, V.36 / EIA-499
9117-570		2954	A	Cable, X.21
9117-570		2962	A	2-Port Multiprotocol PCI Adapter
9117-570		3124	A	Serial to Serial Port Cable for Drawer/Drawer
9117-570		3125	A	Serial to Serial Port Cable for Rack/Rack
9117-570		3146	A	RIO-2 (Remote I/O-2) Cable, 1.2M
9117-570		3147	A	RIO-2 (Remote I/O-2) Cable, 3.5M
9117-570		3148	A	RIO-2 (Remote I/O-2) Cable, 10M
9117-570		3156	A	RIO-2 (Remote I/O-2) Cable, 1.75M
9117-570		3168	A	RIO-2 (Remote I/O-2) Cable, 2.5M
9117-570		3273	A	36.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9117-570		3274	A	73.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9117-570		3275	A	146.8 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9117-570		3277	A	36.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9117-570		3278	A	73.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9117-570		3627	S	IBM P76/P77 Color Monitor, Business Black, Captured Cable
9117-570		3628	S	IBM P260/P275 Color Monitor, Business Black, and Cable
9117-570		3635	S	T210 Flat-Panel Monitor
9117-570		3636	A	L200P Flat Panel Monitor
9117-570		3637	A	IBM T541H /L150p 15" TFT Color Monitor
9117-570		3638	A	IBM C220p 21-inch Color Monitor, Business Black, and Cable
9117-570		3639	A	IBM ThinkVision L170p Flat Panel Monitor
9117-570		3925	A	Serial Port Converter Cable, 9-Pin to 25-Pin
9117-570		3926	A	Asynch Printer/Terminal Cable, 9-pin to 25-pin, 4M
9117-570		4242	A	6 Foot Extender Cable for Displays (15 pin D-shell to 15 pin D-shell)
9117-570		4256	A	Extender Cable - USB Keyboards, 2M
9117-570		4353	S	H-100 Bus 8-position Cable
9117-570		4452	A	2048MB (4x512MB) DIMMs, 208-pin, 8NS DDR SDRAM
9117-570		4453	S	4096MB (4x1024MB) DIMMs, 208-pin, 8NS Stacked DDR SDRAM
9117-570		4454	A	8192MB (4x2048MB) DIMMs, 208-pin, 8NS Stacked DDR SDRAM
9117-570		4490	A	4096MB (4x1024MB) DIMMs, 208-pin, 250MHz Stacked DDR1 SDRAM
9117-570		4491	A	16384MB (4x4096MB) DIMMs, 208-pin, 250MHz Stacked DDR1 SDRAM
9117-570		4492	A	32768MB (4x8192MB) DIMMs, 208-pin, 250MHz Stacked DDR1 SDRAM
9117-570		4651	A	Rack Indicator, Rack #1
9117-570		4652	A	Rack Indicator, Rack #2
9117-570		4653	A	Rack Indicator, Rack #3
9117-570		4654	A	Rack Indicator, Rack #4

p5-570 Available FCs

MT	MD	FC	S/A	Description
9117-570		4655	A	Rack Indicator, Rack #5
9117-570		4656	A	Rack Indicator, Rack #6
9117-570		4657	A	Rack Indicator, Rack #7
9117-570		4658	A	Rack Indicator, Rack #8
9117-570		4659	A	Rack Indicator, Rack #9
9117-570		4660	A	Rack Indicator, Rack #10
9117-570		4661	A	Rack Indicator, Rack #11
9117-570		4662	A	Rack Indicator, Rack #12
9117-570		4663	A	Rack Indicator, Rack #13
9117-570		4664	A	Rack Indicator, Rack #14
9117-570		4665	A	Rack Indicator, Rack #15
9117-570		4666	A	Rack Indicator, Rack #16
9117-570		4691	A	Rack Status Beacon Cable, Junction Box To Drawer Or Status Beacon
9117-570		4692	A	Rack Status Beacon Cable, Junction Box Daisy Chain
9117-570		4693	A	Rack Status Beacon Junction Box
9117-570		4953	S	IBM 64bit/66MHz PCI ATM 155 UTP Adapter
9117-570		4957	S	IBM 64bit/66MHz PCI ATM 155 MMF Adapter
9117-570		4959	A	IBM Token-Ring PCI Adapter
9117-570		4960	S	IBM e-business Cryptographic Accelerator
9117-570		4961	S	IBM Universal 4-Port 10/100 Ethernet Adapter
9117-570		4962	A	10/100 Mbps Ethernet PCI Adapter II
9117-570		4963	S	PCI Cryptographic Coprocessor (FIPS-4)
9117-570		5001	A	Customer Service Specify
9117-570		5005	A	Software Preinstall
9117-570		5700	A	IBM Gigabit Ethernet-SX PCI-X Adapter
9117-570		5701	A	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter
9117-570		5703	A	PCI-X Dual Channel Ultra320 SCSI RAID Adapter
9117-570		5706	A	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter
9117-570		5707	A	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter
9117-570		5709	A	Dual Channel SCSI RAID Enablement Card
9117-570		5712	A	PCI-X Dual Channel Ultra320 SCSI Adapter
9117-570		5716	A	2 Gigabit Fibre Channel PCI-X Adapter
9117-570		5718	A	10 Gigabit Ethernet PCI-X Adapter
9117-570		5751	A	IBM 4.7 GB IDE Slimline DVD-RAM Drive
9117-570		6001	A	Power Control Cable (SPCN) - 2 meter
9117-570		6006	A	Power Control Cable (SPCN) - 3 meter
9117-570		6007	A	Power Control Cable (SPCN) - 15 meter
9117-570		6008	A	Power Control Cable (SPCN) - 6 meter
9117-570		6029	A	Power Control Cable (SPCN) - 30 meter
9117-570		6203	S	PCI Dual Channel Ultra3 SCSI Adapter
9117-570		6204	A	PCI Universal Differential Ultra SCSI Adapter
9117-570		6228	S	2 Gigabit Fibre Channel Adapter for 64-bit PCI Bus
9117-570		6230	S	Advanced SerialRAID Plus Adapter
9117-570		6231	S	128 MByte DRAM Option Card
9117-570		6235	S	32 MByte Fast-Write Cache Option Card
9117-570		6239	S	2 Gigabit Fibre Channel PCI-X Adapter
9117-570		6458	A	Power Cable -- Drawer to IBM PDU, 14-foot, 250V/10A
9117-570		6469	A	Power Cord (14-foot) ,To Wall, (250V, 15A), United States, Plug Type #5
9117-570		6470	A	Power Cord (6-foot), To Wall (125V, 15A), Plug Type #4
9117-570		6471	A	Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A), Plug Type #70
9117-570		6472	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #18
9117-570		6473	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type 19
9117-570		6474	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 13A), Plug Type #23
9117-570		6475	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #32
9117-570		6476	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #24
9117-570		6477	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #22
9117-570		6478	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #25
9117-570		6479	A	Power Cord (9-foot) , To Wall/OEM PDU, (250V, 10A), Plug Type #6
9117-570		6487	A	Power Cord (6-foot) ,To Wall, (250V, 15A), United States, Plug Type #5
9117-570		6488	A	Power Cord (9-foot) , To Wall/OEM PDU, (125V, 15A or 250V, 10A), Plug Type #2
9117-570		6493	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #62
9117-570		6494	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #69
9117-570		6495	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #64
9117-570		6496	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #66
9117-570		7164	A	IBM Rack-mount Drawer Rail Kit
9117-570		7165	A	OEM Rack-mount Drawer Rail Kit
9117-570		7305	A	AAP Software Pre-Install Indicator
9117-570		7801	A	Ethernet Cable, 6M, Hardware Management Console to System Unit
9117-570		7802	A	Ethernet Cable, 15M, Hardware Management Console to System Unit
9117-570		7830	A	2-Way 1.65 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots
9117-570		7832	A	2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR1 Memory DIMM Slots
9117-570		7833	A	2-Way 1.9 GHz POWER5 CUoD Processor Card, 0-Way Active, 8 DDR2 Memory DIMM Slots
9117-570		7834	A	2-Way 1.5 GHz POWER5 Processor Card, 0-Way Entitled, 8 DDR1 Memory DIMM Slots
9117-570		7861	A	PCI Blind Swap Cassette Kit, Single Wide Short Adapters, Type II
9117-570		7862	A	PCI Blind Swap Cassette Kit, Single Wide Adapters, Type II

p5-570 Available FCs

MT	MD	FC	S/A	Description
9117-570		7863	A	PCI Blind Swap Cassette Kit, Double Wide Adapters, Type II
9117-570		7865	A	Processor Enclosure And Backplane
9117-570		7866	A	I/O Backplane, 6 PCI-X Slots
9117-570		7867	A	System Midplane
9117-570		7868	A	Ultra320 SCSI 6-pack Backplane
9117-570		7869	A	Media Enclosure And Backplane
9117-570		7870	A	Power Distribution Backplane
9117-570		7875	A	Processor Power Regulator
9117-570		7878	A	Serial Port Riser Card
9117-570		7879	A	System Drawer Enclosure
9117-570		7881	A	Service Processor
9117-570		7888	A	AC Power Supply, 1400 W
9117-570		7890	A	8192MB (4x2048MB) DIMMs, CUoD, 4096MB Active, DDR1
9117-570		7892	A	2048MB (4x512MB) DIMMs, 276-pin, 533MHz DDR2 SDRAM
9117-570		7893	A	4096MB (4x1024MB) DIMMs, 276-pin, 533MHz DDR2 SDRAM
9117-570		7897	A	One Processor Activation for CUoD Processor Feature #7830
9117-570		7898	A	One Processor Activation for CUoD Processor Feature #7832
9117-570		7899	A	One Processor Activation for CUoD Processor Feature #7833
9117-570		7929	A	One Processor Entitlement for Processor Feature #7834
9117-570		7942	A	Advanced POWER Virtualization
9117-570		7950	A	1024MB Activation for DDR1 Memory
9117-570		7951	A	On/Off Processor Enablement
9117-570		7952	A	On/Off Processor Day Billing for Feature 7830
9117-570		7953	A	On/Off Processor Day Billing for Feature 7832
9117-570		7954	A	On/Off Memory Enablement
9117-570		7955	A	On/Off Processor Day Billing for Feature 7833
9117-570		7956	A	30 Days Prepaid Reserve Capacity for 1.65 GHz Processors
9117-570		7957	A	On/Off Memory 1GB-Day Billing for DDR1
9117-570		7959	A	30 Days Prepaid Reserve Capacity for 1.9 GHz Processors
9117-570		8052	S	4096MB (4x1024MB) DIMMs, Express Configuration, Factory Only
9117-570		8131	A	128-Port Asynchronous Controller Cable, 4.5 Meter
9117-570		8132	A	128-Port Asynchronous Controller Cable, 23cm (9-Inch)
9117-570		8133	A	RJ-45 to DB-25 Converter Cable
9117-570		8136	A	Rack Mountable Remote Asynchronous Node 16-Port EIA-232
9117-570		8137	A	Enhanced Remote Asynchronous Node 16-Port EIA-232
9117-570		8430	A	Power Cord Carry Over Indicator, #9800, Model Conversion Only
9117-570		8431	A	Power Cord Carry Over Indicator, #9802, Model Conversion Only
9117-570		8432	A	Power Cord Carry Over Indicator, #9820, Model Conversion Only
9117-570		8433	A	Power Cord Carry Over Indicator, #9821, Model Conversion Only
9117-570		8434	A	Power Cord Carry Over Indicator, #9825, Model Conversion Only
9117-570		8435	A	Power Cord Carry Over Indicator, #9827, Model Conversion Only
9117-570		8436	A	Power Cord Carry Over Indicator, #9828, Model Conversion Only
9117-570		8437	A	Power Cord Carry Over Indicator, #9829, Model Conversion Only
9117-570		8438	A	Power Cord Carry Over Indicator, #9830, Model Conversion Only
9117-570		8439	A	Power Cord Carry Over Indicator, #9831, Model Conversion Only
9117-570		8440	A	Power Cord Carry Over Indicator, #9833, Model Conversion Only
9117-570		8441	A	Power Cord Carry Over Indicator, #9834, Model Conversion Only
9117-570		8452	A	Zero-priced Value Pak Processor Activation Code for #7830
9117-570		8454	A	Zero-priced Value Pak Processor Activation Code for #7832
9117-570		8455	A	Zero-priced Value Pak Processor Activation Code for #7833
9117-570		8456	A	Zero-priced Value Pak Processor Entitlement for #7834
9117-570		8800	A	Quiet Touch Keyboard - USB, Business Black, US English, #103P
9117-570		8801	A	Quiet Touch Keyboard - USB, Business Black, French, #189
9117-570		8802	A	Quiet Touch Keyboard - USB, Business Black, Italian, #142
9117-570		8803	A	Quiet Touch Keyboard - USB, Business Black, German/Austrian, #129
9117-570		8804	A	Quiet Touch Keyboard - USB, Business Black, UK English, #166
9117-570		8805	A	Quiet Touch Keyboard - USB, Business Black, Spanish, #172
9117-570		8806	A	Quiet Touch Keyboard - USB, Business Black, Japanese, #194
9117-570		8807	A	Quiet Touch Keyboard - USB, Business Black, Brazilian/Portuguese, #275
9117-570		8808	A	Quiet Touch Keyboard - USB, Business Black, Canadian French, #058
9117-570		8810	A	Quiet Touch Keyboard - USB, Business Black, Belgian/Dutch, #120
9117-570		8811	A	Quiet Touch Keyboard - USB, Business Black, Swedish/Finnish, #153
9117-570		8812	A	Quiet Touch Keyboard - USB, Business Black, Danish, #159
9117-570		8813	A	Quiet Touch Keyboard - USB, Business Black, Bulgarian, #442
9117-570		8814	A	Quiet Touch Keyboard - USB, Business Black, Swiss/French/German, #150F/G
9117-570		8816	A	Quiet Touch Keyboard - USB, Business Black, Norwegian, #155
9117-570		8817	A	Quiet Touch Keyboard - USB, Business Black, Dutch, #143
9117-570		8818	A	Quiet Touch Keyboard - USB, Business Black, Portuguese, #163
9117-570		8819	A	Quiet Touch Keyboard - USB, Business Black, Greek, #319
9117-570		8820	A	Quiet Touch Keyboard - USB, Business Black, Hebrew, #212
9117-570		8821	A	Quiet Touch Keyboard - USB, Business Black, Hungarian, #208
9117-570		8823	A	Quiet Touch Keyboard - USB, Business Black, Polish, #214
9117-570		8825	A	Quiet Touch Keyboard - USB, Business Black, Slovakian, #245
9117-570		8826	A	Quiet Touch Keyboard - USB, Business Black, Czech, #243
9117-570		8827	A	Quiet Touch Keyboard - USB, Business Black, Turkish, #179

MT	MD	FC	S/A	Description
9117-570	8829	A		Quiet Touch Keyboard - USB, Business Black, LA Spanish, #171
9117-570	8830	A		Quiet Touch Keyboard - USB, Business Black, Arabic, #238
9117-570	8833	A		Quiet Touch Keyboard - USB, Business Black, Korean, #413
9117-570	8834	A		Quiet Touch Keyboard - USB, Business Black, Chinese/US, #467
9117-570	8835	A		Quiet Touch Keyboard - USB, Business Black, French Canadian, #445
9117-570	8836	A		Quiet Touch Keyboard - USB, Business Black, Thai, #191
9117-570	8838	A		Quiet Touch Keyboard - USB, Business Black, Russian, #443
9117-570	8839	A		Quiet Touch Keyboard - USB, Business Black, Yugoslavian/Latin, #105
9117-570	8840	A		Quiet Touch Keyboard - USB, Business Black, US English (EMEA), #103P
9117-570	8841	A		Mouse - Business Black with Keyboard Attachment Cable

p5-590 Available FCs

p5-590 Available FCs

MT	MD	FC	S/A	Description
9119-590		0265	A	AIX Partition Specify
9119-590		0266	A	Linux Partition Specify
9119-590		0267	A	i5/OS Partition Specify
9119-590		0530	A	i5/OS Version V5R3 Specify
9119-590		2425	A	2.5M 16-bit SCSI-2 System-to-System Cable
9119-590		2591	A	External USB 1.44 MB Diskette Drive
9119-590		2738	A	2-Port USB PCI Adapter
9119-590		2849	A	POWER GXT135P Graphics Accelerator with Digital Support
9119-590		2943	A	8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus
9119-590		2944	A	128-Port Asynchronous Controller, PCI bus
9119-590		2947	A	IBM ARTIC960Hx 4-Port Multiprotocol PCI Adapter
9119-590		2951	A	Cable, V.24 / EIA-232
9119-590		2952	A	Cable, V.35
9119-590		2953	A	Cable, V.36 / EIA-499
9119-590		2954	A	Cable, X.21
9119-590		2962	A	2-Port Multiprotocol PCI Adapter
9119-590		3147	A	RIO-2(Remote I/O-2)Cbl, 3.5M
9119-590		3170	A	RIO-2(Remote I/O-2)Cbl, 8.0M
9119-590		3277	A	36.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9119-590		3278	A	73.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9119-590		3636	A	L200P Flat Panel Monitor
9119-590		3637	A	IBM T541H /L150p 15" TFT Color Monitor
9119-590		3638	A	IBM C220p 21-inch Color Monitor, Business Black, and Cable
9119-590		3639	A	IBM ThinkVision L170p Flat Panel Monitor
9119-590		3757	A	Service Shelf Tool Kit
9119-590		4599	A	PCI Blind Swap Cassette Kit, Single Wide Adapters, Universal
9119-590		4643	A	7040-61D I/O Drawer Attachment Indicator
9119-590		4959	A	IBM Token-Ring PCI Adapter
9119-590		4962	A	10/100 Mbps Ethernet PCI Adapter II
9119-590		5005	A	Software Preinstall
9119-590		5700	A	IBM Gigabit Ethernet-SX PCI-X Adapter
9119-590		5701	A	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter
9119-590		5706	A	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter
9119-590		5707	A	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter
9119-590		5710	A	PCI-X Dual Channel Ultra320 SCSI Blind Swap Adapter
9119-590		5711	A	PCI-X Dual Channel Ultra320 SCSI RAID Blind Swap Adapter
9119-590		5716	A	2 Gigabit Fibre Channel PCI-X Adapter
9119-590		5718	A	10 Gigabit Ethernet -SR PCI-X Adapter
9119-590		5791	A	I/O Drawer, 20 Slots, 16 Disk Bays
9119-590		5794	A	I/O Drawer, 20 Slots, 8 Disk Bays
9119-590		6121	A	I/O Drw.Cbl.Grp, Prim.Rck/9U
9119-590		6122	A	I/O Drw.Cbl.Grp, Prim.Rck/5U
9119-590		6123	A	I/O Drw.Cbl.Grp, Prim.Rck/1U
9119-590		6124	A	I/O Drw.Cbl.Grp, Prim.Rck/13U
9119-590		6125	A	I/O Drw.Cbl.Grp, 8691.Rck/1U
9119-590		6126	A	I/O Drw.Cbl.Grp, 8691.Rck/5U
9119-590		6127	A	I/O Drw.Cbl.Grp, 8691 Rck/9U
9119-590		6186	A	Bulk Power Regulator
9119-590		6200	A	Integrated Battery Backup, Primary or Redundant-Front Mounted
9119-590		6201	A	Integrated Battery Backup, Redundant Rear Mounted
9119-590		6204	A	PCI Universal Differential Ultra SCSI Adapter
9119-590		6240	A	Cable, Integrated Battery Backup to Bulk Power Regulator, Primary Rack
9119-590		6251	A	Slim Line Doors, System and #5792 Racks
9119-590		6252	A	Acoustic Doors System and #5792 Racks
9119-590		6253	A	Slim Line Doors, #8691 Expansion Rack
9119-590		6254	A	Acoustic Doors, #8691 Expansion Rack
9119-590		6470	A	Power Cord (6-foot), To Wall (125V, 15A), Plug Type #4
9119-590		6471	A	Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A), Plug Type #70
9119-590		6472	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #18
9119-590		6473	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type 19
9119-590		6474	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 13A), Plug Type #23
9119-590		6475	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #32
9119-590		6476	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #24
9119-590		6477	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #22
9119-590		6478	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #25
9119-590		6479	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #6
9119-590		6487	A	Power Cord (6-foot) ,To Wall, (250V, 15A), United States, Plug Type #5
9119-590		6488	A	Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A or 250V, 10A), Plug Type #2
9119-590		6493	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #62
9119-590		6494	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #69
9119-590		6495	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #64
9119-590		6496	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #66
9119-590		6851	A	Slim Line Doors OEM, System and #5792 Racks
9119-590		6852	A	Acoustic Doors OEM, System and #5792 Racks
9119-590		6853	A	Slim Line Doors, OEM, #8691 Expansion Rack

MT	MD	FC	S/A	Description
9119-590		6854	A	Acoustic Doors, OEM, #8691 Expansion Rack
9119-590		7801	A	Ethernet Cable, 6M, Hardware Management Console to System Unit
9119-590		7802	A	Ethernet Cable, 15M, Hardware Management Console to System Unit
9119-590		7803	A	Bulk Power Controller Assembly
9119-590		7807	A	Cooling Group
9119-590		7809	A	DC Power Converter, Processor Book
9119-590		7810	A	Processor Clock Card, Programmable
9119-590		7811	A	System Service Processor
9119-590		7812	A	Multiplexer Card
9119-590		7814	A	4GB DDR2 Memory Card, 533MHz
9119-590		7816	A	4GB CUoD Memory Card 2GB Active, DDR1
9119-590		7818	A	Remote I/O-2 (RIO-2) Loop Adapter, Two Port
9119-590		7821	A	Pwr.Cbl.Grp, CEC Primary Fans
9119-590		7822	A	Pwr.Cbl.Grp, 1st CEC Book
9119-590		7823	A	Pwr.Cbl.Grp, 2nd CEC Book
9119-590		7826	A	Pwr.Cbl.Grp, 7807 Cooling Grp.
9119-590		7828	A	16GB DDR1 Memory Card, 266MHz
9119-590		7829	A	32GB DDR1 Memory Card, 200MHz
9119-590		7835	A	8GB CUoD Memory Card 4GB Active, DDR1
9119-590		7837	A	Bulk Power Distribution Assembly
9119-590		7839	A	On/Off Processor Enablement for #7981
9119-590		7847	A	I/O Drw.Cbl.Grp, 8691 Rck/13U
9119-590		7848	A	I/O Drw.Cbl.Grp, 8691 Rck/19U
9119-590		7849	A	I/O Drw.Cbl.Grp, 8691 Rck/23U
9119-590		7924	A	RIO-2(Remote I/O-2)Cbl, 0.6M
9119-590		7925	A	Activation, #7981 CUoD Processor Book, One Processor
9119-590		7926	A	30 Days Prepaid Reserve Capacity for #7981
9119-590		7937	A	Bolt-Down Kit, Low-Raised Floor
9119-590		7938	A	Bolt-Down Kit, High-Raised Floor
9119-590		7939	A	Bolt-Down Kit, Non-Raised Floor
9119-590		7960	A	Compact Handling Option
9119-590		7970	A	1GB Activation #7816 & #7835 Memory Features
9119-590		7973	A	On/Off Memory Enablement
9119-590		7974	A	On/Off Memory Billing
9119-590		7981	A	16-Way POWER5 Standard CUoD Processor Book, 0-Way Active
9119-590		7993	A	On/Off Processor Billing for Feature #7981
9119-590		8131	A	128-Port Asynchronous Controller Cable, 4.5 Meter
9119-590		8132	A	128-Port Asynchronous Controller Cable, 23cm (9-Inch)
9119-590		8133	A	RJ-45 to DB-25 Converter Cable
9119-590		8136	A	Rack Mountable Remote Asynchronous Node 16-Port EIA-232
9119-590		8137	A	Enhanced Remote Asynchronous Node 16-Port EIA-232
9119-590		8195	A	256GB DDR1 Memory (32 X 8GB)
9119-590		8197	A	512GB DDR1 Memory (32 X 16GB Cards)
9119-590		8198	A	512GB DDR1 Memory (16 X 32GB Cards)
9119-590		8453	A	Base Customer Spec Plcmnt
9119-590		8677	A	Line Cord, 8AWG, 14ft, No Plug
9119-590		8688	A	Line Cord, 6AWG/Type W, 14ft, IEC309 60A Plug
9119-590		8689	A	Line Cord, 6AWG/Type W, 6ft, IEC309 60A Plug
9119-590		8691	A	Expansion Rack, 24", 42U
9119-590		8694	A	Line Cord, 6AWG, 14ft, No Plug
9119-590		8697	A	Line Cord, 8AWG, 14ft, IEC309 30A Plug
9119-590		8698	A	Line Cord, 8AWG, 6ft, IEC309 30A Plug
9119-590		8800	A	Quiet Touch Keyboard - USB, Business Black, US English, #103P
9119-590		8801	A	Quiet Touch Keyboard - USB, Business Black, French, #189
9119-590		8802	A	Quiet Touch Keyboard - USB, Business Black, Italian, #142
9119-590		8803	A	Quiet Touch Keyboard - USB, Business Black, German/Austrian, #129
9119-590		8804	A	Quiet Touch Keyboard - USB, Business Black, UK English, #166
9119-590		8805	A	Quiet Touch Keyboard - USB, Business Black, Spanish, #172
9119-590		8806	A	Quiet Touch Keyboard - USB, Business Black, Japanese, #194
9119-590		8807	A	Quiet Touch Keyboard - USB, Business Black, Brazilian/Portuguese, #275
9119-590		8808	A	Quiet Touch Keyboard - USB, Business Black, Canadian French, #058
9119-590		8810	A	Quiet Touch Keyboard - USB, Business Black, Belgian/Dutch, #120
9119-590		8811	A	Quiet Touch Keyboard - USB, Business Black, Swedish/Finnish, #153
9119-590		8812	A	Quiet Touch Keyboard - USB, Business Black, Danish, #159
9119-590		8813	A	Quiet Touch Keyboard - USB, Business Black, Bulgarian, #442
9119-590		8814	A	Quiet Touch Keyboard - USB, Business Black, Swiss/French/German, #150F/G
9119-590		8816	A	Quiet Touch Keyboard - USB, Business Black, Norwegian, #155
9119-590		8817	A	Quiet Touch Keyboard - USB, Business Black, Dutch, #143
9119-590		8818	A	Quiet Touch Keyboard - USB, Business Black, Portuguese, #163
9119-590		8819	A	Quiet Touch Keyboard - USB, Business Black, Greek, #319
9119-590		8820	A	Quiet Touch Keyboard - USB, Business Black, Hebrew, #212
9119-590		8821	A	Quiet Touch Keyboard - USB, Business Black, Hungarian, #208
9119-590		8823	A	Quiet Touch Keyboard - USB, Business Black, Polish, #214
9119-590		8825	A	Quiet Touch Keyboard - USB, Business Black, Slovakian, #245
9119-590		8826	A	Quiet Touch Keyboard - USB, Business Black, Czech, #243

MT	MD	FC	S/A	Description
9119-590	8827	A		Quiet Touch Keyboard - USB, Business Black, Turkish, #179
9119-590	8829	A		Quiet Touch Keyboard - USB, Business Black, LA Spanish, #171
9119-590	8830	A		Quiet Touch Keyboard - USB, Business Black, Arabic, #238
9119-590	8833	A		Quiet Touch Keyboard - USB, Business Black, Korean, #413
9119-590	8834	A		Quiet Touch Keyboard - USB, Business Black, Chinese/US, #467
9119-590	8835	A		Quiet Touch Keyboard - USB, Business Black, French Canadian, #445
9119-590	8836	A		Quiet Touch Keyboard - USB, Business Black, Thai, #191
9119-590	8838	A		Quiet Touch Keyboard - USB, Business Black, Russian, #443
9119-590	8839	A		Quiet Touch Keyboard - USB, Business Black, Yugoslavian/Latin, #105
9119-590	8840	A		Quiet Touch Keyboard - USB, Business Black, US English (EMEA), #103P

p5-595 Available FCs

p5-595 Available FCs

MT	MD	FC	S/A	Description
9119-595		0265	A	AIX Partition Specify
9119-595		0266	A	Linux Partition Specify
9119-595		0267	A	i5/OS Partition Specify
9119-595		0530	A	i5/OS Version V5R3 Specify
9119-595		2425	A	2.5M 16-bit SCSI-2 System-to-System Cable
9119-595		2591	A	External USB 1.44 MB Diskette Drive
9119-595		2738	A	2-Port USB PCI Adapter
9119-595		2849	A	POWER GXT135P Graphics Accelerator with Digital Support
9119-595		2943	A	8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus
9119-595		2944	A	128-Port Asynchronous Controller, PCI bus
9119-595		2947	A	IBM ARTIC960Hx 4-Port Multiprotocol PCI Adapter
9119-595		2951	A	Cable, V.24 / EIA-232
9119-595		2952	A	Cable, V.35
9119-595		2953	A	Cable, V.36 / EIA-499
9119-595		2954	A	Cable, X.21
9119-595		2962	A	2-Port Multiprotocol PCI Adapter
9119-595		3147	A	RIO-2(Remote I/O-2)Cbl, 3.5M
9119-595		3170	A	RIO-2(Remote I/O-2)Cbl, 8.0M
9119-595		3277	A	36.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9119-595		3278	A	73.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9119-595		3636	A	L200P Flat Panel Monitor
9119-595		3637	A	IBM T541H /L150p 15" TFT Color Monitor
9119-595		3638	A	IBM C220p 21-inch Color Monitor, Business Black, and Cable
9119-595		3639	A	IBM ThinkVision L170p Flat Panel Monitor
9119-595		3757	A	Service Shelf Tool Kit
9119-595		4599	A	PCI Blind Swap Cassette Kit, Single Wide Adapters, Universal
9119-595		4643	A	7040-61D I/O Drawer Attachment Indicator
9119-595		4959	A	IBM Token-Ring PCI Adapter
9119-595		4962	A	10/100 Mbps Ethernet PCI Adapter II
9119-595		5005	A	Software Preinstall
9119-595		5700	A	IBM Gigabit Ethernet-SX PCI-X Adapter
9119-595		5701	A	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter
9119-595		5706	A	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter
9119-595		5707	A	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter
9119-595		5710	A	PCI-X Dual Channel Ultra320 SCSI Blind Swap Adapter
9119-595		5711	A	PCI-X Dual Channel Ultra320 SCSI RAID Blind Swap Adapter
9119-595		5716	A	2 Gigabit Fibre Channel PCI-X Adapter
9119-595		5718	A	10 Gigabit Ethernet -SR PCI-X Adapter
9119-595		5791	A	I/O Drawer, 20 Slots, 16 Disk Bays
9119-595		5792	A	Expansion Rack, Powered
9119-595		5794	A	I/O Drawer, 20 Slots, 8 Disk Bays
9119-595		6121	A	I/O Drw.Cbl.Grp, Prim.Rck/9U
9119-595		6122	A	I/O Drw.Cbl.Grp, Prim.Rck/5U
9119-595		6123	A	I/O Drw.Cbl.Grp, Prim.Rck/1U
9119-595		6124	A	I/O Drw.Cbl.Grp, Prim.Rck/13U
9119-595		6125	A	I/O Drw.Cbl.Grp, 8691.Rck/1U
9119-595		6126	A	I/O Drw.Cbl.Grp, 8691.Rck/5U
9119-595		6127	A	I/O Drw.Cbl.Grp, 8691 Rck/9U
9119-595		6128	A	I/O Drw.Cbl.Grp, 8691 Rck/13U
9119-595		6129	A	I/O Drw.Cbl.Grp, 8691 Rck/19U
9119-595		6186	A	Bulk Power Regulator
9119-595		6200	A	Integrated Battery Backup, Primary or Redundant-Front Mounted
9119-595		6201	A	Integrated Battery Backup, Redundant Rear Mounted
9119-595		6204	A	PCI Universal Differential Ultra SCSI Adapter
9119-595		6240	A	Cable, Integrated Battery Backup to Bulk Power Regulator, Primary Rack
9119-595		6241	A	Cable, Integrated Battery to Bulk Power Regulator, Expansion Rack
9119-595		6242	A	Cable, Front Mounted Integrated Battery Backup to rear BPR, Primary/Expansion Rack
9119-595		6251	A	Slim Line Doors, System and #5792 Racks
9119-595		6252	A	Acoustic Doors System and #5792 Racks
9119-595		6253	A	Slim Line Doors, #8691 Expansion Rack
9119-595		6254	A	Acoustic Doors, #8691 Expansion Rack
9119-595		6470	A	Power Cord (6-foot), To Wall (125V, 15A), Plug Type #4
9119-595		6471	A	Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A), Plug Type #70
9119-595		6472	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #18
9119-595		6473	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type 19
9119-595		6474	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 13A), Plug Type #23
9119-595		6475	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #32
9119-595		6476	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #24
9119-595		6477	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #22
9119-595		6478	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #25
9119-595		6479	A	Power Cord (9-foot) , To Wall/OEM PDU, (250V, 10A), Plug Type #6
9119-595		6487	A	Power Cord (6-foot) ,To Wall, (250V, 15A), United States, Plug Type #5
9119-595		6488	A	Power Cord (9-foot) , To Wall/OEM PDU, (125V, 15A or 250V, 10A), Plug Type #2
9119-595		6493	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #62
9119-595		6494	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #69

p5-595 Available FCs

MT	MD	FC	S/A	Description
9119-595		6495	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #64
9119-595		6496	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #66
9119-595		6851	A	Slim Line Doors OEM, System and #5792 Racks
9119-595		6852	A	Acoustic Doors OEM, System and #5792 Racks
9119-595		6853	A	Slim Line Doors, OEM, #8691 Expansion Rack
9119-595		6854	A	Acoustic Doors, OEM, #8691 Expansion Rack
9119-595		7799	A	256 Memory Activations for #7835 Memory DIMMS
9119-595		7801	A	Ethernet Cable, 6M, Hardware Management Console to System Unit
9119-595		7802	A	Ethernet Cable, 15M, Hardware Management Console to System Unit
9119-595		7803	A	Bulk Power Controller Assembly
9119-595		7807	A	Cooling Group
9119-595		7809	A	DC Power Converter, Processor Book
9119-595		7810	A	Processor Clock Card, Programmable
9119-595		7811	A	System Service Processor
9119-595		7812	A	Multiplexer Card
9119-595		7813	A	16-Way POWER5 Turbo CUoD Processor Book, 0-Way Active
9119-595		7814	A	4GB DDR2 Memory Card, 533MHz
9119-595		7815	A	Activation, #7813 CUoD Processor Book, One Processor
9119-595		7816	A	4GB CUoD Memory Card 2GB Active, DDR1
9119-595		7818	A	Remote I/O-2 (RIO-2) Loop Adapter, Two Port
9119-595		7821	A	Pwr.Cbl.Grp, CEC Primary Fans
9119-595		7822	A	Pwr.Cbl.Grp, 1st CEC Book
9119-595		7823	A	Pwr.Cbl.Grp, 2nd CEC Book
9119-595		7824	A	Pwr.Cbl.Grp, 3rd CEC Book
9119-595		7825	A	Pwr.Cbl.Grp, 4th CEC Book
9119-595		7826	A	Pwr.Cbl.Grp, 7807 Cooling Grp.
9119-595		7828	A	16GB DDR1 Memory Card, 266MHz
9119-595		7829	A	32GB DDR1 Memory Card, 200MHz
9119-595		7835	A	8GB CUoD Memory Card 4GB Active, DDR1
9119-595		7837	A	Bulk Power Distribution Assembly
9119-595		7847	A	I/O Drw.Cbl.Grp, 8691 Rck/13U
9119-595		7848	A	I/O Drw.Cbl.Grp, 8691 Rck/19U
9119-595		7849	A	I/O Drw.Cbl.Grp, 8691 Rck/23U
9119-595		7850	A	I/O Drw.Cbl.Grp, 8691 Rck/27U
9119-595		7851	A	I/O Drw.Cbl.Grp, 8691 Rck/31U
9119-595		7853	A	I/O Drw.Cbl.Grp, 5792 Rck/1U
9119-595		7854	A	I/O Drw.Cbl.Grp, 5792 Rck/5U
9119-595		7855	A	I/O Drw.Cbl.Grp, 5792 Rck/9U
9119-595		7856	A	I/O Drw.Cbl.Grp, 5792 Rck/13U
9119-595		7857	A	I/O Drw.Cbl.Grp, 5792 Rck/19U
9119-595		7858	A	I/O Drw.Cbl.Grp, 5792 Rck/23U
9119-595		7859	A	I/O Drw.Cbl.Grp, 5792 Rck/31U
9119-595		7860	A	I/O Drw.Cbl.Grp, Prim.Rck/31U
9119-595		7924	A	RIO-2(Remote I/O-2)Cbl, 0.6M
9119-595		7937	A	Bolt-Down Kit, Low-Raised Floor
9119-595		7938	A	Bolt-Down Kit, High-Raised Floor
9119-595		7960	A	Compact Handling Option
9119-595		7970	A	1GB Activation #7816 & #7835 Memory Features
9119-595		7971	A	On/Off Processor Enablement for #7813
9119-595		7972	A	On/Off Processor Billing for Feature #7813
9119-595		7973	A	On/Off Memory Enablement
9119-595		7974	A	On/Off Memory Billing
9119-595		7975	A	30 Days Prepaid Reserve Capacity for #7813
9119-595		7988	A	16-Way POWER5 Standard CUoD Processor Book, 0-Way Active
9119-595		7990	A	Activation, #7988 CUoD Processor Book, One Processor
9119-595		7991	A	30 Days Prepaid Reserve Capacity for #7988
9119-595		7992	A	Advanced POWER Virtualization
9119-595		7994	A	On/Off Processor Enablement for #7988
9119-595		7996	A	On/Off Processor Billing for CoD for Feature #7988
9119-595		8131	A	128-Port Asynchronous Controller Cable, 4.5 Meter
9119-595		8132	A	128-Port Asynchronous Controller Cable, 23cm (9-Inch)
9119-595		8133	A	RJ-45 to DB-25 Converter Cable
9119-595		8136	A	Rack Mountable Remote Asynchronous Node 16-Port EIA-232
9119-595		8137	A	Enhanced Remote Asynchronous Node 16-Port EIA-232
9119-595		8195	A	256GB DDR1 Memory (32 X 8GB)
9119-595		8197	A	512GB DDR1 Memory (32 X 16GB Cards)
9119-595		8198	A	512GB DDR1 Memory (16 X 32GB Cards)
9119-595		8453	A	Base Customer Spec Plcmnt
9119-595		8677	A	Line Cord, 8AWG, 14ft, No Plug
9119-595		8686	A	Line Cord, 6AWG, 14ft, IEC309 100A Plug
9119-595		8687	A	Line Cord, 6AWG, 6ft, IEC309 100A Plug
9119-595		8691	A	Expansion Rack, 24", 42U
9119-595		8694	A	Line Cord, 6AWG, 14ft, No Plug
9119-595		8697	A	Line Cord, 8AWG, 14ft, IEC309 30A Plug
9119-595		8698	A	Line Cord, 8AWG, 6ft, IEC309 30A Plug

p5-595 Available FCs

MT	MD	FC	S/A	Description
9119-595		8800	A	Quiet Touch Keyboard - USB, Business Black, US English, #103P
9119-595		8801	A	Quiet Touch Keyboard - USB, Business Black, French, #189
9119-595		8802	A	Quiet Touch Keyboard - USB, Business Black, Italian, #142
9119-595		8803	A	Quiet Touch Keyboard - USB, Business Black, German/Austrian, #129
9119-595		8804	A	Quiet Touch Keyboard - USB, Business Black, UK English, #166
9119-595		8805	A	Quiet Touch Keyboard - USB, Business Black, Spanish, #172
9119-595		8806	A	Quiet Touch Keyboard - USB, Business Black, Japanese, #194
9119-595		8807	A	Quiet Touch Keyboard - USB, Business Black, Brazilian/Portuguese, #275
9119-595		8808	A	Quiet Touch Keyboard - USB, Business Black, Canadian French, #058
9119-595		8810	A	Quiet Touch Keyboard - USB, Business Black, Belgian/Dutch, #120
9119-595		8811	A	Quiet Touch Keyboard - USB, Business Black, Swedish/Finnish, #153
9119-595		8812	A	Quiet Touch Keyboard - USB, Business Black, Danish, #159
9119-595		8813	A	Quiet Touch Keyboard - USB, Business Black, Bulgarian, #442
9119-595		8814	A	Quiet Touch Keyboard - USB, Business Black, Swiss/French/German, #150F/G
9119-595		8816	A	Quiet Touch Keyboard - USB, Business Black, Norwegian, #155
9119-595		8817	A	Quiet Touch Keyboard - USB, Business Black, Dutch, #143
9119-595		8818	A	Quiet Touch Keyboard - USB, Business Black, Portuguese, #163
9119-595		8819	A	Quiet Touch Keyboard - USB, Business Black, Greek, #319
9119-595		8820	A	Quiet Touch Keyboard - USB, Business Black, Hebrew, #212
9119-595		8821	A	Quiet Touch Keyboard - USB, Business Black, Hungarian, #208
9119-595		8823	A	Quiet Touch Keyboard - USB, Business Black, Polish, #214
9119-595		8825	A	Quiet Touch Keyboard - USB, Business Black, Slovakian, #245
9119-595		8826	A	Quiet Touch Keyboard - USB, Business Black, Czech, #243
9119-595		8827	A	Quiet Touch Keyboard - USB, Business Black, Turkish, #179
9119-595		8829	A	Quiet Touch Keyboard - USB, Business Black, LA Spanish, #171
9119-595		8830	A	Quiet Touch Keyboard - USB, Business Black, Arabic, #238
9119-595		8833	A	Quiet Touch Keyboard - USB, Business Black, Korean, #413
9119-595		8834	A	Quiet Touch Keyboard - USB, Business Black, Chinese/US, #467
9119-595		8835	A	Quiet Touch Keyboard - USB, Business Black, French Canadian, #445
9119-595		8836	A	Quiet Touch Keyboard - USB, Business Black, Thai, #191
9119-595		8838	A	Quiet Touch Keyboard - USB, Business Black, Russian, #443
9119-595		8839	A	Quiet Touch Keyboard - USB, Business Black, Yugoslavian/Latin, #105
9119-595		8840	A	Quiet Touch Keyboard - USB, Business Black, US English (EMEA), #103P

p5-720 Available FCs

p5-570 Available FCs

MT	MD	FC	S/A	Description
9124-720		0986	A	CCS Customer Service Specify (US)
9124-720		1806	A	Dual Port RIO-2 I/O Hub
9124-720		1936	A	512MB (2x256MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9124-720		1937	A	1024MB (4x256MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
9124-720		1938	A	2048MB (4x512MB) DIMMs, 208-pin, 8NS DDR SDRAM
9124-720		1940	A	4096MB (4x1024MB) DIMMs, 208-pin, 8NS DDR SDRAM
9124-720		1942	A	8192MB (4x2048MB) DIMMs, 208-pin, 8NS DDR SDRAM
9124-720		1945	A	16GB (4x4096MB) DIMMs, 208-pin, 266 MHz DDR Stacked SDRAM
9124-720		1960	A	1-way 1.5 GHz POWER5 Processor Card, no L3 Cache, 8 Memory DIMM Slots
9124-720		1961	A	2-way 1.5 GHz POWER5 Processor Card, 36 MB L3 Cache, 8 Memory DIMM Slots
9124-720		1965	A	POWER Hypervisor
9124-720		2114	A	PCI SCSI Adapter 16-Bit Differential External Y Cable
9124-720		2118	A	Converter Cable, VHDCI to P, Mini-68 pin to 68 pin, 0.3M
9124-720		2424	A	0.6M 16-bit SCSI-2 System to System Cable
9124-720		2425	A	2.5M 16-bit SCSI-2 System to System Cable
9124-720		2456	A	LC-SC 50 Micron Fiber Converter Cable
9124-720		2459	A	LC-SC 62.5 Micron Fiber Converter Cable
9124-720		2591	A	External USB 1.44 MB Diskette Drive
9124-720		2640	A	IDE Slimline DVD-ROM Drive
9124-720		2738	A	2 Port USB PCI Adapter
9124-720		2849	A	POWER GXT135P Graphics Accelerator with Digital Support
9124-720		2934	A	Asynchronous Terminal/Printer Cable EIA-232
9124-720		2936	A	Asynchronous Cable EIA-232/V.24
9124-720		3146	A	RIO-2 (Remote I/O-2) Cable, 1.2M
9124-720		3147	A	RIO-2 (Remote I/O-2) Cable, 3.5M
9124-720		3148	A	RIO-2 (Remote I/O-2) Cable, 10M
9124-720		3273	A	36.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9124-720		3274	A	73.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9124-720		3275	A	146.8 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
9124-720		3277	A	36.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9124-720		3278	A	73.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
9124-720		3636	A	L200P Flat Panel Monitor
9124-720		3637	A	IBM T541H /L150p 15" TFT Color Monitor
9124-720		3638	A	IBM C220p 21-inch Color Monitor, Business Black, and Cable
9124-720		3639	A	IBM ThinkVision L170p Flat Panel Monitor
9124-720		3752	A	Service Package
9124-720		3925	A	Serial Port Converter Cable, 9-Pin to 25-Pin
9124-720		3926	A	Asynch Printer/Terminal Cable, 9-pin to 25-pin, 4M
9124-720		4242	A	6 Foot Extender Cable for Displays (15 pin D-shell to 15 pin D-shell)
9124-720		4256	A	Extender Cable - USB Keyboards, 2M
9124-720		4263	A	SCSI Cables (Power and Logic), PCI Riser to SCSI LVD Media Device; Mounting Tray
9124-720		4267	A	SCSI Cable, PCI Adapter to Hot-Swap Disks
9124-720		4273	A	External SCSI Port Enablement Cable
9124-720		4691	A	Rack Status Beacon Cable, Junction Box To Drawer Or Status Beacon
9124-720		4692	A	Rack Status Beacon Cable, Junction Box Daisy Chain
9124-720		4693	A	Rack Status Beacon Junction Box
9124-720		4962	A	10/100 Mbps Ethernet PCI Adapter II
9124-720		5001	A	Customer Service Specify
9124-720		5005	A	Software Preinstall
9124-720		5262	A	2-Way 1.65 GHz POWER5 Processor Card,, 8 Memory DIMM Slots
9124-720		5700	A	IBM Gigabit Ethernet-SX PCI-X Adapter
9124-720		5701	A	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter
9124-720		5703	A	PCI-X Dual Channel Ultra320 SCSI RAID Adapter
9124-720		5706	A	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter
9124-720		5707	A	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter
9124-720		5709	A	Dual Channel SCSI RAID Enablement Card
9124-720		5712	A	PCI-X Dual Channel Ultra320 SCSI Adapter
9124-720		5716	A	2 Gigabit Fibre Channel PCI-X Adapter
9124-720		5751	A	IBM 4.7 GB IDE Slimline DVD-RAM Drive
9124-720		6120	A	IBM 80/160 GB Internal Tape Drive with VXA Technology
9124-720		6134	A	60/150 GB 16-bit 8mm Internal Tape Drive
9124-720		6258	A	36/72 4mm Internal Tape Drive
9124-720		6458	A	Power Cable -- Drawer to IBM PDU, 14-foot, 250V/10A
9124-720		6460	A	Power Cord (14-foot), Drawer to OEM PDU, (125V, 15A), Plug Type #4
9124-720		6469	A	Power Cord (14-foot), Drawer to OEM PDU, (250V, 15A), United States, Plug Type #5
9124-720		6470	A	Power Cord (6-foot), To Wall (125V, 15A), Plug Type #4
9124-720		6471	A	Power Cord (9-foot), To Wall/OEM PDU, (125V, 15A), Plug Type #70
9124-720		6472	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #18
9124-720		6473	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type 19
9124-720		6474	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 13A), Plug Type #23
9124-720		6475	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #32
9124-720		6476	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #24
9124-720		6477	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #22
9124-720		6478	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 16A), Plug Type #25
9124-720		6479	A	Power Cord (9-foot) , To Wall/OEM PDU, (250V, 10A), Plug Type #6

p5-570 Available FCs

MT	MD	FC	S/A	Description
9124-720		6487	A	Power Cord (6-foot) ,To Wall, (250V, 15A), United States, Plug Type #5
9124-720		6488	A	Power Cord (9-foot) , To Wall/OEM PDU, (125V, 15A or 250V, 10A), Plug Type #2
9124-720		6493	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #62
9124-720		6494	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #69
9124-720		6495	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #64
9124-720		6496	A	Power Cord (9-foot), To Wall/OEM PDU, (250V, 10A), Plug Type #66
9124-720		6592	A	Ultra320 SCSI 4-Pack
9124-720		6593	A	Ultra320 SCSI 4-Pack for Disk Mirroring
9124-720		7162	A	IBM Rack-mount Drawer Rail Kit
9124-720		7163	A	OEM Rack-mount Drawer Rail Kit
9124-720		7801	A	Ethernet Cable, 6M, Hardware Management Console to System Unit
9124-720		7802	A	Ethernet Cable, 15M, Hardware Management Console to System Unit
9124-720		7876	A	Processor Power Regulator
9124-720		7877	A	Media Backplane
9124-720		7889	A	Power Supply, 1475 Watt AC, Hot-swap, Base and Redundant
9124-720		7912	A	IBM Deskside Cover Set
9124-720		7914	A	IBM Rack-mount Drawer Bezel and Hardware
9124-720		8800	A	Quiet Touch Keyboard - USB, Business Black, US English, #103P
9124-720		8801	A	Quiet Touch Keyboard - USB, Business Black, French, #189
9124-720		8802	A	Quiet Touch Keyboard - USB, Business Black, Italian, #142
9124-720		8803	A	Quiet Touch Keyboard - USB, Business Black, German Austrian, #129
9124-720		8804	A	Quiet Touch Keyboard - USB, Business Black, UK English, #166
9124-720		8805	A	Quiet Touch Keyboard - USB, Business Black, Spanish, #172
9124-720		8806	A	Quiet Touch Keyboard - USB, Business Black, Japanese, #194
9124-720		8807	A	Quiet Touch Keyboard - USB, Business Black, Brazilian/Portuguese, #275
9124-720		8808	A	Quiet Touch Keyboard - USB, Business Black, Canadian French, #058
9124-720		8810	A	Quiet Touch Keyboard - USB, Business Black, Belgian Dutch, #120
9124-720		8811	A	Quiet Touch Keyboard - USB, Business Black, Swedish/Finnish, #153
9124-720		8812	A	Quiet Touch Keyboard - USB, Business Black, Danish, #159
9124-720		8813	A	Quiet Touch Keyboard - USB, Business Black, Bulgarian, #442
9124-720		8814	A	Quiet Touch Keyboard - USB, Business Black, Swiss/French/German, #150F/G
9124-720		8816	A	Quiet Touch Keyboard - USB, Business Black, Norwegian, #155
9124-720		8818	A	Quiet Touch Keyboard - USB, Business Black, Portuguese, #163
9124-720		8819	A	Quiet Touch Keyboard - USB, Business Black, Greek, #319
9124-720		8820	A	Quiet Touch Keyboard - USB, Business Black, Hebrew, #212
9124-720		8821	A	Quiet Touch Keyboard - USB, Business Black, Hungarian, #208
9124-720		8823	A	Quiet Touch Keyboard - USB, Business Black, Polish, #214
9124-720		8825	A	Quiet Touch Keyboard - USB, Business Black, Slovakian, #245
9124-720		8826	A	Quiet Touch Keyboard - USB, Business Black, Czech, #243
9124-720		8827	A	Quiet Touch Keyboard - USB, Business Black, Turkish, #179
9124-720		8829	A	Quiet Touch Keyboard - USB, Business Black, LA Spanish, #171
9124-720		8830	A	Quiet Touch Keyboard - USB, Business Black, Arabic, #238
9124-720		8833	A	Quiet Touch Keyboard - USB, Business Black, Korean, #413
9124-720		8834	A	Quiet Touch Keyboard - USB, Business Black, Chinese #467
9124-720		8835	A	Quiet Touch Keyboard - USB, Business Black, French Canadian, #445
9124-720		8836	A	Quiet Touch Keyboard - USB, Business Black, Thai, #191
9124-720		8838	A	Quiet Touch Keyboard - USB, Business Black, Russian, #443
9124-720		8839	A	Quiet Touch Keyboard - USB, Business Black, Yugoslavian/Latin, #105
9124-720		8840	A	Quiet Touch Keyboard - USB, Business Black, US English (EMEA), #103P
9124-720		8841	A	Mouse - Business Black with Keyboard Attachment Cable

Chapter 3

pSeries p5-Feature Descriptions

0265 AIX Partition Specify — Miscl

This feature code is used to indicate that the system will have partitions running under AIX.

OS level required: AIX V5.2 or AIX V5.3, or later

0266 Linux Partition Specify — Miscl

This feature code is used to indicate that the system will have partitions running under Linux.

OS level required:
SUSE LINUX Enterprise Server 9 for POWER or later or
Red Hat Enterprise Linux AS for POWER Version 3

0267 i5/OS Partition Specify — Miscl

This feature number is used to indicate the number of partitions the system will have running under i5/OS.

Max: 10 partitions per processor - max of 1 processor may be used for i5/OS V5R3

Requires: i5/OS V5R3 or later

0530 i5/OS Version V5R3 Specify — Miscl

This feature indicates that i5/OS Version V5R3 will be ordered for use in a partition of this server.

Max: 1

0705 Integrate with DR400 - IBM TotalStorage Retention Solution — Miscl

This feature specifies that this machine type/model will be integrated ino the IBM Total Storage Data Retention Solution, DR400.

Orders with this feature will be routed to IBM Rochester manufacturing for fulfillment and integration.

0986 CCS Customer Service Specify (US) — Miscl

Specifies that the system will receive special request services from the Center for Customized Solutions (CCS).

1800 RIO-2 Remote I/O Loop Adapter — RIO/SPCN

This feature provides two RIO-2 Remote I/O ports for attaching up to four I/O drawers to the system in a single loop.

No adapter may be installed in PCI slot #6
(Installing FC #1800 in a drawer prevents use of PCI slot #6 in that drawer)

Drawer must have two processor cards installed.

9117-570: Max: 4

OS levels supported:
AIX 5.2 or AIX 5.3 or later

SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

1806 Dual Port RIO-2 I/O Hub — RIO/SPCN

This feature provides an adapter plus interposer card that connects slot #5 to the system backplane and provides two additional external RIO-2 ports for external connectivity or I/O drawer expansion.

Requires: Slot #5 on the model 550, 720

OS levels supported:
AIX 5.2 or AIX 5.3 or later

SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

1846 Operator Panel — Miscl

This feature provides an operator panel that controls single-drawer or multi-drawer systems.

1847 Processor Cable: Two-Drawer System — Cables Miscl

This cable provides the required interconnections between processors in separate drawers of a two-drawer system.

It is a flat cable that connects to the front of each drawer.

1848 Processor Cable: Three-Drawer System — Cables Miscl

This cable provides the required interconnections between processors in separate drawers of a three-drawer system.

It is a flat cable that connects to the front of each drawer.

1849 Processor Cable: Four-Drawer System — Cables Miscl

This cable provides the required interconnections between processors in separate drawers of a four-drawer system.

It is a flat cable that connects to the front of each drawer.

1857 SP Flex Cable: Two-Drawer System — Cables Miscl

This cable provides the required Service Processor interconnections between separate drawers of a two-drawer system.

It is a flat cable that connects to the rear of each drawer.

1858 SP Flex Cable: Three-Drawer System — Cables Miscl

This cable provides the required Service Processor interconnections between separate drawers of a three-drawer system.

It is a flat cable that connects to the rear of each drawer.

1859 SP Flex Cable: Four-Drawer System — Cables Miscl

This cable provides the required Service Processor interconnections between separate drawers of a four-drawer system.

It is a flat cable that connects to the rear of each drawer.

1936 512MB (2x 256MB) DIMMs 208-pin 266MHz DDR SDRAM — Memory (PCI Bus)

Provides 512MB of system memory via 2x 256MB DIMMs

OS level supported:
SUSE LINUX Enterprise Server 9 for POWER or later or
Red Hat Enterprise Linux AS for POWER Version 3

1937 1024MB (4x 256MB) DIMMs 208-pin 266MHz DDR SDRAM — Memory (PCI Bus)

Provides 1024MB of system memory via 4x 256MB DIMMs

OS level supported:
SUSE LINUX Enterprise Server 9 for POWER or later or
Red Hat Enterprise Linux AS for POWER Version 3

1938 2048MB (4x 512MB) DIMMs 208-pin 8NS DDR SDRAM — Memory (PCI Bus)

Provides 2048MB of system memory via 4x 512MB DIMMs

OS level supported:
SUSE LINUX Enterprise Server 9 for POWER or later or
Red Hat Enterprise Linux AS for POWER Version 3

1940 4096MB (4x 1024MB) DIMMs 208-pin 8NS DDR SDRAM — Memory (PCI Bus)

Provides 4096MB of system memory via 4x 1024MB DIMMs

OS level supported:
SUSE LINUX Enterprise Server 9 for POWER or later or
Red Hat Enterprise Linux AS for POWER Version 3

1942 8192MB (4x 2048MB) DIMMs 208-pin 8NS DDR Stacked SDRAM — Memory (PCI Bus)

Provides 8192MB of system memory via 4x 2048MB DIMMs

OS level supported:
SUSE LINUX Enterprise Server 9 for POWER or later or
Red Hat Enterprise Linux AS for POWER Version 3

1945 16GB (4x 4096MB) DIMMs 208-pin 266MHz DDR Stacked SDRAM — Memory (PCI Bus)

Provides 16GB of system memory via 4x 4096MB DIMMs

OS level supported:
SUSE LINUX Enterprise Server 9 for POWER or later or
Red Hat Enterprise Linux AS for POWER Version 3

1960 1.5GHz 1-way POWER5 Processor Card - 0MB L3 Cache — CPU - POWER5

1-way processor card with 1.5GHz POWER5 processor and no L3 Cache.

There are 8 DIMM slots on the processor card.

9124-720 Max: 1

OS level supported:
SUSE LINUX Enterprise Server 9 for POWER
Red Hat Enterprise Linux AS for POWER Version 3

1961 1.5GHz 2-WAY POWER5 Processor Card 36MB L3 Cache — CPU - POWER5

2-way processor card with 1.5GHz POWER5 processor and 36MB L3 Cache.

There are 8 DIMM slots on the processor card.

9124-720 Max: 2

OS level supported:
SUSE LINUX Enterprise Server 9 for POWER
Red Hat Enterprise Linux AS for POWER Version 3

1965 POWER Hypervisor — Miscl

This feature allows the customer to create partitions that are in units of less than 1 CPU (sub-CPU LPARs) and allows the same system I/O to be virtually allocated to these partitions.

The processor(s) on the system can be partitioned into as many as 10 LPARs per processor.

An encrypted key is supplied to the customer and installed on the system, authorizing the partitioning at the sub-processor level.

9124-720: Max: 1

OS levels supported:
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

2114 PCI F/W Differential External Y Cable — SCSI Cables (External)

Y Cable for attachment of multiple hosts to the PCI SCSI-2 Differential Adapters 2409, 6209.

Each connection of this cable is 68 Pin

2118 SCSI Converter Cable - VHDCI to 68-Pin P Style (Mini-68 pin to 68 pin) 0.3m SCSI Cables (External)

0.3M 16-bit SCSI cable used to convert from a Mini-68 pin VHDCI connector to a 68 pin P style connector.

Cable has male Mini-68 pin VHDCI connector on one end and a female 68 pin P style connector on the other. Length = 0.3 meters.

2424 0.6m 16 Bit SCSI-2 Differential System to System Cable SCSI Cables (External)

Connects two or more System/6000 processors that each have a SCSI-2 Differential Fast/Wide Adapter/A 2416 and a SCSI-2 Differential Fast/Wide Y-Cable 2426 (16-bit).

68-pin to 68-pin cable, 60cm (22.7 inches)

2425 2.5m 16 Bit SCSI-2 Differential System to System Cable SCSI Cables (External)

Connects two or more System/6000 processors that each have a SCSI-2 Differential Fast/Wide Adapter/A 2416 and a SCSI-2 Differential Fast/Wide Y-Cable 2426 (16-bit).

Can also be used as F/W device to device cable

68 pin to 68 pin cable, 2.5m (8.2 feet).

2456 LC-SC 50 Micron Fiber Converter Cable 2.0m Fiber

2.0 meter 50 micron fiber cable used to convert from LC type to SC type connectors.

Provides attachment to external 50 micron fabric or device with one type fiber connector to an adapter with the other type fiber connector.

Cable has Male LC type connector on one end and a Female SC type connector on the other.

2459 LC-SC 62.5 Micron Fiber Converter Cable 2.0m Fiber

2.0 meter 62.5 micron fiber cable used to convert from LC type to SC type connectors.

Provides attachment to external 62.5 micron fabric or device with one type fiber connector to an adapter with the other type fiber connector.

Cable has Male LC type connector on one end and a Female SC type connector on the other.

Non-bootable high performance Ultra3 SCSI RAID Adapter providing RAID 0, 1, 1E, 5, or 5E capability.

Ultra3 SCSI is also known as U160 and Fast 80

The RS/6000 PCI 4-Channel Ultra3 SCSI RAID Adapter supports:

Addressing up to 60 16-bit SCSI physical disk drives on 4 independent SCSI buses

128 MB fast-write cache (using non-volatile RAM) resident on the adapter

Up to 160 MB/s data transfer rates per SCSI bus
Two internal ports and four external ports
AIX configuration manager
2104-DU3, 2104-TU3, 2104-DL1, 2104-TL1 disk enclosures

Four independent LVD/SE Ultra3 SCSI buses.
There are two internal ports which are 68 pin P connectors and four external ports using 68 pin VHDCI connectors. The two internal ports are shared with two of the external ports.

Two of the four busses can drive either an internal port or an external port. The other two busses only drive external ports. The internal ports can be used to provide internal RAID solutions on supporting RS/6000 systems. Systems with one or two internal 6-pack disks can attach to a PCI 4-Channel Ultra3 SCSI RAID Adapter.

The four external ports provide connectivity to:
2104-xU3 at up to 160 MB/s SCSI bus data rate
2104-xL1 at up to 80 MB/s SCSI bus data rate

128MB Non-Volatile Fast Write Cache:
During the unlikely event of an PCI 4-Channel Ultra3 SCSI RAID Adapter failure, a replacement PCI 4-Channel Ultra3 SCSI RAID Adapter can be installed. The fast-write cache can be removed from the failing adapter and installed in the new adapter insuring data integrity.

The 128 MB fast-write cache can provide significant improvement in data throughput and response time during certain sequence write operations compared to SCSI RAID adapters without the fast-write cache.

Conforms to PCI 2.2 Specification for Long Card.
Height: 107 mm (4.2 inches)
Length: 312 mm (12.3 inches)

Requires:
AIX 4.3.3 with the 4330-05 Recommended Maintenance Package.

Limitations:
Internal ports limited to internal applications.
External ports limited to supported 16-bit externally attached disk enclosures.
Addressing limited to a maximum of 15 16-bit disk drives per SCSI bus port.
Addressing limited to a maximum of sixty 16-bit disk drives per adapter.
No IPL boot support.
Single-initiator configuration support only (no multi-initiator support).
Internally attached disk drives will run at a maximum SCSI bus data rate specified by that supporting system backplane.

Originally announced as supporting the 7131-105 on two of the external ports, IBM's salesmanual now confirms that the four external ports do not support connection to the 7131-105 external Fast/Wide SCSI disk enclosure.

To take full advantage of the Ultra3 (up to 160 MB/s) speed of this adapter, the minimum AIX level should be AIX 4.3.3 with appropriate APAR updates or later

Customer Setup:
Yes, for machine types 7025, 7043, 7044, and 7046.
No, for machine type 7026.

2591 External USB 1.44 MB Diskette Drive — Diskette Drive

The externally attached USB diskette drive provides storage capacity up to 1.44 MB on a high density (2HD) floppy disk and 720 KB on a double density floppy disk.

Includes 350mm (13.7 in) captured cable with standard USB connector.

Limitations:
Maximum 1 USB diskette per adapter,
Up to 1 Keyboard and Mouse also supported on the adapter with the diskette drive at the same time
No system boot capability
Not to be operated upside down or with eject button down

Physical Dimensions:
Width = 103mm (4.05 in)
Height = 17.6mm (0.69 in)
Depth = 141.8mm (5.58 in)

Color: Black
Data Rate: 12 Mbits/sec
Max Power Consumption: 2.36 Watt (seek)

Operates in all positions except those noted in the limitations above

Requires: 1 available USB port

OS levels required:
AIX 5.2 or AIX 5.3
SUSE LINUX Enterprise Server 9 for POWER
Red Hat Enterprise Linux AS for POWER Version 3

2640 IDE Slimline DVD-ROM Drive 8x/24x Max — CD/DVD

The 8X/24X(max) Slimline IDE DVD-ROM Drive is an internal tray loading DVD-ROM drive providing up to 3600KB/sec (CD-ROM) and 10.3MB/sec (DVD-ROM) data transfer rates.

It is a 12.7mm Slimline form factor multi-session capable, DVD-ROM drive which provides state of the art performance and supports existing 650MB CD-ROM, 4.7 GB DVD-ROM, and 9.4 GB DVD-ROM (double-sided) discs.

This drive also reads Type II (removable from cartridge) DVD-RAM discs at DVD-ROM speeds. System boot and install functions are supported with CD-ROM and DVD-RAM media.

Characteristics:
Multisession capable (Reads CD/R & CD-R/W media)
Form Factor   : 12.7mm Slimline
Interface   : IDE/ATAPI
Buffer Memory : 256KB

Media Data Transfer Rate:
CD-ROM : 3600 KB/sec (max)
DVD-ROM : 10.3MB/sec (max)

Avg. Random Access Time:
CD-ROM : 95ms(typical)
DVD-ROM : 150ms(typical)

Media capacity:
CD-ROM : 650MB
DVD-ROM : 4.7GB (Single Sided)
           9.4GB (Double Sided)

Operates in either vertical or horizontal positions
Interface supports standard and extended XA formats
Loading tray supports 12cm and 8cm disks

Limitations:
DVD video is not supported.

For p5 systems, DVD-ROM only reads CD-type formatted media with AIX 5.1.

Requires: 1 Slimline media bay

OS levels required:
AIX 5.2 or AIX 5.3 or later

i5/OS V5R3, or later

SUSE LINUX Enterprise Server 9 for POWER or later
Red Hat Enterprise Linux AS for POWER Version 3

2737 Keyboard/Mouse Attachment Card - PCI (Type N-D) — Mouse / Input Device

This PCI card provides for connection of one keyboard and mouse.

Maximum of 2 adapters per 6563 PCI planar.
Maximum of 8 adapters per 7040-681 server with a maximum of 1 adapter per LPAR

pSeries p5 9117-570:
Maximum: 8

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2738 2 Port USB PCI Keyboard/Mouse Attachment — Mouse / Input Device

The 2 Port USB PCI Adapter is a USB 2.0 capable adapter that provides for the connection of one USB keyboard and mouse.

Limitation:
Limited to USB 1.1 support with AIX

Max 2 : 9111-520, 9113-550, 9124-720
Max 8 : 9117-570
Max 16 : 9119-590/595 (4 per I/O Drawer)

OS levels required:
AIX 5.2 or AIX 5.3 or later

SUSE LINUX Enterprise Server 9 for POWER
Red Hat Enterprise Linux AS for POWER Version 3

2848 POWER GXT135P PCI Graphics Accelerator (Type 1-X) — Graphics Adapters

Low-End 2D graphics accelerator for RS/6000 workstations and pSeries servers. Can be configured to operate in either 8-bit or 24-bit color modes.

128-bit graphics processor
8-bit CLUT or 24-bit true color
16 MB SDRAM
32-bit PCI interface
Universal PCI (5.0v or 3.3v)
1 hardware color map

Features Supported:
Up to approximately 16.7 million colors
Rectangular clipping
2 analog monitor outputs
Up to 1600 x 1200 resolution
60 to 85 Hz refresh rates (ISO 9241, Part 3)

APIs Supported:
X-Windows and Motif
UMS 2.3.0 (no hardware scaling)

Requires: 1 PCI slot

OS levels Supported:
AIX Versions 4.3.3 or 5.1
AIX 5.2 or AIX 5.3 or later (p5 Systems)
Red Hat Enterprise Linux AS for POWER Version 3 or later
SUSE LINUX Enterprise Server 9 for POWER or later

2849 POWER GXT135P PCI Graphics Accelerator with Digital Support (Type 2849) Graphics Adapters

The POWER GXT135P is a 2D graphics accelerator for RS/6000 workstations and pSeries servers that can be configured to operate in either 8-bit or 24-bit color modes.

This adapter supports both analog and digital monitors. (FC 2848 supported only analog monitors).

Analog monitors are supported via the 15 Pin socket.
Digital Monitors are supported via the DVI interface.

Hardware Description
  128-bit graphics processor
  8-bit CLUT or 24-bit true color
  16 MB SDRAM
  32-bit PCI interface
  Universal PCI (5.0v or 3.3v)
  1 hardware color map
Features Supported
  Up to approximately 16.7 million colors
  Rectangular clipping
  2 analog monitor outputs at up to 1280 x 1024 resolution
  1 analog monitor output at up to 2048 x 1536 resolution
  1 digital monitor output at up to 1600 x 1200 resolution
  60 to 85 Hz refresh rates (ISO 9241, Part 3)
APIs Supported
  X-Windows and Motif
  UMS 2.3.0 (no hardware scaling)

Requires: 1 PCI Slot

OS levels Supported:
AIX 4.3 (analog support only)
AIX Versions 5.1 or 5.2 (analog / digital support)
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

pSeries p5 Specific:
Max: 2 : 9111-520, 9113-550, 9124-720
Max: 8 : 9117-570
Max: 16 : 9119-590/595 (4 per I/O Drawer)

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2861 ARTIC960Hx 4-Port EIA-232 Cable ARTIC960

Four port cable for FC 2947 ARTIC960 4-Port Selectable Mezzanine Card.

This cable has a 120 Pin Male D-Shell connector at one end (Connects to PMC) with 4x 25 Pin Male D-Shell (to communications devices) at the other.

Interface Speed - EIA-232 (ISO 2110)
   38.4K bps (U.S.A. only)
   19.2K bps (Outside U.S.A.)

2863 ARTIC960Hx 4-Port X.21 Cable ARTIC960

Four port cable for FC 2947 ARTIC960 4-Port Selectable Mezzanine Card.

This cable has a 120 Pin Male D-Shell connector at one end (Connects to PMC) with 4x 15 Pin Male D-Shell (to communications devices) at the other.

Interface Speed - X.21 (ISO 4903)
   2.048M bps

2864 ARTIC960Hx 4-Port V.35 (DTE) Cable ARTIC960

Four port cable for FC 2947 ARTIC960 4-Port Selectable Mezzanine Card.

This cable has a 120 Pin Male D-Shell connector at one end (Connects to PMC) with 4x 34 Pin Male D-Shell (to communications devices) at the other.

Interface Speed - V.35 DTE (ISO 2593)
   2.048K bps (U.S.A. only)
   64K bps (Outside U.S.A.)

2877 ARTIC960RXD Quad DTA H100 4 Drop Cable — ARTIC960

This cable provides the capability to interconnect adapters that provide H.100 bus connectors.

When more than 4 and less than or equal to 8 adapters will be connected, the H.100 Bus 8-Drop Cable (#4353) should be used.

Requires: Two to Four H.100 adapters

2934 Async Terminal/Printer Cable EIA-232 — Async

Used for attaching printers, plotters, and terminals which support the EIA 232 standard to any asynchronous adapter

The cable is the equivalent of features 2936 (modem cable) and 2937 (printer/terminal interposer)

Cable length is 3 m (9.8 feet) using DB25 connectors
It is supported on all RS/6000 systems using any asynchronous ports.

Can be used in conjunction with:
8-port fanout box FC 2995
16-port fanout box FC 2996
16-port Async Concentrator and RJ45-DB25 converter cable FC 6401 and 6402
16-port Remote Async Node and RJ45-DB25 converter cable FC 8130/8134 and 8133
8-port Async Adapter EIA 232, ISA Bus FC 2931
8-port Async Adapter EIA 232, MC Bus FC 2930

2936 Async Cable EIA-232/V.24 — Async

Used to attach a modem to the standard I/O ports with the 10-pin to 25-pin converter cable (#3925)

May be used with:
8-port Cable Assembly
16-Port Cable Assembly
16-Port Async Concentrator (w/ RJ45-DB25 Converter FC #6402)
16-Port EIA-232 RAN (w/RJ45-DB25 Converter FC #8133)

The cable is 3 meters (9.8 feet) in length.

2943 8-Port Async Adapter EIA-232/RS-422 PCI bus (Type 3-B) — Async

Single slot PCI Card.
For connection of up to 8 asynchronous EIA-232 or RS-422 devices.

All eight ports are software programmable to support either EIA-232E or RS-422A protocols at up to 230K baud.

Height: 10.66 cm (4.2 in)
Length: 21.59 cm (8.5 in)

Temperature: 10 (degs) to 55 (degs)C
Relative humidity: 5% to 90% non-condensing
Electrical power: 12.6W
FCC rating: FCC Class B
EMEA emi rating: CE Mark

AIX V.4.2.1 and above

pSeries p5 Specific:

Max: 6 : 9111-520
Max: 2 : 9113-550
Max: 8 : 9117-570
Max: 32 : 9119-590/595

AIX 5.2 or AIX 5.3, or later

iSeries i5 Specific:

Requires:
#0140 (Logical Partitioning Specify and
#0142 (LINUX Partition Specify) or
#0145 (AIX Partition Specify)
AIX 5L for Power V5.2 for IBM eServer, or later

2944 & related features. 8130, 8131, 8132, 8133, 8134, 8135, 8136, 8137, 8138.

Single slot PCI card which is faster than the equivalent Micro Channel or ISA Bus Cards.

Provides attachment for up to 128 Asynchronous devices (EIA-232 or RS-422) such as terminals, printers, and modems.

The card contains two (2.4 Mbps) synchronous channels which link the adapter to a maximum of eight 16-Port Remote Async Nodes (RANs).

Up to four RANs can be linked to each synchronous channel to provide 128 ports.

Maximum EIA-232 distance supported is 62 meters (200 feet). Maximum external interface speed is 57.6 Kbps. Supports the following interface signals: Tx, Rx, RTS, CTS, DTR, DSR, DCD, RI

One RJ-45 wrap plug and two Controller Line Terminator plugs are included per adapter.

The 128 Port Async Controller subsystem is compatible with all temperature, humidity, vibration, EMC, and other environmental limits of System/6000 product.

This card supports RANs at the following data rates:-
1.2Mbps : 8130 16 Port EIA-232 (US)
1.2Mbps : 8134 16 Port EIA-232 (WT)
1.2Mbps : 8136 16 Port EIA-232 (Rack)
2.4Mbps : 8137 16 Port EIA-232
2.4Mbps : 8138 16 Port RS-422

If RANs 8130, 8134, 8136 are intermixed with 8137, 8138 the data rate drops to 1.2 Mbps.
For best results keep the previous and new RANs on separate synchronous channels.

Height: 10.66 cm (4.2 in)
Length: 17.46 cm (6.875 in

Temperature: 10 (degs) to 55 (degs)C
Relative humidity: 5% to 90% non-condensing
Electrical power: 4.75W
FCC rating: FCC Class B
EMEA emi rating: CE Mark

Related Features.
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Remote Async Nodes:-
8130: 16-Port Remote Async Node - US & Canada
8134: 16-Port Remote Async Node - World Trade
8136: 16 Port EIA-232 (Rack) Remote Async Node
8137: 16 Port EIA-232 (Enhanced) Remote Async Node
8138: 16 Port RS-422 (Enhanced) Remote Async Node
RAN Power Supplies are included with the RAN when purchased as feature

Cables:-
8131: 4.5-meter (15 feet) cable. Connects the adapter to the first Remote Async Node on each synchronous channel or can be used to "Daisy Chain" RANs
8132: 23-cm (9-inch) cable. Generally used to "Daisy Chain" when stacking RANs.
8133: RJ-45 to DB-25 Converter Cable (four per order) is used to attach devices with DB-25 connectors to the Remote Async Nodes.
8135: 64-Port to 128-Port Pin-out Converter allows devices currently using 16 Port Concentrators (FC 6401 to attach to 16 Port RANs. Quantity (4) per order.

AIX 4.2.1 & above

pSeries p5 Specific:

Max: 6 : 9111-520
Max: 2 : 9113-550
Max: 8 : 9117-570
Max: 32 : 9119-590/595

AIX 5.2 or AIX 5.3, or later

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2946 Turboways 622 Mbps PCI MMF ATM Adapter (Type A-B) ATM

The TURBOWAYS 622 Mbps PCI MMF ATM Adapter is a 64-bit, PCI Adapter that provides direct access to ATM networks through a dedicated 622 Mbps full-duplex connection.

It is a PCI short form-factor adapter and connects to the 622 ATM network by using an LED-driven, dual-SC type, multi-mode fiber optics cable.

The 622 Mbps PCI MMF ATM Adapter utilizes 16MB of SDRAM for control memory and 16MB of SDRAM for packet memory.

Better overall system performance achieved by minimizing the host CPU cycles
33 MHz and 66 MHz operation
Switched virtual circuit (SVC) and permanent virtual circuit (PVC) support

This ATM adapter also provides a hardware assist for TCP checksum which can provide a performance improvement by minimizing the host CPU cycles.

Height: 4.200 in
Length: 6.875 in

Requires:
AIX 4.3.3 with 4330-05 Recommended Maintenance Package, or later support.
RS/6000 SP nodes also require IBM Parallel System Support Programs (PSSP) for AIX Version 3.1.1 or PSSP Version 3.2.
The device driver for AIX 4.3.3 is shipped with the adapter and included in the AIX 4.3.3 Additional Device Software CD-ROM.

Customer Setup:
Yes, for machine types 7025, 7043, and 7044
No, for machine types 7013, 7015, 7017, 7026 and 9076

ARTIC960Hx PCI Adapters consist of an ARTIC960Hx PCI Base Adapter and a PCI Mezzanine Card (PMC).

There are three types of PCI Mezzanine Card:
FC 2947 ARTIC960 4-Port Selectable Mezzanine Card
FC 2948 ARTIC960 4-Port T1/E1 Mezzanine Card
FC 2949 ARTIC960 DSP Resource Mezzanine Card

The mezzanine card by itself does not represent the feature. It still requires the base adapter to function. The base adapter has no feature code.

PCI Base Adapter Description:

The base adapter card is a full-length, 32-bit card with universal PCI interface. The card is compatible with 3.3-volt and 5-volt host systems. PMC connectors are keyed to 5 volts via a voltage regulator.

The base adapter provides high-function control of I/O operations and serves to off-load input/output tasks from the system microprocessor.

Base Card Details:
32-bit (33/66 MHz) Intel 80960HD microprocessor
33Mhz on-card oscillator with two on-board memory subsystems:
EDO DRAM and Read Only Memory (ROM)

4MB to 32MB of 50ns or 60ns EDO DRAM
The base adapter microprocessor uses this area for its instructions and data packets.

128KB sector-erasable ROM (5v -only)
The ROM subsystem consists of 128KB of sector-erasable, read-only Flash memory. It contains the power-on self-test (POST) and bootstrap-loader code for the on-board microprocessor.

PMC Connector
The PMC connector provides a 32-bit PCI interface for attaching a single, or single-extended, PCI Mezzanine Card (PMC).

The PMC provides a high-function, application-specific interface that expands the capability of a base adapter like the ARTIC960Hx PCI Base Adapter. Attaching a PMC provides support for high-speed communications, such as T1 or a broadband network. A PMC has the protocol chips and electrical-interface drivers, receivers, terminators, and connectors that apply to that specific interface.

Bus Master Data Transfers
The base adapter supports adapter-to-system or adapter-to-adapter bus master data transfers.

Plug-in Memory
Plug-in memory modules are available in 4MB, 8MB, 16MB, and 32MB sizes, one of which must be installed.

The base card is 309.8 mm (12.2 inches) long and 98.5 mm (3.8 inches) tall.

FC 2947 ARTIC960 4-Port Selectable Mezzanine Card (PMC) Description:

This PMC is used with the ARTIC960Hx PCI Base Adapter to make up the ARTIC960Hx 4-Port Selectable PCI Adapter.

The card complies with the Draft Standard for a Common Mezzanine Card (CMC) and the Draft Standard for a PCI Mezzanine Card (PMC).

The card includes:
- One high-speed multi-channel DMA controller with PCI interface
- Two serial communication controllers
- One serial ROM for configuration data
- Four communication ports

The PMC connects to the base adapter via two 64-pin connectors. The PMC includes a 120-pin connector at the rear of the card that connects to the 4 port cable. (Note: IBM's service guides show a 36 pin connector on the PMC).

The combined base adapter and PMC occupy a single 32-bit expansion slot.

Optional Cables:

FC 2861 ARTIC960Hx 4-Port EIA-232 Cable
This cable has a 120 Pin Male D-Shell connector at one end (Connects to PMC) with 4x 25 Pin Male D-Shell (to communications devices) at the other.

FC 2862 ARTIC960Hx 4-Port RS-449 Cable
This cable has a 120 Pin Male D-Shell connector at one end (Connects to PMC) with 4x 37 Pin Male D-Shell (to communications devices) at the other.

FC 2863 ARTIC960Hx 4-Port X.21 Cable
This cable has a 120 Pin Male D-Shell connector at one end (Connects to PMC) with 4x 15 Pin Male D-Shell (to communications devices) at the other.

FC 2864 ARTIC960Hx 4-Port X.35(DTE) Cable
This cable has a 120 Pin Male D-Shell connector at one end (Connects to PMC) with 4x 34 Pin Male D-Shell (to communications devices) at the other.

FC 2865 ARTIC960Hx 4-Port EIA-530 Cable
This cable has a 120 Pin Male D-Shell connector at one end (Connects to PMC) with 4x 25 Pin Male D-Shell (to communications devices) at the other.

Electrical Interface Maximum Speed (per port)
EIA-232 (ISO 2110)
   38.4K bps (U.S.A. only)
   19.2K bps (Outside U.S.A.)

EIA-530 (ISO 2110)
   2.048M bps

V.35 DTE (ISO 2593)
   2.048K bps (U.S.A. only)
   64K bps (Outside U.S.A.)

RS 449 (ISO 4902)
   2.048M bps

X.21 (ISO 4903)
   2.048M bps

AIX V.4.2.1 or 4.3.1 or later

For pSeries p5:
Max 3 9111-520
Max 4 9113-550
Max 20 9117-570
Max 16 9119-590/595

AIX 5.2 or AIX 5.3 or later

For iSeries i5:
AIX 5L for POWER V5.2 for IBM eServer or later

…

2951 2 Port Cable V.24 / EIA-232 **Async**

V.24 cable for use with:
CCITT V.24 Signalling
CCITT V.28 Electrical
CCITT X.21bis Electrical and Signalling
EIA-232-C Electrical and Signalling
ISO 2110 Connector for DCE side of an V.24 VHSI Modem Cable

via the following adapters:

pSeries:

#2962 2-Port Multiprotocol Adapter

iSeries:

#0635 SDLC/X.25 2-Port Adapter

Max two cables per #2962 / #0635

2952 2 Port Cable V.35 Async

V.35 cable for use with:
CCITT V.35 Some signals for signalling
CCITT V.28 Some signals for electrical and signalling
ISO 2593 Connector for DCE side of an V.35 VHSI Modem Cable

via the following adapters:

pSeries:

#2962 2-Port Multiprotocol Adapter

iSeries:

#0635 SDLC/X.25 2-Port Adapter

Max two cables per #2962 / #0635

2953 2 Port Cable V.36 / EIA-449 Async

V.36/EIA-499 cable for use with:
CCITT V.10 Electrical
CCITT V.11 Electrical

via the following adapters:

pSeries:

#2962 2-Port Multiprotocol Adapter

iSeries:

#0635 SDLC/X.25 2-Port Adapter

Max two cables per #2962 / #0635

2954 2 Port Cable X.21 Async

X.21 cable for use with:
CCITT X.21 Signalling
CCITT V.11 Electrical
CCITT X.27 Electrical
EIA-422-A Electrical
ISO 4903 Connector for DCE side of an X.21 VHSI Modem Cable

via the following adapters:

pSeries:

#2962 2-Port Multiprotocol Adapter

iSeries:

#0635 SDLC/X.25 2-Port Adapter

Max two cables per #2962 / #0635

2962 2-Port Multiprotocol PCI Adapter (Type 9-L & 9-V) Async

This adapter provides high-speed connections between stand-alone system units on a WAN. To access WAN lines, the 2-Port Multiprotocol PCI Adapter connects via external communications equipment including Channel Service Units (CSU), Data Service Units (DSU), or through synchronous modems.

This adapter together with IBM AIXlink/X.25 provides a two-port connection to X.25 packet switched networks. IBM AIXlink/X.25 is a separately orderable LPP (5696-926).

2-Port Multiprotocol PCI Adapter with an appropriate cable is compatible with the following protocols:

X.21 DCE - Using 2-Port Cable, X.21 (#2954)
CCITT X.21 Signalling
CCITT V.11 Electrical
CCITT X.27 Electrical
EIA-422-A Electrical
ISO 4903 Connector for DCE side of an X.21 VHSI Modem Cable

V.24 DCE - Using 2-Port Cable, V.24/EIA-232 (#2951)
CCITT V.24 Signalling
CCITT V.28 Electrical
CCITT X.21bis Electrical and Signalling
EIA-232-C Electrical and Signalling
ISO 2110 Connector for DCE side of an V.24 VHSI Modem Cable

V.35 DCE - Using 2-Port Cable, V.35 (#2952)
CCITT V.35 Some signals for signalling
CCITT V.28 Some signals for electrical and signalling
ISO 2593 Connector for DCE side of an V.35 VHSI Modem Cable

V.36 DCE - Using 2-Port Cable, V.36/EIA-449 (#2953)
CCITT V.10 Electrical
CCITT V.11 Electrical

AIX 4.1.5 or 4.2.1

pSeries p5 Specific:

Max 6 9111-520
Max 4 9113-550, 9117-570
Max 32 9119-590/595

AIX 5.2 or AIX 5.3, or later

…

3124 Serial to Serial Port Cable for Drawer/Drawer Cluster Power Control

This 3.7 meter cable is available to provide a null-modem connection between the serial ports of two system drawers that are mounted within the same rack.

The cable provides a DB25 female connector at each end.

3125 Serial to Serial Port Cable for Rack/Rack Cluster Power Control

This 8 meter cable is available to provide a null-modem connection between the serial ports of two system drawers that are mounted in separate racks.

The cable provides a DB25 female connector at each end.

3146 RIO-2 (Remote I/O) Cable 1.2m RIO/SPCN

This feature provides a 1.2 meter RIO-G (RIO-2) Cable

It is used to connect various combinations of I/O Drawers with a system CEC.

For the p650 7038-6M2:
 Connects the CEC with 7311-D10/D20 I/O Drawers in the local rack via
  6411 2-Port Primary RIO Adapter
  6412 2-Port Secondary RIO Adapter
  6415 2-Port Primary RIO-2 Adapter
  6416 2-Port Secondary RIO-2 Adapter

For the p655 7039-651, p670 7040-671, p690 7040-681:
 Connects the CEC with an adjacent 7040-61D Drawer
 Connects two FC 6571 PCI-X I/O Planars within a 7040-61D I/O Drawer for Single Loop configs

With p655 7039-651, this cable is used for RIO-2 connections only - for example, when connecting the I/O Drawer with the RIO-2 Ports on:
  5515 1.5GHz 8-way POWER4+ Processor and System Planar
  5518 1.7GHz 4-way POWER4+ Processor and System Planar

With p670 7040-671, p690 7040-681, this cable is used for RIO-2 connections only - for example, when connecting the I/O Drawer with the RIO-2 Ports on:
  6418 RIO-2 Primary I/O Adapter
  6419 RIO-2 Secondary I/O Adapter

...

3147 RIO-2 (Remote I/O) Cable 3.5m RIO/SPCN

This feature provides a 3.5 meter RIO-G (RIO-2) Cable

It is used to connect various combinations of I/O Drawers with a system CEC.

For the p650 7038-6M2:
 Connects the CEC with 7311-D10/D20 I/O Drawers in an adjacent rack via
  6411 2-Port Primary RIO Adapter
  6412 2-Port Secondary RIO Adapter
  6415 2-Port Primary RIO-2 Adapter
  6416 2-Port Secondary RIO-2 Adapter

3148 RIO-2 (Remote I/O) Cable 10m RIO/SPCN

This feature provides a 10 meter RIO-G (RIO-2) Cable

It is used to connect various combinations of I/O Drawers with a system CEC.

For the p650 7038-6M2:
 Connects the CEC with 7311-D10/D20 I/O Drawers in an adjacent rack via
  6411 2-Port Primary RIO Adapter
  6412 2-Port Secondary RIO Adapter
  6415 2-Port Primary RIO-2 Adapter
  6416 2-Port Secondary RIO-2 Adapter

3156 RIO-2 (Remote I/O) Cable 1.75m RIO/SPCN

This 1.75 meter RIO-2 cable is used to connect RIO-2 based I/O Planars and I/O Drawers to RIO-2 Adapters in the system CEC. Typically, this where they reside in the same 7040-61R Rack.

RIO-2 Based Planars include:
 FC 6571 PCI-X I/O Planar.

RIO-2 Based Adpaters include the:
  6418 RIO-2 Primary I/O Adapter
  6419 RIO-2 Secondary I/O Adapter

Requires:
  I/O Drawer and two RIO-2 connectors on the system CEC.

3168 RIO-2 (Remote I/O) Cable 2.5m — RIO/SPCN

This 2.5 meter RIO-2 cable is used to connect RIO-2 based I/O Planars and I/O Drawers to RIO-2 Adapters in the system CEC. Typically, this where they reside in adjacent 7040-61R Racks.

RIO-2 Based Planars include:
FC 6571 PCI-X I/O Planar.

RIO-2 Based Adpaters include the:
6418 RIO-2 Primary I/O Adapter
6419 RIO-2 Secondary I/O Adapter

Requires:
I/O Drawer and two RIO-2 connectors on the system CEC.

3170 RIO-2 (Remote I/O) Cable 8.0m — RIO/SPCN

8 meter RIO-2 (Remote I/O) cable, available to connect the processor complex and the I/O drawers or to connect I/O drawers mounted in separate racks.

3273 36.4GB Ultra320 SCSI Disk Drive 10K RPM 80 Pin (320MB/s) — Disk 36.4GB (SCSI)

36.4GB 10,000 RPM U320 SCSI Disk Drive Assembly
Supports industry-standard U320 SCSI interface speed of up to 320MBps.

Note: This feature was "renamed and re-announced" in IBM's 10/14/03 announcement.

Originally released as Ultra160 compliant (Ultra3 SCSI), IBM now determine this feature to be Ultra320 SCSI.

All drive PNs and FRUs in RISC Analysis for this FC are confirmed as Ultra320

However, this drive may require a firmware update to work with U320 SCSI controllers. Visit IBM's microcode site at the following link to confirm:
https://techsupport.services.ibm.com/server/mdownload//download.html
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Ultra320 is also known as Ultra4 and Fast160 SCSI
Ultra160 is also known as Ultra3 and Fast80 SCSI

Form Factor:	3.5-inch, 1-inch (25 mm) high
External Interface:	U320 SCSI (16-bit, Low Voltage Differential)
Attachment Spec:	SCSI-3 fast 160
Average Seek:	4.82 ms (based on four READS to one WRITE)
Average Latency:	2.99 ms
Rotational Speed:	10,000 RPM
Max Data Tfer Rate:	67 MBps

Limitations:
Requires attachment to a supported Ultra320 SCSI Adapter in a system that supports an Ultra320 SCSI cable/backplane to run at 320MBps.

All other SCSI devices on the same SCSI bus must also be U320 SCSI in order for this disk drive to run at 320MBps.

AIX 5.1
…

3274 73.4GB Ultra320 SCSI Disk Drive 10K RPM 80 Pin (320MB/s) Disk 73.4GB (SCSI)

73.4GB 10,000 RPM U320 SCSI Disk Drive Assembly
Supports industry-standard U320 SCSI interface speed of up to 320MBps.

Note: This feature was "renamed and re-announced" in IBM's 10/14/03 announcement.

Originally released as Ultra160 compliant (Ultra3 SCSI), IBM now determine this feature to be Ultra320 SCSI.

All drive PNs and FRUs in RISC Analysis for this FC are confirmed as Ultra320

However, this drive may require a firmware update to work with U320 SCSI controllers. Visit IBM's microcode site at the following link to confirm:
https://techsupport.services.ibm.com/server/mdownload//download.html

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Ultra320 is also known as Ultra4 and Fast160 SCSI
Ultra160 is also known as Ultra3 and Fast80 SCSI

Form Factor:	3.5-inch, 1-inch (25 mm) high
External Interface:	U320 SCSI (16-bit, Low Voltage Differential)
Attachment Spec:	SCSI-3 fast 160
Average Seek Time:	4.82 ms (based on four READS to one WRITE)
Average Latency:	2.99 ms
Rotational Speed:	10,000 RPM
Max Data Tfer Rate:	67 MBps

Limitations:
Requires attachment to a supported Ultra320 SCSI Adapter in a system that supports an Ultra320 SCSI cable/backplane to run at 320MBps.

All other SCSI devices on the same SCSI bus must also be U320 SCSI in order for this disk drive to run at 320MBps.

AIX 5.1
…

3275 146.8GB Ultra320 SCSI Disk Drive 10K RPM 80 Pin (320MB/s) Disk 146.8GB (SCSI)

146.8GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly
Supports industry-standard U320 SCSI interface speed of up to 320MBps.

Note: This feature was "renamed and re-announced" in IBM's 10/14/03 announcement.

Originally released as Ultra160 compliant (Ultra3 SCSI), IBM now determine this feature to be Ultra320 SCSI.

All drive PNs and FRUs in RISC Analysis for this FC are confirmed as Ultra320

However, this drive may require a firmware update to work with U320 SCSI controllers. Visit IBM's microcode site at the following link to confirm:
https://techsupport.services.ibm.com/server/mdownload//download.html

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Ultra320 is also known as Ultra4 and Fast160 SCSI
Ultra160 is also known as Ultra3 and Fast80 SCSI

Form Factor:	3.5-inch, 1-inch (25 mm) high
External Interface:	Ultra320 SCSI 16-bit, Low Voltage Differential (LVD)
Attachment Spec:	SCSI-3 fast 160
Average Seek Time:	4.94 ms (4 reads to 1 write)
Average Latency:	2.99 ms
Max Data Tfer Rate:	67 MBps

Limitations:
Requires attachment to a supported Ultra320 SCSI Adapter in a system that supports an Ultra320 SCSI cable/backplane to run at 320MBps.

All other SCSI devices on the same SCSI bus must also be U320 SCSI in order for this disk drive to run at 320MBps.

AIX 5.1
…

36.4GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
Supports industry-standard U320 SCSI interface speed of up to 320MBps.

Note: This feature was "renamed and re-announced" in IBM's 10/14/03 announcement.

Originally released as Ultra160 compliant (Ultra3 SCSI), IBM now determine this feature to be Ultra320 SCSI.

All drive PNs and FRUs in RISC Analysis for this FC are confirmed as Ultra320

However, this drive may require a firmware update to work with U320 SCSI controllers. Visit IBM's microcode site at the following link to confirm:
https://techsupport.services.ibm.com/server/mdownload//download.html

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Ultra320 is also known as Ultra4 and Fast160 SCSI
Ultra160 is also known as Ultra3 and Fast80 SCSI

Form Factor:	3.5-inch, 1-inch (25 mm) high
Cable included:	No
External Interface:	U320 SCSI (16-bit, Low Voltage Differential)
Attachment Spec:	SCSI-3 fast 160
Average Seek Time:	3.7 ms (based on four READS to one WRITE)
Average Latency:	2 ms
Rotational Speed:	15,000 RPM
Maxi Data Tfer Rate:	83 MBps

Limitations:
Requires attachment to a supported Ultra320 SCSI Adapter in a system that supports an Ultra320 SCSI cable/backplane to run at 320MBps.

All other SCSI devices on the same SCSI bus must also be U320 SCSI in order for this disk drive to run at 320MBps.

AIX 5.1
…

The 73.4GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly
Supports industry-standard U320 SCSI interface speed of up to 320MBps.

Note: This feature was "renamed and re-announced" in IBM's 10/14/03 announcement.

Originally released as Ultra160 compliant (Ultra3 SCSI), IBM now determine this feature to be Ultra320 SCSI.

All drive PNs and FRUs in RISC Analysis for this FC are confirmed as Ultra320

However, this drive may require a firmware update to work with U320 SCSI controllers. Visit IBM's microcode site at the following link to confirm:
https://techsupport.services.ibm.com/server/mdownload//download.html

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Ultra320 is also known as Ultra4 and Fast160 SCSI
Ultra160 is also known as Ultra3 and Fast80 SCSI

Form Factor:	3.5-inch, 1-inch (25 mm) high
Cable included:	No
External Interface:	Ultra320 SCSI (16-bit, Low Voltage Differential)
Attachment Spec:	SCSI-3 fast 160
Average Seek Time:	3.7 ms (based on four READS to one WRITE)
Average Latency:	2 ms
Rotational Speed:	15,000 RPM
Max Data Tfer Rate:	83 MBps

Limitations:
Requires attachment to a supported Ultra320 SCSI Adapter in a system that supports an Ultra320 SCSI cable/backplane to run at 320MBps.

All other SCSI devices on the same SCSI bus must also be U320 SCSI in order for this disk drive to run at 320MBps.

AIX 5.1
...

CDSG21 shows 55P4103 for this drive. PN normally for MT 2104

17-inch Trinitron Flat CRT with viewable image size of 16.0 inches (406 mm) incorporating a higher 0.24 mm stripe pitch (dot pitch) and a captured cable.

The P76 and P77 monitors are functionally equivalent.

Maximum horizontal frequency of 92 KHz
Reduced flicker operation at an optimum 1024 x 768 pels at up to 85 Hz non-interlaced with maximum addressability of 1600 x 1200 at 70 Hz.

There are two models, P76 and P260 which are available in Pearl White and Stealth Black .

Features include:
New Flat Trinitron CRT for improved viewing
Video Electronics Standards Association (VESA) Display Data Channel (DDC) capability for Plug and Play and asset tracking when the attaching system unit's hardware and software is DDC-enabled.
Universal power supply

VESA DDC capability that automatically select optimum display mode when attached to a DDC-enabled system
Anti-reflective screen treatments to minimize glare, without sacrificing picture sharpness

Energy efficiency compliance with ENERGY STAR guidelines
Microprocessor-controlled, multifrequency operation so you can change, replace, or upgrade most system units without replacing these monitors

Timings for the VESA 85 Hz non-interlaced refresh rate display modes for 640 x 480, 800 x 600, 1024 x 768, and 1024 x 1280 addressabilities are supported (appropriate graphics adapter hardware and software must be installed in the attaching system unit).

The microprocessor-controlled, multifrequency operation of the monitor lets you migrate from VGA through SVGA, XGA to SXGA (1600 x 1200 addressability) or use increasingly sophisticated applications without any immediate need to replace the monitors.

Power management reduces energy requirements to a minimum after the monitor remains idle for a specific period. The power management functions are invoked when initiating signals are received from an attached system unit, or installed graphic adapter card, that also uses the VESA Display Power Management Signalling (DPMS) standard.

The availability of power management minimizes the energy requirements of the monitor. This can have an immediate, advantageous effect for those who need to reduce energy consumption.

The microprocessor-based On-Screen Display (OSD), combined with the digital controls, lets you control:
Picture position, size, shape, and alignment
Selectable color points
Digital brightness and contrast
Color tint control
Tilt, zoom, and moire effect
Degaussing

The controls, set on the front bezel, incorporate commonly used icons that identify the controls and their operation. In conjunction with the built-in display mode presets, a reset control lets you revert to the factory default setting for the current mode. When you customize the current mode settings of the monitor, changes are saved automatically.

Technical Information
Specified Operating Environment
Physical Specifications: Approximate dimensions and weight of the monitors are:

Width	406 mm (15.9 in)
Depth	430 mm (16.8 in)
Height	416 mm (16.3 in)
Weight	19.2 kg (43.2 lb)

Height and weight includes the tilt-swivel stand.

Operating Environment: Energy can be saved by switching monitors off overnight or when not in use for extended periods during the day.

Power Requirements P76	
Input voltage (UV)	100-240 V AC, 50/60Hz
Maximum heat dissipation	380 Btu/hr
Maximum power consumption	110 watts
Power consumption	
VESA Standby/Suspend	<15 watts typical
VESA Off	< 3 watts typical
Max earth leakage current	<0.50 mA at 100 V AC

Actual power consumption depends on the screen mode used, the images displayed, and how user controls are set.

Ambient Temperature and Relative Humidity

		Humidity	Wet Bulb
Operating	0(degs) to 40(degs)C	10% to 80%	27(degs)C
Storage	-40(degs) to 60(degs)C	5% to 95%	29(degs)C
Shipping	0(degs) to 60(degs)C	5% to 90%	29(degs)C

Altitude: Maximum altitude: 3048 m (10,000 ft)

Acoustics: Declared acoustical noise emissions LWAD = 4.5 Bels or less. The noise emission level stated is the declared (upper limit). A weighted sound power level, in Bels, for a random sample of monitors. All measurements are made in accordance with ANSI S12.10, and reported in conformance with ISO 9296.

Publications

61H3620	User's Guide (P76)

Compliance

Compliance with the ISO 9241 Part 3 for front-of-screen ergonomics when forming part of an ISO-compliant system

Compliance with SWEDAC MPR-II Guidelines for low-electric, magnetic, and electrostatic emissions

All P-Series models comply with the EN 61000-3-2:1995 harmonic emission specification. Compliance of EN 61000-3-2:1995 helps ensure that harmonic disturbance levels do not exceed compatibility levels defined in IEC

Power management capability that meets the power consumption requirements of Swedish National Board for Industrial and Technical Development (NUTEK)

TCO-99 compliant — Incorporating a universal power supply with power factor correction (EN 61000-3-2:1995) providing worldwide operating capability in many instances

Notes

Not all available display modes run at the high refresh rates necessary for reduced flicker performance. Display modes at lower refresh rates are available for compatibility with older graphics adapters and system units.

Supported display modes are a function of the attaching system unit. The full range of display modes available with these monitors may not be available or supported with all combinations of system units, their operating systems, and application software.

Horizontal and vertical sync signal timings are critical in order to achieve acceptable screen images. As a consequence, support for all possible variations in H/V sync timings for any display mode cannot be stated.

The number of colors shown in any display mode is not limited by the monitor but depends upon the capabilities of the adapter to which the monitor is attached.

Power Factor correction only effective during normal operation and not effective during power management. The power management function is invoked only after initiating signals are received from the attached system unit or graphics adapter. The method used to implement power management follows the Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS) standard. This standard must also be implemented in the attaching system unit and/or graphics adapter for monitor power management to be effective.

21-inch Trinitron Flat CRT with viewable image size of 19.8 inches (503 mm), incorporating a higher 0.24 mm stripe pitch (dot pitch).

The P260 and P275 monitors are functionally equivalent.

Maximum horizontal frequency of 121 KHz
Reduced flicker operation at an optimum 1600 x 1200 pels at up to 85 Hz non-interlaced with maximum supported addressability of 1800 x 1440 pels at 80 Hz

There are two models, P76 and P260 which are available in Pearl White and Stealth Black .

Features include:
New Flat Trinitron CRT for improved viewing
Video Electronics Standards Association (VESA) Display Data Channel (DDC) capability for Plug and Play and asset tracking when the attaching system unit's hardware and software is DDC-enabled.
Universal power supply

VESA DDC capability that automatically select optimum display mode when attached to a DDC-enabled system
Anti-reflective screen treatments to minimize glare, without sacrificing picture sharpness

Energy efficiency compliance with ENERGY STAR guidelines
Microprocessor-controlled, multifrequency operation so you can change, replace, or upgrade most system units without replacing these monitors

Timings for the VESA 85 Hz non-interlaced refresh rate display modes for 640 x 480, 800 x 600, 1024 x 768, and 1024 x 1280 addressabilities are supported (appropriate graphics adapter hardware and software must be installed in the attaching system unit).

The microprocessor-controlled, multifrequency operation of the monitor lets you migrate from VGA through SVGA, XGA to SXGA (1600 x 1200 addressability) or use increasingly sophisticated applications without any immediate need to replace the monitors.

Power management reduces energy requirements to a minimum after the monitor remains idle for a specific period. The power management functions are invoked when initiating signals are received from an attached system unit, or installed graphic adapter card, that also uses the VESA Display Power Management Signalling (DPMS) standard.

The availability of power management minimizes the energy requirements of the monitor. This can have an immediate, advantageous effect for those who need to reduce energy consumption.

The microprocessor-based On-Screen Display (OSD), combined with the digital controls, lets you control:
Picture position, size, shape, and alignment
Selectable color points
Digital brightness and contrast
Color tint control
Tilt, zoom, and moire effect
Degaussing

The controls, set on the front bezel, incorporate commonly used icons that identify the controls and their operation. In conjunction with the built-in display mode presets, a reset control lets you revert to the factory default setting for the current mode. When you customize the current mode settings of the monitor, changes are saved automatically.

Technical Information
Specified Operating Environment
Physical Specifications: Approximate dimensions and weight of the monitors are:

Width	498 mm (19.6 in)
Depth	509 mm (19.9 in)
Height	504 mm (19.7 in)
Weight	31.0kg (70.0 lb)

Height and weight includes the tilt-swivel stand.

Operating Environment: Energy can be saved by switching monitors off overnight or when not in use for extended periods during the day.

Power Requirements P260	
Input voltage (UV)	100-240 V AC, 50/60Hz
Maximum heat dissipation	546 Btu/hr
Maximum power consumption	160 watts
Power consumption	100 watts typical
VESA Standby/Suspend	15 watts typical
VESA Off	< 3 watts typical
Max earth leakage current	0.4 mA at 100 V AC

Actual power consumption depends on the screen mode used, the images displayed, and how user controls are set.

Ambient Temperature and Relative Humidity

		Humidity	Wet Bulb
Operating	0(degs) to 40(degs)C	10% to 80%	27(degs)C
Storage	-40(degs) to 60(degs)C	5% to 95%	29(degs)C
Shipping	0(degs) to 60(degs)C	5% to 90%	29(degs)C

Altitude: Maximum altitude: 3048 m (10,000 ft)

Acoustics: Declared acoustical noise emissions LWAD = 4.5 Bels or less. The noise emission level stated is the declared (upper limit). A weighted sound power level, in Bels, for a random sample of monitors. All measurements are made in accordance with ANSI S12.10, and reported in conformance with ISO 9296.

Publications
04N7177 User's Guide (P260)

Compliance
Compliance with the ISO 9241 Part 3 for front-of-screen ergonomics when forming part of an ISO-compliant system
Compliance with SWEDAC MPR-II Guidelines for low-electric, magnetic, and electrostatic emissions
All P-Series models comply with the EN 61000-3-2:1995 harmonic emission specification. Compliance of EN 61000-3-2:1995 helps ensure that harmonic disturbance levels do not exceed compatibility levels defined in IEC
Power management capability that meets the power consumption requirements of Swedish National Board for Industrial and Technical Development (NUTEK)
TCO-99 compliant — Incorporating a universal power supply with power factor correction (EN 61000-3-2:1995) providing worldwide operating capability in many instances

Notes
Not all available display modes run at the high refresh rates necessary for reduced flicker performance. Display modes at lower refresh rates are available for compatibility with older graphics adapters and system units.

Supported display modes are a function of the attaching system unit. The full range of display modes available with these monitors may not be available or supported with all combinations of system units, their operating systems, and application software.

Horizontal and vertical sync signal timings are critical in order to achieve acceptable screen images. As a consequence, support for all possible variations in H/V sync timings for any display mode cannot be stated.

The number of colors shown in any display mode is not limited by the monitor but depends upon the capabilities of the adapter to which the monitor is attached.

Power Factor correction only effective during normal operation and not effective during power management. The power management function is invoked only after initiating signals are received from the attached system unit or graphics adapter. The method used to implement power management follows the Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS) standard. This standard must also be implemented in the attaching system unit and/or graphics adapter for monitor power management to be effective.

6659-HW2 & 6659-HG2

The IBM 6659 Model HG2 is the T210 flat panel, color monitor with a 20.8-inch viewable display.

HW2 is white, HG2 is black. HG2 corresponds to RS6000 feature 3635.

20.8-inch viewable imaging area
2048 x 1536 maximum resolution
Picture-in-picture using RCA or S-video inputs
Tilt/swivel and lift stand
Scaling for full-screen viewing of resolutions less than 2048 x 1536
Lockable digital controls
Detachable base allows for mounting on wall or arm
Video Electronics Standards Association (VESA) Display Data Channel (DDC) 2B Plug and Play capability

Dual input (two analog inputs or one analog and one digital input)
Hybrid system connectivity - analog and/or digital connectivity to the system using 15-pin D-shell connector and/or Digital Visual Interface (DVI-I)

Digital user controls are located on the front bezel. Adjustments are made in conjunction with the on-screen displays. After adjustments are made, with exception of brightness, contrast, and auto adjust, the controls can be locked to prevent further changes. User setup values are stored automatically. For ease of use, there is direct access for brightness, contrast, input selection, and auto setup.

Width	19.6-in (497.0 mm)
Depth	11.0-in (280.0 mm)
Height	20.1-in (510.0 mm)
Weight	23.1 lb (10.5 kg)

Input voltage: 90 to 264 V ac
Frequency: 50/60 Hz

Power consumption:
Maximum: 100 watts
Normal use: <100 watts typical
VESA Standby: 13.5 watts maximum
VESA Suspend: 13.5 watts maximum
VESA Off: 13.5 watts maximum

Maximum earth leakage current:
<3.5 mA @ 264 V (with PFC)
<1.4 mA @ 100 V (with PFC)

Dual analog input requires a customer supplied cable. Depending on the system interface, the cable must have DVI-A connectors on both ends or a DVI-A connector on the monitor end and 15 Pin D-shell on the system end.

The T210 color monitor is intended to operate with system units or video adapters that generate a video output signal that falls within the T210 specification below:

Maximum addressability (pixels)	2048 x 1536
Maximum pixel rate (MHz)	240

The T210 supports VESA Standard Timings, V.1.0, Revision 0.8, dated September 17, 1998, for the following modes:

VGA: 640 x 480 at 60, 66, 72, 75, 85Hz
SVGA: 800 x 600 at 56, 60, 72, 75, 85Hz
XGA: 1024 x 768 at 60, 70, 75, 85Hz
SXGA: 1280 x 1024 at 60, 70, 75Hz
QXGA: 2048 x 1536 at 60Hz

The T210 also supports the following additional modes:
720 x 350 at 60 Hz
1600 x 1200 @ 60 Hz

The IBM 6736 L200p Model HB0 has a 1.9 megapixel screen, 20.1-inch LCD size, 20.1-inch viewable image size, and stealth black cover color.

Viewable image size: 20.1-inch
Brightness: 250 cd/m2
Contrast ratio: 400:1
0.255mm pixel pitch

Viewing angles:
- Vertical - +/-85 degrees
- Horizontal - +/-85 degrees

Display resolution of up to 1600 x 1200
Tilt/swivel and height adjustable stand
Direct access for auto adjustment, brightness and input select
Dual input analog or digital system attachment
Internal power

Quick and easy monitor adjustments using new designed on-screen-display (OSD)
Hybrid system connectivity - analog or digital system attachment
Scaling for viewing of full page images of resolutions less than 1600 x 1200
Kensington lock compatible
Lockable digital controls
Detachable base allows for mounting on wall or arm

The L200p LCD monitor supports the DDC Plug and Play protocol to level 2B.
VESA Display Power Management Signaling (DPMS)
ENERGY STAR compliant through implementation of the DPMS protocol.

Physical Specifications

Width	18.4-in (468 mm)
Depth	10.2-in (259.0 mm)
Height	18.6-in (473.0 mm)
Weight	20.9 lb (9.5 kg)

Input voltage: 90 to 264 V ac
Frequency: 50/60 Hz
Power consumption:
- Maximum: 65 watts
- Normal use: 65 watts typical
- VESA standby: < 3 watts
- VESA suspend: < 3 watts
- VESA off: < 1 watts

Maximum earth leakage current:
- < 3.5 mA at 264 V
- < 0.25 mA at 100 V

Dual analog input requires a customer-supplied cable. Depending on the system interface the cable must have DVI-A connectors on both ends or DVI-A on the monitor end and 15-pin D shell connector on the system end.

Maximum addressability (pixels)	1600 x 1200
Maximum pixel rate (MHz)	205 - Analog / 162 - Digital

The L200p supports VESA Standard Timings as detailed in Display Monitor Timing Specification Version 1.0, Revision 0.8, dated September 17, 1998, for the following modes:
- VGA: 640 x 480 at 60, 66, 75, and 85 Hz
- SVGA: 800 x 600 at 56, 60, 72, and 85 Hz
- XGA: 1024 x 768 at 60, 70, 75, and 85 Hz
- SXGA: 1280 x 1074 at 60 and 75 Hz
- UXGA: 1600 x 1200 at 60 and 75 Hz

The L200p also supports the additional modes listed:
- 640 x 350 at 70 Hz
- 720 x 400 at 70 Hz
- 832 x 624 at 75 Hz
- 1152 x 870 at 75 Hz
- 1152 x 900 at 66 Hz

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According to the woefully inadequate announcement for this tube, it features a captured cable and supports 2D Graphics Adapters only.

However, the announcement also goes on to say that two cables (Digital and Analog) are supplied - this contradicts the notion of a captured cable.

Additionally, it should be noted that the display is VESA DDC compliant which means that 3D cards should work with it via analog mode. Given that the FC 3635 T210 had significant problems with different video cards, it may be that the announcement was playing it safe and shows this tube as only being supported by the new GXT135 FC 2849.

The following specs refer to the IBM 9512 T541H which is the same as FC 3637.

The IBM 9512 T541H 15.0-inch hybrid flat-panel color monitor offers dual connectors for analog or digital system attachment. 9512-HB0 is available in Stealth Black and corresponds to RS6000 FC 3637

The T541H color monitor offers the following:
- 15-inch viewable image area
- Brightness: 250 cd/m2
- Contrast ratio: 300:1
- Viewing angles:
  - Vertical: +/-65 degrees
  - Horizontal: +/-80 degrees
- Displays resolution of up to 1024 x 768
- Analog or digital system attachment

Full-screen support for other common Video Electronics Standards Association (VESA) and industry modes - VESA DDC Plug & Play

- Digital controls
- Kensington lock compatible
- Detachable base allows for mounting on wall or arm
- Models available in pearl white and stealth black

The T541H color monitor supports a wide range of display modes, including a selection of the VESA timings of incoming video signals at up to 75 Hz (non-interlaced) for the following screen addressabilities:
640 x 480 720 x 400 800 x 600 1024 x 768

VESA Display Power Management Signaling (DPMS)
The T541H color monitor meets ENERGY STAR power consumption requirements through implementation of the DPMS protocol.

The T560 offers excellent quality and the ability to view images in either landscape or portrait mode. The monitor supports portrait or landscape viewing. In addition, it tilts backwards 145 degrees. Pivot Pro Software is shipped with the monitor to rotate images 90, 180, and 270 degrees.

Width	14.4-in (365 mm)
Depth	8.0-in (202 mm)
Height	14.0-in (356 mm)
Weight	9.5 lb (4.3 kg)

Input voltage: 90 to 264 V ac
Frequency: 50/60 Hz
Power consumption:
- Maximum: 25 watts
- Normal use: 25 watts typical
- VESA active off: < 3 watts maximum
- VESA off: < 1 at 90 V ac to 135 V ac

Maximum earth leakage current:
- < 3.5 mA at 264 V
- < 0.25 mA at 100 V

Digital attachment requires customer supplied cable with DVI-D connectors on each end.

Maximum addressability (pixels)	1024 x 768
Maximum pixel rate (MHz)	80

The T541H supports VESA Standard Timings as detailed in "Display Monitor Timing Specification," Version 1.0, Revision 0.8, dated September 17, 1998, for the following modes:
VGA: 640 x 480 at 60, 66, 70, 72, and 75 Hz
SVGA: 800 x 600 at 56, 60, 72, and 75 Hz
XGA: 1024 x 768 at 60, 70, and 75 Hz

The T541H also supports the additional modes listed:
640 x 350 at 70 Hz
720 x 400 at 70 Hz
832 x 624 at 75 Hz

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FC 3638 is equivalent to the IBM 6735-60N ThinkVision C220p

Flat-Screen Technology
High contrast CRT with 1/4-wave anti-reflective coating for high definition images

Twin video inputs : 15P and DVI-A
22-inch aperture grill with a 20-inch (508mm) viewable image size
.24mm aperture grill pitch
Maximum horizontal frequency of 130kHz
Recommended 1600 x 1200 pels at 85Hz
Maximum addressability of 2048 x 1536 pels at 80Hz
Northern hemisphere

Video Electronics Standards Association (VESA) Display Data Channel (DDC) plug and play

MPR-II compliance and International Organization for Standardization (ISO) Standard 9241, Parts 3, 7, and 8 capability for front-of-screen ergonomics

Universal voltage power supply

Monitor characteristics
CRT type: Flat aperture grille
CRT size: 22-inch/559mm
Diagonal viewable image size: 20 inch/508 mm
Aperture grille stripe pitch: 0.24 mm
Maximum height viewable area: 11.96 inch/304 mm
Maximum width viewable area: 15.98 inch/406 mm
Surface screen treatment: Anti-reflective, anti-static

Monitor identification (ID) bits: 1010
VESA DDC capable: 2B
Horizontal frequency range: 30 to 130 kHz
Vertical frequency range: 50 to 160 Hz
Maximum pixel rate: 360 MHz
Maximum resolution: 2048 x 1536 at 80 Hz
Maximum flicker-free resolution: 1920 x 1440 at 85 Hz
Recommended resolution: 1600 x 1200 at 85 Hz
User controls: digital
OSD menu: five languages (English, French, Italian, German, Spanish)
Display modes: 8 IBM Preset/8 IBM preloaded/16 user settable

ISO 9241/3 capable: Yes
Power management: Yes
MPR-II Emission compliance: Yes
Environmental label: TCO'99
Video connector: 15-pin D-shell and DVI-A

Note:
A separate signal cable adapter (96G2693) is required to provide "1010" ID bits at the monitor interface for those systems that require ID bits. In order to present 1010 ID Bits at the monitor interface, the DDC operation of the monitor must be disabled.

Tilt-swivel stand characteristics
Tilt: +15 degrees/-5 degrees (15 degrees backward/5 degrees forward)
Swivel: +90 degrees/-90 degrees (90 degrees left/90 degrees right)
Operating controls

Physical Specifications
Approximate dimension and weight:
Width: 513 mm (20.2 inches)
Depth: 484 mm (19.1 inches)
Height: 516 mm (20.3 inches)
Weight: 30.5 kg (67.1 lbs)
(height and weight includes the tilt-swivel stand)

Power requirements
Input voltage 90-264 V ac, 47/63Hz (Universal Voltage)
Power Consumption:
- Max < 160 watts
- Typical < 130 watts
- Standby Mode < 2 watts
- Suspend Mode < 2 watts
- 'Off' Mode < 2 watts
Max leakage current < 3.5 mA

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3639 ThinkVision L170p TFT Flat Panel Monitor — Displays

FC 3639 is equivalent to the IBM 6734-Hxx ThinkVision L170p 17-inch LCD Color Monitor

17-inch business black LCD color monitor
17.0 in viewable image size
1280 x 1024 maximum addressability
on-screen display (OSD) controls
tilt/swivel adjustments
VESA standards for mounting
TCO99 compliance
language support.

Brightness: 250 cd/m2 (typical)
Contrast ratio: 500:1
Viewing angles:
Vertical: +/-85 degrees
Horizontal: +/-85 degrees

Display resolution of 1280 x 1024 (automatically scales lower resolution to fill the screen)

Analog or digital system attachment (analog cable provided with monitor)

Technical

Luminance (typical)	250 cd/m2
Contrast (typical)	500 : 1
Colors	>16.0-million
Cell response time (typical)	25 ms
RGB Vertical stripe pitch (mm)	0.264
Height adjustment	100 mm
Non-interlace operation	Yes (all modes)
Multi-mode operation	Yes
Video input (analog max) 135MHz	1280 x 1024 @ 75Hz
Signal cable - analog	1.8 m
Signal cable - digital	Customer supplied (DVI-D both ends)
Video	RGB Analog + separate H&V Syncs
Sync Type 1	Separate H&V sync
Video connector 1	15-pin D-Sub
Video connector 2	DVI-D

Physical Specifications
Width: 19.4-in (493.0 mm)
Depth: 17.1-in (435.0 mm)
Height: 11.7-in (298.0 mm)
Weight: 15.9 lb (7.2 kg)

Unpacked:
Width: 15.7-in (400 mm)
Depth: 9.3-in (237.0 mm)
Height: 18.0-in (457.0 mm)
Weight: 12.6 lb (5.7 kg)

Power consumption:
Maximum: 40 watts
Normal use: 40 watts typical
VESA standby: < 2 watts (analog), < 3 watts (digital)
VESA suspend: < 2 watts (analog), < 3 watts (digital)
VESA off: < 2 watts (analog), < 3 watts (digital)

Maximum earth leakage current:
< 3.5 mA at 264 V
< 0.25 mA at 100 V

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3752 Service Package — Miscl

Kit contains service publications, wrap plugs, and diagnostic CD-ROM.

Includes Maintenance Analysis Procedures (MAPs) that are common to to all multiple bus system units.

Two wrap plugs are included for use in diagnostic testing of the following connections to the system unit:
RS-232 serial I/O port
Parallel I/O port

3757 Service Shelf Tool Kit — Miscl

This feature contains six separate tool kits which are required for the installation and maintenance of the p590 & p595 processor books and memory cards.

Each kit weighs less than or equal to 40 lbs. Without this feature, installation and maintenance of the p590 & p595 CEC may be delayed.

Note: This feature will be defaulted in the configurator, but may be de-selected.

3925 Serial Port Converter Cable 9-Pin to 25-Pin — Async

This cable converts the 9-pin serial port on the system to a 25-pin serial port which allows the user to attach 25-pin serial devices to the system.

3926 Serial Port Converter Cable 9-Pin to 25-Pin 4m — Async

This 4 meter cable converts the 9-pin serial port on the system to a 25-pin serial port which allows the user to attach 25-pin serial devices to the system.

Consisting of cable and transposer (2 parts), it allows external async devices such as printers or terminals to be attached directly to the 9-pin serial port.

This is equivalent to using #3925 in combination with #2934.

4242 6ft Display Extender Cable (15 Pin D-Shell/15 Pin D-Shell) — Graphics Cables

6ft Display Extender Cable - 15 Pin D shell only.

4256 2.0m Extender Cable - USB Keyboards — Cables Miscl

This feature provides a 2M extension cable for use with USB keyboards.

4263 PCI Riser to SCSI LVD Media Cables (Power and Logic) — SCSI Cables (Internal)

Provides a SCSI LVD logic and power cable that connects the SCSI controller on the system planar to the SCSI media bay.

Required when installing a SCSI LVD device in the SCSI media bay. Also includes a mounting tray for the SCSI LVD media device.

4267 SCSI Cable - PCI Adapter to Hot-Swap Disks — SCSI Cables (Internal)

SCSI cable that connects a PCI SCSI Adapter to FC 6584 H/S Ultra320 SCSI 4-Pack for Disk Mirroring.

4270 External SCSI Port Enablement Cable — SCSI Cables (External)

SCSI cable that connects one SCSI internal controller to an external port allowing attachment of external SCSI devices to the system.

Installing this feature in the system will negate the usage of a second four-pack disk enclosure (second #6574 or first #6594) since it uses/blocks 1 slot.

Requires: One internal SCSI controller and 1 PCI slot

4273 External SCSI Port Enablement Cable — SCSI Cables (External)

SCSI cable that connects one SCSI internal controller to an external port allowing attachment of external SCSI devices to the system.

Installing this feature in the system will negate the usage of a second four-pack disk enclosure (second #6592 or first #6593) since it uses/blocks 1 slot.

4353 ARTIC960RXD Quad DTA H100 8 Drop Cable — ARTIC960

This cable provides the capability to interconnect adapters that provide H.100 bus connectors.

This 8-position cable should be used when more than 4 and less than or equal to 8 adapters with H.100 connectors will be interconnected.

If 4 or less adapters are interconnected, the H.100 Bus 4-Drop Cable FC 2877 should be used.

Provides H.100 bus connection between adapters
Requires Four to eight H.100 adapters

4443 512MB (2x256MB) DIMMs, 208-pin, 266 MHz DDR SDRAM — Memory (PCI Bus)

4443 512MB (2x256MB) DIMMs, 208-pin, 266 MHz DDR SDRAM
Provides 512MB of system memory with 2 x 256 MB DIMMs.

FC #4443 is only available with:
 9111-520: #5231 1-way 1.5GHz POWER5 Processor Card - No L3 Cache.
 9113-550: #5239 1-way 1.5GHz POWER5 Processor Card - No L3 Cache.

Whenever more DIMMs are added to a system with #5231, an additional pair of #4443 must be added to the original pair to make a quad, then one additional quad of DIMMs may be added to the system.

4444 1GB (4x 256MB) DDR-1 DIMMs 208-pin 266MHz SDRAM — Memory (PCI Bus)

Provides 1024MB of system memory via 4x 256MB DIMMs

4445 4GB (4x 1024MB) DDR-1 DIMMs 208-pin 266MHz SDRAM — Memory (PCI Bus)

Provides 4096MB of system memory via 4x 1024MB DIMMs

4447 2048MB (4x 512MB) DDR-1 DIMMs 208-pin 8NS 266MHz SDRAM — Memory (PCI Bus)

Provides 2048MB of system memory via 4x 512MB DIMMs.

208-pin 8NS 266MHz SDRAM

4449 8192MB (4x 2048MB) DDR-1 DIMMs 208-pin 266MHz 8NS Stacked SDRAM — Memory (PCI Bus)

Provides 8192MB of system memory via 4x 2048MB DIMMs.

208-pin 266MHz Stacked SDRAM

4450 16GB (4x 4096MB) DDR-1 DIMMs 208-pin 266MHz Stacked SDRAM — Memory (PCI Bus)

Provides 16GB of system memory via 4x 4096MB DIMMs

4452 2048MB (4x 512MB) DDR-1 DIMMs 208 Pin 8NS SDRAM — Memory (PCI Bus)

Provides 2048MB of system memory via 4x 512MB DIMMs (208-pin 8NS DDR SDRAM).

4453 4096MB (4x 1024MB) DDR-1 DIMMs 208 Pin 8NS Stacked SDRAM — Memory (PCI Bus)

Provides 4096MB of system memory via 4x 1024MB DIMMs

(208-pin 8NS Stacked DDR SDRAM).

4454 8192MB (4x 2048MB) DDR-1 DIMMs 208 Pin 8NS Stacked SDRAM — Memory (PCI Bus)

Provides 8192MB of system memory via 4x 2048MB DIMMs (208-pin 8NS Stacked DDR SDRAM).

4490 4096MB (4x 1024MB) DDR-1 DIMMs 208 Pin 250MHz Stacked SDRAM — Memory (PCI Bus)

Provides 4096MB of system memory via 4x 1024MB DIMMs

4491 16GB (4x 4096MB) DDR-1 DIMMs 208-pin 250MHz Stacked SDRAM — Memory (PCI Bus)

Provides 16384MB of system memory via 4x 4096MB DIMMs

4492 32GB (4x 8192MB) DDR-1 DIMMs 208-pin 250MHz Stacked SDRAM — Memory (PCI Bus)

Provides 32796MB of system memory via 4x 8192MB DIMMs

CCIN 30F7

4599 PCI Blind Swap Cassette Kit (Single Wide Adapters) Universal **Blind Swap Cassette**

This feature contains a blind swap cassette for single slot width PCI adapters.

It also includes the necessary hardware to adapt the cassette to mount various sizes of PCI cards.

Requires: PCI card and empty PCI adapter location

Most adapter PCI cards require an adpter bracket/clip when mounting in the Blind Swap Cassette. A kit of adapter brackets is available under PN 00P4680: Blindswap Adapter Bracket Kit

The kit contains brackets/clips for FCs:
2751: S/390 ESCON Channel PCI Adapter
2969: Gigabit Ethernet - SX PCI Adapter
2975: 10/100/1000 Base-T Ethernet PCI Adapter
4962: 10/100 Mbps Ethernet PCI Adapter II
5700: Gigabit Ethernet - SX PCI-X Adapter
5701: 10/100/1000 Base-TX Ethernet PCI-X Adapter
6203: PCI Dual Channel Ultra3 SCSI Adapter
6228: 2 Gigabit Fibre Channel Adapter for 64-bit PCI Bus

At this time, it is unknown if FC 4599 includes the bracket/clip kit

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4643 7040-61D I/O Drawer Attachment Indicator **I/O Drawer**

This feature indicates that a 7040-61D I/O Drawer is being attached to the system.

Supported I/O Drawere features are:
#5791: I/O Drawer: 20x PCI-X Slots 16x Disk Bays
#5794: I/O Drawer: 20x PCI-X Slots 8x Disk Bays

9119-590: Max: 7
9119-595: Max: 11

4651 Rack Indicator, Rack 1 **Rack Placement**

This indicator is used to specify the first rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the first rack of a multi rack complex.

4652 Rack Indicator, Rack 2 **Rack Placement**

Used to specify the second rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the second rack of a multi rack complex.

4653 Rack Indicator, Rack 3 **Rack Placement**

Used to specify the third rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the third rack of a multi rack complex.

4654 Rack Indicator, Rack 4 **Rack Placement**

Used to specify the fourth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the fourth rack of a multi rack complex.

4655 Rack Indicator, Rack 5 **Rack Placement**

Used to specify the fifth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the fifth rack of a multi rack complex.

4656 Rack Indicator, Rack 6 — Rack Placement

Used to specify the sixth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the sixth rack of a multi rack complex.

4657 Rack Indicator, Rack 7 — Rack Placement

Used to specify the seventh rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the seventh rack of a multi rack complex.

4658 Rack Indicator, Rack 8 — Rack Placement

Used to specify the eighth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the eighth rack of a multi rack complex.

4659 Rack Indicator, Rack 9 — Rack Placement

Used to specify the ninth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the ninth rack of a multi rack complex.

4660 Rack Indicator, Rack 10 — Rack Placement

Used to specify the tenth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the tenth rack of a multi rack complex.

4661 Rack Indicator, Rack 11 — Rack Placement

Used to specify the eleventh rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the eleventh rack of a multi rack complex.

4662 Rack Indicator, Rack 12 — Rack Placement

Used to specify the twelfth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the twelfth rack of a multi rack complex.

4663 Rack Indicator, Rack 13 — Rack Placement

Used to specify the thirteenth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the thirteenth rack of a multi rack complex.

4664 Rack Indicator, Rack 14 — Rack Placement

Used to specify the fourteenth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the fourteenth rack of a multi rack complex.

4665 Rack Indicator, Rack 15 — Rack Placement

Used to specify the fifteenth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the fifteenth rack of a multi rack complex.

4666 Rack Indicator, Rack 16 — Rack Placement

Used to specify the sixteenth rack of a multi rack complex.

It is also used to specify that a rack mounted device (such as an I/O drawer) is to be mounted in the sixteenth rack of a multi rack complex.

4691 Rack Status Beacon Cable - Junction Box to Drawer or Beacon — Rack Related

This cable can be used to connect the 7014-Txx Rack Status Beacon Junction Box to a supported Rack Drawer or to the Rack Status Beacon.

The Rack Status Beacon is a feature of the 7014 Rack. The 7014 Feature Code is 4690.

4692 Rack Status Beacon Cable - Junction Box Daisy Chain — Rack Related

This cable is used to connect two FC 4693 Rack Status Beacon Junction Boxes together.

Multiple Junction Boxes may be linked in series, as required.

Requires: Two or more FC 4693 Junction Boxes.

4693 Rack Status Beacon Junction Box — Rack Related

This feature provides six input connectors and one output connector for racks configured with the Rack Status Beacon (7014-Txx FC 4690).

Multiple Junction Boxes can be linked together in series with FC 4692 Daisy Chain Cable.

Requires:
7014-Txx FC 4690
Min of two FC 4691 Rack Status Cables.

4953 64bit 66MHz PCI ATM 155 UTP Adapter (Type A-C) — ATM

The IBM 64bit/66MHz PCI ATM 155 UTP Adapter provides dedicated, 155 Mbps full-duplex connection to ATM networks over either permanent virtual circuits (PVC) or switched virtual circuits (SVC).

This adapter enables TCP/IP to run over an ATM network with Category-5 Unshielded Twisted Pair (UTP). It also supports communication with devices located on an ATM network or bridged to a Token-Ring, Ethernet, or other LAN.

Requires: One PCI slot

AIX 4.3.3 with AIX product CD LCD4-0286-07 and AIX Update CD LCD4-0995-14 or later

AIX 5.1 with AIX product CD LCD4-1061-01 and AIX Update CD LCD4-1103-01 or later

4957 64bit 66MHz PCI ATM 155 MMF Adapter (Type A-D) — ATM

The IBM 64bit/66MHz PCI ATM 155 MMF Adapter provides direct access to ATM networks.

This 155 Mbps PCI ATM MMF Adapter provides dedicated 155 Mbps full-duplex connection using permanent virtual circuits (PVC) or switched virtual circuits (SVC) and enables TCP/IP to run over an ATM network.

The adapter also supports communication with devices located on an ATM network or bridged to a Token-Ring, Ethernet, or other LAN.

This 155 Mbps PCI MMF ATM Adapter is compatible with:
IBM 8285 ATM Workgroup Switch
IBM 8260 ATM Subsystem
IBM 8282 ATM Concentrator
IBM 8281 ATM LAN Bridge

Requires: One PCI slot

AIX 4.3.3 with AIX product CD LCD4-0286-07 and AIX Update CD LCD4-0995-14 or later

AIX 5.1 with AIX product CD LCD4-1061-01 and AIX Update CD LCD4-1103-01 or later

4959 Token-Ring PCI Adapter (Type 9-Y) — Token Ring

FC 4959 provides network boot capability.

This is a single slot, short, 32-bit PCI adapter supporting 4 and 16 Mbps data rates, either half- duplex or full-duplex.

Automatic ring-speed selection is designed to prevent "wrong speed" insertion into the ring, even when connected to speed-sensing hubs.

This adapter will operate with either unshielded twisted pair (UTP) Category 5 cable with RJ-45 connectors or shielded twisted pair (STP) Type 1A cabling with 9-pin D-shell connectors.

AIX 4.3.3 or later

pSeries p5:
AIX 5.2 or AIX 5.3 or later

Max: 4 9111-520, 9113-550
Max: 20 9117-570

iSeries i5 Requires:
#0140 (Logical Partitioning Specify)
#0145 (AIX Partition Specify)
AIX 5L for POWER V5.2 for IBM eServer or later

4960 e-business Cryptographic Accelerator (Type 6-J) — Other Adapters

Short form factor PCI Secure Socket Layer (SSL) hardware accelerator adapter.

SSL is required for secure web transactions via public-key cryptographic operations using SSL handshake protocols.

The IBM e-business Cryptographic Accelerator is a hardware cryptographic solution that off-loads this compute-intensive public-key cryptographic processing from the host. This allows the system processor to perform other tasks and speeds up SSL Transactions

The overall operation control, including command decoding, is implemented in hardware and requires no on-card microprocessor subsystem. As such, the adapter is a less expensive alternative to those who do not need the high security of the on-card secure programming environment (such as is offered by the PCI Cryptographic Coprocessor FC 4958), but who do need the high cryptographic performance that hardware acceleration provides by offloading the host processor.

Note: The IBM e-business Cryptographic Accelerator is only supported by the industry standard PKCS #11 application programming interface (API) Version 2.01, and applications which interface to the PKCS #11 Support Program.

Requires 1 PCI slot

AIX 4.3.3 with 4330-09 Recommended Maintenance Package or later, AIX 5.1 with 5100-01

Length: 174.63 mm (6.9 in)
Height: 106.68 mm (4.2 in)

IBM Universal 4-Port 10/100 Ethernet Adapter is a single slot, long, 64-bit, 33 MHz PCI adapter supporting 4 industry standard Ethernet 10 Base-T or 100Base-T interfaces either half or full duplex. Each port is provided with it's own RJ-45 connector for attachment to standard CAT-3/5 Unshielded Twisted Pair (UTP) cable. The adapter is IEEE 802.3u compatible and provides full auto-negotiation for detecting speed and duplex capability across each port.

Network boot capability and Network Install Manager (NIM) capability are available using this adapter if no specific limitation is stated.

The IBM Universal 4-Port 10/100 Ethernet Adapter (4961) should be considered where maximum port density is required per I/O card slot. But, for high end systems, where card slots are not the limiting factor and maximum throughput is required, the single port IBM 10/100 Mbps Ethernet PCI Adapter (2968) or 10/100 Mbps Ethernet PCI Adapter II (4962) are the preferred solutions.

Below are some performance factors to consider when choosing the right adapter for your needs. These performance comparisons are based on all four ports of the IBM Universal 4-Port 10/100 Ethernet Adapter (4961) being active.

A single IBM Universal 4-Port 10/100 Ethernet Adapter (4961) is expected to deliver up to 3 times the performance of a single IBM 10/100 Mbps Ethernet PCI Adapter (2968) or 10/100 Mbps Ethernet PCI Adapter II (4962).

Under most conditions, each port of the IBM Universal 4-Port 10/100 Ethernet Adapter (4961) is expected to perform at greater than 50% the throughput of the single port of the IBM 10/100 Mbps Ethernet PCI Adapter (2968) or 10/100 Mbps Ethernet PCI Adapter II (4962).

Note: The resulting performance in your environment compared to the above may vary and depends upon the RS/6000 model, the I/O configuration, and associated workload of your applications.

Requires: 1 PCI slot

AIX 4.3.3 with AIX Update CD LCD4-0995-14 or later
AIX 5.1 or later

Initial Order/MES: Both

Small form factor, single port PCI ethernet adapter. This high performance, low power ethernet 10/100Mbps LAN adapter can be used in both client and server PCI systems.

The 10/100 Mbps Ethernet PCI Adapter II provides both 10Base-T and 100Base-TX full duplex ethernet LAN connectivity. The adapter supports Category-5 unshielded twisted pair cabling for both 10/100 Mbps and Category-3 unshielded twisted pair cabling for 10 Mbps.

The 10/100 Mbps Ethernet PCI Adapter II supports:
Half / Full Duplex 10/100 Mbps Ethernet interface
10/100 Mbps data rates
Auto-negotiation for 10/100 speed and half/full duplex
Network boot capability and Network Install Manager (NIM)
IEEE 802.3 Ethernet Specification
IEEE 802.3u Fast Ethernet Specification

After 4/26/02, the 10/100 Mbps Ethernet PCI Adapter II supports the off-load of IP Security cryptographic algorithms by providing hardware assistance in performing data encryption and authentication. This support is provided with AIX 5.1 (with appropriate software updates)and later.

This IP Security function, normally performed with encryption software by the host, is off-loaded to this adapter to enhance network traffic throughput and reduce CPU utilization. If you are running with AIX 5.1, to invoke the IP Security function on the adapter, you must obtain AIX 5.1 software updates IY27069 and IY26514 or the 5100-02 Recommended Maintenance package. These updates can be obtained by ordering APAR IY28102, or by ordering the AIX 5.1 Update CD (LCD4-1103-03) dated 4/2002 or later.

Note: This IP Security function is not supported with AIX 4.3 software.

An additional function called 'Large Send' or sometimes known as TCP Segmentation is also available. This function offloads the TCP segmentation operation from the AIX IP layer to the adapter for outgoing (transmit side) TCP segments.

Another function known as "Checksum Offload" which offloads the TCP/UDP Checksum Operation or workload from the CPU to the adapter is also available. Both these functions are available with AIX version 5.1 with APAR IY38248 or later software, or AIX version 5.2 with APAR IY38492 or later software.

When mounting in a Blind Swap Cassete, an adapter bracket/clip is available.
The clip PN 44P0321 is not separately orderable as a single FRU. Refer to PN 00P4680 - which includes brackets/clips for various adapter cards.

Non pSeries p5:
AIX 4.3.3 with AIX product CD LCD4-0286-07 and AIX Update CD LCD4-0995-14 or later
AIX 5.1 with AIX product CD LCD4-1061-01 and AIX Update CD LCD4-1103-01 or later

pSeries p5:
AIX 5.2 or AIX 5.3, or later
Max 6: 9111-520
Max 5: 9113-550, 9124-720
Max 24: 9117-570
Max 160: 9119-590/595

iSeries i5 Requires:
#0140 (Logical Partitioning Specify) and
#0142 (Linux Partition Specify or
#0145 (AIX Partition Specify)

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4963 PCI Cryptographic Coprocessor (FIPS-4) (Type 6-I) — Other Adapters

The PCI Cryptographic Coprocessor (FIPS-4) is a 2/3 length PCI adapter which combines hardware and software to provide a wide variety of security services.

The PCI Cryptographic Coprocessor (FIPS-4) is a second generation adapter of the Cryptographic Coprocessor family that provides high performance secure hardware engines for secure internet transactions such as transmitting data, verifying electronic signatures, bulk data encryption and decryption.

In addition, the card is enclosed in a tamper proof enclosure to restrict access to on card resources, designed to FIPS 140-1 Level 4 standards.

Security functions supported by the adapter include:
DES (Data Encryption Standard) (40 and 56 bit key) encryption and decryption, with pre-and post-padding; the coprocessor uses both ECB (electronic and codebook) and CBC (cipher block chain) modes of encryption.

MAC (Message Authentication) generation and MAC verification services
Triple DES (three key) encryption and decryption of eight-byte units
Secure RSA key-pair generation
RSA signature generation and signature verification at 18 signatures/sec at 2048 bits
Hardware random number generation
Secure data storage and retrieval
Other non-cryptographic security utilities can be carried out using the onboard processor

As part of this adapter's physical security features, the following events will cause an adapter shutdown and secure data zeroization:-
Shipping/Storage Temperature less than -15C or greater than 95C
Dead Battery (VBAT less than 2.4V)
Supply Voltage greater than 3.3V/12V max
Mesh Sensor opens/shorts detection
X-ray exposure

IBM offers software to enable your use of the Coprocessors. Two different approaches to cryptographic functions are offered for download from the following Web site:
http://www.ibm.com/security/cryptocards

PKCS #11 Version 2.01, an implementation of the industry-standard API

IBM Common Cryptographic Architecture (CCA), featuring support of special interest to the finance industry.

Under custom contract, IBM also offers toolkits that you can employ to develop extensions to the CCA offering and to develop your own application to exploit the secure computing environment and cryptographic hardware.

For more information on custom contracts, refer to Web site:
http://www.ibm.com/security/cryptocards.

For additional information on the IBM PCI Cryptographic Coprocessor, refer to the following World Wide Web page:
http://www.ibm.com/security/cryptocards
Limitations:

The IBM PCI Cryptographic Coprocessor Adapter is a field only installed device in order to meet restrictive shipping requirements.

non pSeries p5:

AIX support for this adapter is limited to the 32-bit kernel only. (AIX 64-bit kernel does not support this adapter.)

Requires:
AIX 4.3.3 with 4330-08 Recommended Maintenance Package or later, AIX 5.1 or later.

pSeries p5 9117-570:

Max: 24
OS level required: AIX 5.2 or AIX 5.3, or later

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5001 Customer Service Specify — Miscl

This feature code specifies that the system will receive special request services from the Center for Customer Services (CCS) in Rochester.

5005 Software Preinstall — Miscl

Licensed programs may be preinstalled on the media selected. To order this option, specify code (#5005) on the initial system order. The preinstalled licensed programs will be at the same release level as programs being shipped from the Program Libraries at the time the system is manufactured.

5158 850W Hot-Swap AC Power Supply - Base and Redundant — Power Supplies

Provides an 850 Watt AC power supply, either as the primary or secondary power supply for redundant power in the pSeries 9113-520 or iSeries 9406-520.

According to the pSeries Salesmanual:
Each power supply, base and redundant, comes with one power cord

According to the iSeries Salesmanual:
#5158 requires an additional CEC line cord feature to be ordered.

5226 1.5GHz 2-way POWER5 Processor Card - 36MB L3 Cache — CPU - POWER5

2-way processor card with 1.5GHz POWER5 processor and 36MB of L3 cache. Attached to planar.

9111-520: Max: 1

AIX 5.2 or AIX 5.3, or later

5229 1.65GHz 2-way POWER5 Processor Card 36MB L3 Cache — CPU - POWER5

2-way processor card with 1.65 GHz POWER5 processor and 36MB of L3 cache attached to planar.

OS level required:
AIX 5.2 or AIX 5.3 or later

5231 1.5GHz 1-way POWER5 Processor Card - No L3 Cache — CPU - POWER5

1-way processor card with 1.5GHz POWER5 processor and no L3 cache. Attached to planar.

9111-520: Max: 1

AIX 5.2 or AIX 5.3, or later.

5237 1.65GHz 2-Way POWER5 CUoD Processor Card 0-Way Active — CPU - POWER5

2-way 1.65GHz processor card with Capacity Upgrade on Demand.

The two processors share 36MB of L3 cache and 1.9MB of L2 cache.

There are 8 DIMM slots on the processor card which may be used without activating the processors.

OS level required:
AIX 5.2 or AIX 5.3 or later

5239 1.5GHz 1-way POWER5 Processor Card - No L3 Cache — CPU - POWER5

1-way processor card with 1.5GHz POWER5 processor and no L3 cache.

9113-550: Max: 1

AIX 5.2 or AIX 5.3, or later

5262 1.65GHz 2-Way POWER5 Processor Card 36MB L3 Cache — CPU - POWER5

2-way 1.65GHz processor card.

The two processors share 36MB of L3 cache and 1.9MB of L2 cache.

There are 8 DIMM slots on the processor card.

OS level required:
SUSE LINUX Enterprise Server 9 for POWER
Red Hat Enterprise Linux AS for POWER Version 3

5264 1.5GHz 2-way POWER5 Processor Card 36MB L3 Cache - DDR1 Memory DIMMs CPU - POWER5

2-way 1.5GHz processor card. The two processors share 36MB of L3 cache and 1.9MB of L2 cache. There are 8 DIMM slots on the processor card.

9113-550: Max: 2

AIX 5.2 or AIX 5.3, or later

5700 Gigabit Ethernet - SX PCI-X Adapter (Type 5700) Ethernet

PCI-X Adapter providing a 1 Gbps (1000 Base-SX) Full-Duplex Ethernet LAN connection via a standard Shortwave Multi Mode Fiber (MMF) Optical cable which conforms to the IEEE 802.3z standard. (Half Duplex (HDX) mode is not supported).

The adapter requires a Long or Short 3V PCI slot. However, for optimum performance, it should be placed in a 3V 64 bit PCI-X slot.

The adapter has a Duplex LC Fiber-Optic connector and supports distances of:
260m for 62.5 micron MMF and
550m for 50.0 micron MMF.

#5700 only supports TCP/IP and requires an intervening switch/hub/router when connecting to 1000/100/10Mbps networks.

#5700 can also be used to connect to existing 100/10Mbps Ethernet LANs. If connecting to older SC type connector networks, a LC-SC Fiber Converter Cable is required.

For pSeries, the Converter Cable FCs are:
#2456 50 Micron Fiber Converter Cable
#2459 62.5 Micron Fiber Converter Cable

For iSeries, the Converter Cable FCs are:
#0371 50 Micron Fiber Converter Cable
#0372 62.5 Micron Fiber Converter Cable

When mounting in a Blind Swap Cassete, an adapter bracket/clip is available.
The clip PN 53P5450 is not separately orderable as a single FRU. Refer to PN PN 00P4680 - which includes brackets/clips for various adapter cards.

Platform Specific:
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pSeries: AIX Network Install Manager (NIM) boot capability is supported with this adapter.

pSeries (not p5)

Max: 6 7038-6M2 pSeries 650
AIX 5.1 or later

For pSeries p5 Systems:

Max 6: 9111-520
Max 5: 9113-550, 9124-720
Max 24: 9117-570
Max 160: 9119-590/595

For iSeries i5 Systems:

#5700 is supported by a #2892 or #4810 Integrated xSeries Server. If a #5700 will be controlled/driven by a #2792 or #4810, then specify code #0226 1Gbps Ethernet Specify must be ordered. One #0226 is required for each #5700 controlled/driven by an integrated server.

i5/p5 Supported OS levels:

AIX 5.2 or AIX 5.3 or later
i5/OS V5R3, or later
SUSE LINUX Enterprise Server 9 for POWER/ or later or
Red Hat Enterprise Linux AS for POWER Version 3

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#5701 is a Full Duplex 10/100/1000 Base-TX Ethernet PCI-X Adapter for attachment to IEEE standard 802.3Z Ethernet LANs.

This adapter can be configured to run at 10/100/1000 Mbps data rates. The adapter supports only TCP/IP and connects to the network using a 4-pair CAT-5 Unshielded Twisted Pair (UTP) cable for distances of up to 100m.

1000Mbps speed is not supported in Half Duplex (HDX) mode.

The adapter also supports jumbo frames when running at the 1000 Mbps speed.

For optimum performance, adapter should be placed in a 64 bit PCI-X card slot.

When mounting in a Blind Swap Cassete, an adapter bracket/clip is available.
The clip PN 53P5450 is not separately orderable as a single FRU. Refer to PN PN 00P4680 - which includes brackets/clips for various adapter cards.

Platform Specific:
---
pSeries: AIX Network Install Manager (NIM) boot capability is supported with this adapter.

pSeries (not p5)

Max: 6 7038-6M2 pSeries 650
AIX 5.1 or later

For pSeries p5:

Max 6: 9111-520
Max 5: 9113-550, 9124-720
Max 24: 9117-570
Max 160: 9119-590
Max 192: 9119-590

For iSeries i5:

If #5701 is used with a #2792 or #2892, then #0226 1Gbps Ethernet Specify must be ordered for each #5701

i5/p5 OS levels Supported:

AIX 5.2 or AIX 5.3 or later
i5/OS V5R3, or later
SUSE LINUX Enterprise Server 9 for POWER or later
Red Hat Enterprise Linux AS for POWER Version 3

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64-bit 3.3v Bootable high performance Ultra320 SCSI RAID Adapter
LVD/SE SCSI (Low Voltage Differential/Single Ended)
Provides RAID 0, 5, 10
Addresses up to 30 SCSI physical disk drives (16 bit) on 2 independent SCSI buses
Includes resident 40mb Fast-Write Cache utilizing Non-Volatile RAM (NVRAM)

FC 5703 has two independent Ultra320 SCSI buses, each with an internal and external port. Each bus can drive either an internal or external port. Neither bus can drive an internal and external port simultaneously.

Internally attached Ultra320 devices are designed to run at a data rate of up to 320MB/sec on systems that have internal backplanes capable of supporting U320 speeds.

To fully utilize U320 performance, all attaching devices on the bus should be U320 LVD devices. If Ultra2, Ultra3 and U320 devices coexist on the same bus, each device will operate at its rated speed. If slower speed Single Ended (SE) devices are used (SCSI, SCSI-2, Ultra SCSI), the SCSI bus will switch to Single Ended performance for all devices on the SCSI bus.

External Connectors:
Two industry standard VHDCI 68-pin connectors are mounted on the adapter's end bracket allowing attachment of various LVD and SE external subsystems.

FC 2118: SCSI Converter Cable - VHDCI to 68-Pin P Style (Mini-68 pin to 68 pin) 0.3m may be used with older external SE devices or subsystems to allow connection to the VHDCI connector on the PCI-X Dual Channel Ultra320 SCSI RAID Adapter.

The two external ports provide connectivity to a 2104-DS4 or 2104-TS4 (Expandable Storage Plus Drawer or Tower) at up to 320MB/s configured as either a non-array or an array of disks.

RAID and Array Configurations:
When an array configuration is selected with the RAID Manager, the disk drives being designated as part of the array (attached to either the internal or external ports) are required to be formatted to 522 byte sectors. 522 byte sectors provide additional CRC error checking for improved data integrety. A menu option is provided in the AIX supporting software which will reformat these disk drives prior to their usage in an array. Conversely, when a disk drive is removed from an array, a similar menu option is also provided to re-format them back to 512 byte sectors.

Note:
Some disk drives require that their microcode be updated to the latest level before being formatted to 522 Byte Sectors.
Some disk drives do not support 522 Byte Sector formats.
The PCI-X SCSI Disk Array Manager will inform the user of these known situations when they exist.

For disk microcode updates, go to the following web page URL:
http://techsupport.services.ibm.com/server/mdownload/

Limitations:
2104-xxx Connection Speeds:
2104-xS4 320MB/s
2104-xU3 160MB/s (Array configurations not supported)
2104-xL1 80MB/s (Array configurations not supported)

Connection to the 7131-105 IBM Multi-Storage Tower is not supported.

Even though the Dual Channel Ultra320 SCSI RAID Adapter has ports that run at Ultra320 SCSI speeds (up to 320MB/s), the internally attached disk drives will run at a maximum SCSI bus data rate specified by that supporting system disk backplane.

Disk drives internal to the pSeries system shipped prior to September 1, 2003 require a disk drive microcode update to run at U320 speed.

AIX 5.1 or later, AIX 5.2 or later

pSeries p5:
Max: 3 9111-520
Max: 4 9113-550, 9124-720
Max: 20 9117-570

OS levels supported:
AIX 5.2 or AIX 5.3 or later
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

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#5706 is a Full Duplex, dual ported, Gigabit Ethernet adapter that can be configured to run either port at 10, 100, or 1000Mbps data rates.

The adapter interfaces to the system via a PCI or PCI-X bus and connects to a network using a 4-pair CAT-5 Unshielded Twisted Pair (UTP) cable for distances of up to 100m.

The adapter conforms to the IEEE 802.3ab 1000Base-T standard. The adapter also supports jumbo frames when running at the 1000 Mbps speed.

#5706 supports Large Send (TCP Segmentation). This function offloads the TCP segmentation operation from the AIX IP layer to the adapter for outgoing (transmit side) TCP segments.

#5706 also supports Checksum Offload function, which offloads the TCP/UDP Checksum Operation or workload from the CPU to the adapter.

#5706 should be considered where maximum port density is required per I/O card slot. If card slots are not the limiting factor and maximum throughput is required, #5701 10/100/1000 Base-TX Ethernet PCI-X Adapter (Single Port) is the preferred solution.

Length: 165 mm (6.50 in)
Height: 63.5 mm (2.50 in)
5V Nominal / 1057 mA

AIX Network Install Manager (NIM) boot capability is supported with this adapter.

Limitations:
#5706 does not support SNA
1000Mbps speed is not supported in Half Duplex (HDX) mode.

#5706 is supported in 3V PCI or PCI-X card slots (either long or short). However, for optimum performance, the adapter should be placed in a 64 bit PCI-X card slot.

Systems manufactured prior to October 25, 2002 may require a system firmware update. Check the following Web URL after October 25, 2002 to review and download latest firmware if needed.
http://www.austin.ibm.com/support/micro/

When mounting in a Blind Swap Cassete, an adapter bracket/clip is available.
The clip PN 53P5450 is not separately orderable as a single FRU. Refer to PN PN 00P4680 - which includes brackets/clips for various adapter cards.

pSeries non p5:

AIX 5.1 or later, AIX 5.2 or later
Max: 5 per FC 6563 PCI Planar
Max: 10 per FC 6571 PCI-X planar

pSeries p5 Specific:

Max 6: 9111-520
Max 5: 9113-550, 9124-720
Max 24: 9117-570
Max 160: 9119-590
Max 192: 9119-590

iSeries i5 Specific:

#5706 does not require a PCI IOP, even in an OS/400 partition.

Supported OS levels:

AIX 5.2 or AIX 5.3 or later
i5/OS V5R3, or later
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3 701x5706

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2-Port Gigabit Ethernet-SX PCI-X Adapter provides 2x 1Gbps (1000 Base-SX) full-duplex Ethernet LAN connections with throughput on a standard shortwave multimode optical cable that conforms to the IEEE 802.3z standard.

The adapter supports distances of 260m for 62.5 micron Multi Mode Fiber (MMF) and 550m for 50.0 micron MMF.

#5707 supports Large Send (TCP Segmentation). This function offloads the TCP segmentation operation from the AIX IP layer to the adapter for outgoing (transmit side) TCP segments.

#5707 also supports Checksum Offload function, which offloads the TCP/UDP Checksum Operation or workload from the CPU to the adapter.

#5707 should be considered where maximum port density is required per I/O card slot. If card slots are not the limiting factor and maximum throughput is required, #5700 Gigabit Ethernet-SX PCI-X Adapter (Single Port) is the preferred solution.

Length: 162.3 mm (6.39 in)
Height: 63.5 mm (2.50 in)
5V Nominal / 820 mA

For pSeries, AIX Network Install Manager (NIM) boot capability is supported with this adapter.

When mounting in a Blind Swap Cassete, an adapter bracket/clip is available.
The clip PN 53P5450 is not separately orderable as a single FRU. Refer to PN PN 00P4680 - which includes brackets/clips for various adapter cards.

#5707 incorporates an LC type connector on the card. If connecting to older SC type connector networks a converter cable is required, as follows::-

iSeries Converter Cables
#0371 LC-SC Adapter Kit (50um)
#0372 LC-SC Adapter Kit (62.5um)

pSeries Converter Cables
#2456 LC-SC 50 Micron Fiber Converter Cable
#2459 LC-SC 62.5 Micron Fiber Converter Cable

Limitations:

The #5707 does not support SNA.
Half Duplex (HDX) mode is not supported.
Requires: One 3V PCI or PCI-X card slot (short or long). For optimum performance, the adapter should be placed in a 64 bit PCI-X card slot whenever possible.

Platform Specific:
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pSeries non p5:

Systems manufactured prior to October 25, 2002 may require a system firmware update. Check the following Web URL: http://www.austin.ibm.com/support/micro/

Max 5 per #6563 PCI Planar
Max 10 per #6571 PCI-X planar
AIX 5.1 or later

pSeries p5 Specific:

Max 6: 9111-520
Max 5: 9113-550, 9124-720
Max 24: 9117-570
Max 160: 9119-590
Max 192: 9119-590

iSeries i5 Specific:

#5707 does not require a PCI IOP, even in an OS/400 partition.

Supported OS levels:

AIX 5.2 or AIX 5.3 or later
i5/OS V5R3, or later
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

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FC 5709 is a bootable, high performance SCSI RAID Enablement Card providing RAID 0, 5 or 10 capability to select pSeries systems with the appropriate supporting integrated SCSI adapter and internal multiple disk drives or packs of drives.

The 5709 includes a resident 16mb Fast Write Cache utilizing Non-Volatile RAM (NVRAM)

RAID and Array Configurations:
When an array configuration is selected with the RAID Manager, the disk drives being designated as part of the array (attached to either the internal or external ports) are required to be formatted to 522 byte sectors. 522 byte sectors provide additional CRC error checking for improved data integrety. A menu option is provided in the AIX supporting software which will reformat these disk drives prior to their usage in an array. Conversely, when a disk drive is removed from an array, a similar menu option is also provided to re-format them back to 512 byte sectors.

Note:
Some disk drives require that their microcode be updated to the latest level before being formatted to 522 Byte Sectors.
Some disk drives do not support 522 Byte Sector formats.

The PCI-X SCSI Disk Array Manager will inform the user of these known situations when they exist.

For disk microcode updates, go to the following web page URL:
http://techsupport.services.ibm.com/server/mdownload/

Limitations:
Although the supporting integrated adapter with the Dual Channel SCSI RAID Enablement Card has ports that run at Ultra320 SCSI speeds (up to 320MB/s), the internally attached disk drives will run at a maximum SCSI bus data rate specified by that supporting system disk backplane.

Disk drives internal to the pSeries system shipped prior to September 1, 2003 require a disk drive microcode update to run at U320 speed.

AIX 5.1 or later, AIX 5.2 or later

pSeries p5 Specific:
Maximum allowed: 1 9111-520
Maximum allowed: 1 9113-550, 9124-720
Maximum allowed: 4 9117-570

Supported OS levels:
AIX 5.2 or AIX 5.3 or later
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

FC 5710 is equivalent to FC 5712 PCI-X Dual Channel Ultra320 SCSI Adapter and includes a Blind Swap Cassette.

Attributes:
- 64-bit 3.3v Bootable high performance Ultra320 SCSI RAID Adapter
- LVD/SE SCSI (Low Voltage Differential/Single Ended)
- 2 Independent SCSI buses
- Supports Target Mode.

FC 5703 has two independent Ultra320 SCSI buses, each with an internal and external port. Each bus can drive either an internal or external port. Neither bus can drive an internal and external port simultaneously.

Internally attached Ultra320 devices are designed to run at a data rate of up to 320MB/sec on systems that have internal backplanes capable of supporting U320 speeds.

To fully utilize U320 performance, all attaching devices on the bus should be U320 LVD devices. If Ultra2, Ultra3 and U320 devices coexist on the same bus, each device will operate at its rated speed. If slower speed Single Ended (SE) devices are used (SCSI, SCSI-2, Ultra SCSI), the SCSI bus will switch to Single Ended performance for all devices on the SCSI bus.

External Connectors:
Two industry standard VHDCI 68-pin connectors are mounted on the adapter's end bracket allowing attachment of various LVD and SE external subsystems.

FC 2118: SCSI Converter Cable - VHDCI to 68-Pin P Style (Mini-68 pin to 68 pin) 0.3m may be used with older external SE devices or subsystems to allow connection to the VHDCI connector on the PCI-X Dual Channel Ultra320 SCSI RAID Adapter.

The two external ports provide connectivity to 2104-Dxx or 2104-Txx (Expandable Storage Plus Drawer Tower) or other SCSI external subsystems.

The FC 5712 PCI-X Dual Channel Ultra320 SCSI Adapter is a native boot adapter with AIX 5.1 or AIX 5.2 software in a supported pSeries or RS/6000 system.

Limitations:

2104-xxx Connection Speeds:
2104-xS4 320MB/s
2104-xU3 160MB/s (Array configurations not supported)
2104-xL1 80MB/s (Array configurations not supported)

Connection to the 7131-105 IBM Multi-Storage Tower is not supported.

Even though the Dual Channel Ultra320 SCSI RAID Adapter has ports that run at Ultra320 SCSI speeds (up to 320MB/s), the internally attached disk drives will run at a maximum SCSI bus data rate specified by that supporting system disk backplane.

Disk drives internal to the pSeries system shipped prior to September 1, 2003 require a disk drive microcode update to run at U320 speed.
For disk microcode updates, go to the following web page URL:
http://techsupport.services.ibm.com/server/mdownload/

AIX 5.1 or later, AIX 5.2 or later

FC 5711 is equivalent to FC 5703 PCI-X Dual Channel Ultra320 SCSI RAID Adapter and includes a Blind Swap Cassette.

Attributes:
- 64-bit 3.3v Bootable high performance Ultra320 SCSI RAID Adapter
- LVD/SE SCSI (Low Voltage Differential/Single Ended)
- Provides RAID 0, 5, 10
- Addresses up to 30 SCSI physical disk drives (16 bit) on 2 independent SCSI buses
- Includes resident 40mb Fast-Write Cache utilizin Non-Volatile RAM (NVRAM)

FC 5703 has two independent Ultra320 SCSI buses, each with an internal and external port. Each bus can drive either an internal or external port. Neither bus can drive an internal and external port simultaneously.

Internally attached Ultra320 devices are designed to run at a data rate of up to 320MB/sec on systems that have internal backplanes capable of supporting U320 speeds.

To fully utilize U320 performance, all attaching devices on the bus should be U320 LVD devices. If Ultra2, Ultra3 and U320 devices coexist on the same bus, each device will operate at its rated speed. If slower speed Single Ended (SE) devices are used (SCSI, SCSI-2, Ultra SCSI), the SCSI bus will switch to Single Ended performance for all devices on the SCSI bus.

External Connectors:
Two industry standard VHDCI 68-pin connectors are mounted on the adapter's end bracket allowing attachment of various LVD and SE external subsystems.

FC 2118: SCSI Converter Cable - VHDCI to 68-Pin P Style (Mini-68 pin to 68 pin) 0.3m may be used with older external SE devices or subsystems to allow connection to the VHDCI connector on the PCI-X Dual Channel Ultra320 SCSI RAID Adapter.

The two external ports provide connectivity to a 2104-DS4 or 2104-TS4 (Expandable Storage Plus Drawer or Tower) at up to 320MB/s configured as either a non-array or an array of disks.

RAID and Array Configurations:
When an array configuration is selected with the RAID Manager, the disk drives being designated as part of the array (attached to either the internal or external ports) are required to be formatted to 522 byte sectors. 522 byte sectors provide additional CRC error checking for improved data integrety. A menu option is provided in the AIX supporting software which will reformat these disk drives prior to their usage in an array. Conversely, when a disk drive is removed from an array, a similar menu option is also provided to re-format them back to 512 byte sectors.

Note:
Some disk drives require that their microcode be updated to the latest level before being formatted to 522 Byte Sectors.
Some disk drives do not support 522 Byte Sector formats.
The PCI-X SCSI Disk Array Manager will inform the user of these known situations when they exist.

For disk microcode updates, go to the following web page URL:
http://techsupport.services.ibm.com/server/mdownload/

Limitations:

2104-xxx Connection Speeds:
2104-xS4 320MB/s
2104-xU3 160MB/s (Array configurations not supported)
2104-xL1 80MB/s (Array configurations not supported)

Connection to the 7131-105 IBM Multi-Storage Tower is not supported.

Even though the Dual Channel Ultra320 SCSI RAID Adapter has ports that run at Ultra320 SCSI speeds (up to 320MB/s), the internally attached disk drives will run at a maximum SCSI bus data rate specified by that supporting system disk backplane.

Disk drives internal to the pSeries system shipped prior to September 1, 2003 require a disk drive microcode update to run at U320 speed.

AIX 5.1 or later, AIX 5.2 or later

Attributes:
64-bit 3.3v Bootable high performance Ultra320 SCSI RAID Adapter
LVD/SE SCSI (Low Voltage Differential/Single Ended)
2 Independent 320MB/sec SCSI buses
Supports Target Mode.

FC 5703 has two independent Ultra320 SCSI buses, each with an internal and external port. Each bus can drive either an internal or external port. Neither bus can drive an internal and external port simultaneously.

Internally attached Ultra320 devices are designed to run at a data rate of up to 320MB/sec on systems that have internal backplanes capable of supporting U320 speeds.

To fully utilize U320 performance, all attaching devices on the bus should be U320 LVD devices. If Ultra2, Ultra3 and U320 devices coexist on the same bus, each device will operate at its rated speed. If slower speed Single Ended (SE) devices are used (SCSI, SCSI-2, Ultra SCSI), the SCSI bus will switch to Single Ended performance for all devices on the SCSI bus.

External Connectors:
Two industry standard VHDCI 68-pin connectors are mounted on the adapter's end bracket allowing attachment of various LVD and SE external subsystems.

FC 2118: SCSI Converter Cable - VHDCI to 68P P Style 0.3m
This cable may be used with older external SE devices or subsystems to allow connection to the VHDCI connector on the PCI-X Dual Channel Ultra320 SCSI RAID Adapter.

The two external ports provide connectivity to 2104-Dxx or 2104-Txx (Expandable Storage Plus Drawer Tower) or other SCSI external subsystems.

The FC 5712 PCI-X Dual Channel Ultra320 SCSI Adapter is a native boot adapter with AIX 5.1 or AIX 5.2 software in a supported pSeries or RS/6000 system.

Limitations:
2104-xxx Connection Speeds:
2104-xS4 320MB/s
2104-xU3 160MB/s (Array configs not supported)
2104-xL1 80MB/s (Array configs not supported)

Connection to the 7131-105 IBM Multi-Storage Tower is not supported.

Even though the Dual Channel Ultra320 SCSI RAID Adapter has ports that run at Ultra320 SCSI speeds (up to 320MB/s), the internally attached disk drives will run at a maximum SCSI bus data rate specified by that supporting system disk backplane.

Disk drives internal to the pSeries system shipped prior to September 1, 2003 require a disk drive microcode update to run at U320 speed.
For disk microcode updates, go to the following web page URL:
http://techsupport.services.ibm.com/server/mdownload/

AIX 5.1 or later, AIX 5.2 or later

pSeries p5 Specific:
Maximum allowed: 6 9111-520
Maximum allowed: 5 9113-550, 9124-720
Maximum allowed: 24 9117-570

OS levels required:
AIX 5.2 or AIX 5.3 or later

SUSE LINUX Enterprise Server 9 for POWER, or later, or Red Hat Enterprise Linux AS for POWER Version 3

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5716 2 Gigabit Fibre Channel PCI-X Adapter — Fiber

The 2 Gigabit Fibre Channel PCI-X Adapter is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single or dual initiator capability over an optical fiber link or loop.

With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high speed local and remote located storage.

The 2 Gigabit Fibre Channel PCI-X Adapter will auto-negotiate for the highest data rate (either 1 Gbps or 2 Gbps) of which the device or switch is capable.

Distances of up to 500 meters running at 1 Gbps data rate and up to 300 meters running at 2 Gbps data rate are supported between the adapter and an attaching device or switch.

When used with IBM supported Fibre Channel storage switches supporting long-wave optics, distances of up to 10 kilometers are capable running at either 1 Gps or 2 Gps data rates.

The 2 Gigabit Fibre Channel PCI-X Adapter can be used to attach devices either directly, or by means of Fibre Channel Switches.

If attaching a device or switch with a SC type fiber connector, a Converter Cable is required:
#2456: LC-SC 50 Micron Fiber Converter Cable
#2459: LC-SC 62.5 Micron Fiber Converter Cable

Max 6: 9111-520
Max 5: 9113-550, 9124-720
Max 24: 9117-570
Max 160: 9119-590
Max 192: 9119-590

OS levels required:
AIX 5.2 or AIX 5.3 or later
SUSE LINUX Enterprise Server 9 for POWER
Red Hat Enterprise Linux AS for POWER Version 3

5718 10-Gigabit Ethernet PCI-X Adapter — Ethernet

Provides 10 Gigabit Ethernet PCI-X based server connections.

Supports distances of up to 33m using 62.5 um multimode fiber or 300m using 50 um multimode fiber with 2000MHz km minimum model bandwidth at 850nm.

Adapter connector type is LC.

Supported in PCI-X slots only

Platform Specific:

For pSeries p5:

Requires: AIX V5.2.H and higher (No AIX V4 Support)

Max 2: 9111-520
Max 1: 9113-550
Max 8: 9117-570
Max 16: 9119-590 (4 per I/O Drawer)
Max 24: 9119-595 (4 per I/O Drawer)

OS level required: AIX 5.2 or AIX 5.3 or later

For iSeries i5:

OS level required: AIX 5L for Power V5.2 for IBM eServer

For Linux:

Red Hat Enterprise Linux AS for POWER Version 3 or later
SUSE LINUX Enterprise Server 9 for POWER or later

The 4.7GB IDE Slimline DVD-RAM Drive is an internal tray loading, multifunction storage device capable of reading and writing 4.7GB DVD-RAM discs as well as reading a multitude of other optical media discs.

This drive also reads Type II (removable from cartridge) DVD-RAM discs.

It is a 12.7mm high Slimline form factor, multi-session capable, DVD-RAM drive which provides state of the art performance.

System boot and install functions are supported with CD-ROM and DVD-RAM media.

Characteristics:
Interface : Parallel IDE
Buffer Memory : 2MB
Loading tray accommodates 8cm and 12cm discs
Operates in either vertical or horizontal position

Media Data Transfer Rates:
CD-ROM : 3600KB/sec Read (24x Max)
DVD-ROM : 10.8MB/sec Read (8x)
DVD-RAM : 2.7MB/sec Read/Write (2X)

Average Random Access Times:
CD-ROM : 150ms
DVD-ROM: 180ms
DVD-RAM: 229ms

High-Speed Burst Rates:
PIO : 16mb/sec PIO
MDMA : 16mb/sec
UDMA : 33mb/sec

Read/Write:
Reads multi-session discs
Reads CD-ROM, CD-R, CD-RW, DVD-ROM, DVD-RAM
Reads 2.6GB DVD-RAM media
R/W 4.7GB and 9.4GB Double Sided DVD-RAM media
Supports all major CD-ROM formats: Mode 1, Mode 2, XA, CDDA and audio

Limitations:
DVD video is not supported.
#5751 is a FCC Class A Device. If installed in a Class B System the system is now FCC Class A

Platform Specific:

For pSeries p5:

Drive only reads CD-Type formatted media with AIX 5.1
Max: 2 9111-520
Max: 2 9113-550, 9124-720
Max: 8 9117-570
AIX 5.2 or AIX 5.3 or later

For iSeries i5:

Requires: 5.25-inch, half-high removable media slot
OS level: i5/OS V5R3 or later
AIX 5L for POWER V5.2 for IBM eServer

Linux:

SUSE LINUX Enterprise Server 9 for POWER or later
Red Hat Enterprise Linux AS for POWER Version 3

5791 I/O Drawer: 20x PCI-X Slots 16x Disk Bays — I/O Drawer

FC #5791 and #5794 are similar features.

FC #5791 provides a 4U I/O drawer containing 20x PCI-X slots and 16x hot-swap disk bays.

FC #5794 provides a 4U I/O drawer containing 20x PCI-X slots and 8x hot-swap disk bays.

The drawers attach to the central electronics complex via RIO-2 attachment cables.

A minimum of one #5791 or #5794 must exist on each 9119-590 or 9119-595.

9119-590: Max: 8 (combination of 5791 or 5794)
9119-595: Max: 12 (combination of 5791 or 5794)

Also requires 1x FC #4643: 7040-61D I/O Drawer Attachment Indicator for each #5791 or #5794.

5792 Powered Expansion Rack — Rack Related

This feature provides a 24", 42U powered expansion rack.

The power subsystem resides in the upper 8U of the rack and utilizes the same power components provided in the CEC rack.

5794 I/O Drawer: 20x PCI-X Slots 8x Disk Bays — I/O Drawer

FC #5791 and #5794 are similar features.

FC #5791 provides a 4U I/O drawer containing 20x PCI-X slots and 16x hot-swap disk bays.

FC #5794 provides a 4U I/O drawer containing 20x PCI-X slots and 8x hot-swap disk bays.

The drawers attach to the central electronics complex via RIO-2 attachment cables.

A minimum of one #5791 or #5794 must exist on each 9119-590 or 9119-595.

9119-590: Max: 8 (combination of 5791 or 5794)
9119-595: Max: 12 (combination of 5791 or 5794)

Also requires 1x FC #4643: 7040-61D I/O Drawer Attachment Indicator for each #5791 or #5794.

6001 SPCN Cable 2.0m — RIO/SPCN

System Power Control Network (SPCN) Cables - General Info.

I/O drawers and CEC Processors must be connected in an SPCN loop for power control redundancy.

Power control for I/O drawers is provided via one loop. The number of power control (SPCN) cables required is equal to one plus the number of I/O drawers attached to the system.

A minimum of two power control cables are required for attachment of the first drawer. Each additional drawer requires one additional power control cable to complete the loop attachment.

SPCN will function with any single connection broken regardless of the location of the open connection. No error reporting is provided for SPCN faults.

SPCN Feature Summary:
FC 6001 = 2.0m
FC 6006 = 3.m
FC 6007 = 15.0m
FC 6008 = 6.0m

6006 SPCN - I/O Drawer to Drawer Power Control Cable 3.0m RIO/SPCN

System Power Control Network (SPCN) Cables - General Info.

I/O drawers and CEC Processors must be connected in an SPCN loop for power control redundancy.

Power control for I/O drawers is provided via one loop. The number of power control (SPCN) cables required is equal to one plus the number of I/O drawers attached to the system.

A minimum of two power control cables are required for attachment of the first drawer. Each additional drawer requires one additional power control cable to complete the loop attachment.

SPCN will function with any single connection broken regardless of the location of the open connection. No error reporting is provided for SPCN faults.

SPCN Feature Summary:
FC 6001 = 2.0m
FC 6006 = 3.m
FC 6007 = 15.0m
FC 6008 = 6.0m

6007 SPCN - I/O Rack to Rack Power Control Cable 15.0m RIO/SPCN

System Power Control Network (SPCN) Cables - General Info.

I/O drawers and CEC Processors must be connected in an SPCN loop for power control redundancy.

Power control for I/O drawers is provided via one loop. The number of power control (SPCN) cables required is equal to one plus the number of I/O drawers attached to the system.

A minimum of two power control cables are required for attachment of the first drawer. Each additional drawer requires one additional power control cable to complete the loop attachment.

SPCN will function with any single connection broken regardless of the location of the open connection. No error reporting is provided for SPCN faults.

SPCN Feature Summary:
FC 6001 = 2.0m
FC 6006 = 3.m
FC 6007 = 15.0m
FC 6008 = 6.0m

6008 SPCN - Processor Complex to I/O Rack Power Control Cable 6.0m RIO/SPCN

System Power Control Network (SPCN) Cables - General Info.

I/O drawers and CEC Processors must be connected in an SPCN loop for power control redundancy.

Power control for I/O drawers is provided via one loop. The number of power control (SPCN) cables required is equal to one plus the number of I/O drawers attached to the system.

A minimum of two power control cables are required for attachment of the first drawer. Each additional drawer requires one additional power control cable to complete the loop attachment.

SPCN will function with any single connection broken regardless of the location of the open connection. No error reporting is provided for SPCN faults.

SPCN Feature Summary:
FC 6001 = 2.0m
FC 6006 = 3.m
FC 6007 = 15.0m
FC 6008 = 6.0m

6029 SPCN Power Control Cable 30.0m RIO/SPCN

SPCN Power Control Cable 30.0m

6120 80/160GB Internal Tape Drive with VXA Technology — Tape Drives

The IBM 80/160GB Internal Tape Drive with VXA Technology is a 5.25-inch half-high Ultra2 LVD 16-bit tape drive which provides a high capacity for save/restore and achieve functions.

This tape drive uses VXA Tape data cartridges and is compression capable, providing a capacity of up to 160GB.

```
Capacity:       80GB Native 160GB Compression
Form Factor:    5.25-inch half high
Media:          VXA Tape Data Cartridges
Technology:     Helical scan, rotating head
Operation:      Streaming
Data Rate:      6MBps Native 12MBps Compression
Interface:      SCSI-2 (LVD/SE) asynchronous/synchronous
Compatability:  R/W: 80GB Native 160GB compression
```

Requires: 1x 1.6-inch (41mm) half-high media bay and one SCSI-2 internal 16-bit address

Supported OS levels:
AIX 5.1 or later
AIX 5.2 or AIX 5.3 or later
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

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6121 I/O Drawer Attachment Cable Group, Drawer Position 9U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 9U location of the primary system rack.

For the 7040-61D, this FC is used in conjuction with FC #4609

For the 9119-590/595, this is FC is used with the Primary Rack, not the #8691 Rack.

6122 I/O Drawer Attachment Cable Group, Drawer Position 5U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 5U location of the primary system rack.

For the 7040-61D, this FC is used in conjuction with FC #4605

For the 9119-590/595, this is FC is used with the Primary Rack, not the #8691 Rack.

6123 I/O Drawer Attachment Cable Group, Drawer Position 1U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 1U location of the primary system rack.

For the 7040-61D, this FC is used in conjuction with FC #4601

For the 9119-590/595, this is FC is used with the Primary Rack, not the #8691 Rack.

6124 I/O Drawer Attachment Cable Group, Drawer Position 13U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 13U location of the primary system rack.

For the 7040-61D, this FC is used in conjuction with FC #4613

For the 9119-590/595, this is FC is used with the Primary Rack, not the #8691 Rack.

6125 I/O Drawer Attachment Cable Group, Drawer Position 1U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 1U location of the expansion rack.

For the 7040-61D, this FC is used in conjuction with FC #4401

For the 9119-590/595, this is FC is used with the #8691 Rack, not the Primary Rack.

6126 I/O Drawer Attachment Cable Group, Drawer Position 5U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 5U location of the expansion rack.

For the 7040-61D, this FC is used in conjuction with FC #4405

For the 9119-590/595, this is FC is used with the #8691 Rack, not the Primary Rack.

6127 I/O Drawer Attachment Cable Group, Drawer Position 9U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 9U location of the expansion rack.

For the 7040-61D, this FC is used in conjuction with FC #4409

For the 9119-590/595, this is FC is used with the #8691 Rack, not the Primary Rack.

6128 I/O Drawer Attachment Cable Group, Drawer Position 13U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 13U location of the expansion rack.

Note for 9119-595:
This cable provides redundant power to EIA13 on the Bolt-On Expansion Rack (#8691) when it is attached to the Powered Expansion Rack (#5792).

This cable is not the same as #7847, which is used when rack #8691 is attached to the CEC rack.

6129 I/O Drawer Attachment Cable Group, Drawer Position 19U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 19U location of the expansion rack.

Note for 9119-595:
This cable provides redundant power to EIA13 on the Bolt-On Expansion Rack (#8691) when it is attached to the Powered Expansion Rack (#5792).

This cable is not the same as #7848, which is used when rack #8691 is attached to the CEC rack.

6134 60/150GB 16-bit 8mm Internal Tape Drive — Tape Drives

60/150GB 16-bit 8mm Internal Tape Drive

Characteristics:
Form Factor : 5.25-inch Half-high
Media : 8mm Data Cartridge w/Smart Clean Technology
Technology : Helical Scan, Rotating Head
Operation : Streaming
Interface : 16 Bit SCSI LVD/SE Asynchronous/Synchronous

Capacity:
60GB Native Mode
150GB Compression Mode (typical)

Data Transfer Rate:
12 MB/Sec Native Mode
30 MB/Sec (typical) Compression

Compatibility: Refer to:
http://techsupport.services.ibm.com/server/mdownload/tapewhdr.html

Requires:
1.6-inch (41mm) half-high media bay and PCI SCSI controller.

6186 Bulk Power Regulator — Regulator

Bulk power regulators provide increments of power for use by the systems components such as fans, CEC components, and I/O drawers.

6200 Integrated Battery Backup - Primary or Redundant-Front Mounted 7040 Specific

The Primary Integrated Battery Backup features provide batteries to be connected to the bulk power regulators of the front bulk power assembly.

These batteries protect against power line disturbances as well as power failures involving both redundant power sources or the front power source and the rear bulk power assembly. The batteries provide sufficient backup power to allow an orderly system shutdown.

When Primary integrated Battery Backup feature(s) are ordered, one is required for each Bulk Power Regulator (6186) in the front bulk power assembly.

Requires: 2U Rack Space

6201 Integrated Battery Backup - Redundant Rear Mounted 7040 Specific

The Redundant Integrated Battery Backup features provide batteries to be connected to the bulk power regulators of the rear bulk power assembly.

These batteries protect against power line disturbances as well as power failures involving both redundant power sources. They also protect against failure of both power sources at the same time as a failure of the primary battery backup or the front bulk power assembly. The batteries provide sufficient backup power to allow an orderly system shutdown.

Requires: Primary Integrated Battery Backup Feature (6200)

6203 PCI Dual Channel Ultra3 SCSI Adapter (Type 4-Y) SCSI Adapters

64-bit adapter providing 2x SCSI channels (busses).

Each SCSI bus can either be internal or external and will support a data rate of up to 160MB/sec.

Ultra3 SCSI is also known as U160 and Fast80

The adapter utilizes Low Voltage Differential (LVD) drivers and receivers. For full Ultra3 160MB/sec performance, all attaching devices or subsystems should also be Ultra3 LVD devices.

If Ultra2 and Ultra3 devices coexist on the same bus, each device will operate at its rated speed.

For lower speed devices, the entire SCSI bus will switch to single-ended (SE) performance and interface at the bus data rate of the slowest device.

2x industry standard VHDCI 68 pin connectors are mounted on the adapter's end bracket allowing attachment of various LVD and SE external subsystems.

FC #2118: 0.3m VHDCI to 68 Pin Converter cable may be used with older external SE subsystems to allow connection to the VHDCI connector on the adapter.

If any Single Ended (SE) SCSI subsystem is attached to an external port of this adapter, the SCSI port will auto-throttle to a Fast interface speed running no faster than 20MB/s max. The auto-throttle function is performed to ensure best signal quality between host adapter and attaching subsystem. The second external port is unaffected unless a SE subystem is also attached to it. If so, it would also auto-throttle as described above.

The PCI Dual Channel Ultra3 SCSI Adapter (6203) also is a native boot adapter with AIX 4.3.3 or AIX 5.1 (with appropriate updates) in the supported pSeries or RS/6000 systems.

Requires: One available PCI slot
AIX 4.3.3 with AIX Update CD LCD4-0995-14 or later
AIX 5.1 with Update CD LCD4-1103-01 or later
Initial Order/MES: Both

When mounting in a Blind Swap Cassete, an adapter bracket/clip is available.
The clip PN 44P2661 or 44P0324 or 44P0798 is not separately orderable as a single FRU.
Refer to PN PN 00P4680 - which includes brackets/clips for various adapter cards.

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6204 PCI Universal Differential Ultra SCSI Adapter (Type 4-U) SCSI Adapters

PCI Bus Ultra SCSI Differential adapter with max data transfer rate of 40MB/sec.

Ultra SCSI is:
40MB/s when used with a 16 bit (Wide) Bus
20MB/s when used with a 8 bit (Narrow) Bus
It is also referred to as Fast20
Max cable length 25 meters

Designed for +3.3 volt PCI slots as well as the older +5 volt PCI slots.

FC 6204 can negotiate with each external device and transfer data at the fastest SCSI data transfer rate capable by the external device.

The adapter conforms to SCSI-2 standard and the Fast-20 (Ultra) documentation.

Industry standard 68 pin connectors are incorporated (SCSI P connector definition of X3T9.2/90-048)

Provides: 15 external SCSI-2 addresses
Requires: 1 PCI slot

Supported by OS levels:
AIX 4.3.3 or later
AIX 5.2 or AIX 5.3 or later
AIX 5L for POWER V5.2 for IBM eServer or later
Red Hat Enterprise Linux AS for POWER Version 3 or later
SUSE LINUX Enterprise Server 9 for POWER or later

6228 2 Gigabit Fibre Channel Adapter for 64-bit PCI Bus (Type 4-W) Fiber

Note: Although similar in function to FC #6239, this adpater is a PCI card. The #6239 is a PCI-X card.

64-bit PCI Bus (64-bit address/data), short form factor PCI adapter with LC type external fiber connectors that provides single or dual initiator capability over an optical fiber link or loop.

With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high speed local and remote located storage.

The adapter will auto-negotiate for the highest data rate (1Gbps or 2Gbps) of which the device or switch is capable.

Distances Supported:
Up to 500m at 1Gbps data rate.
Up to 300m at 2Gbps data rate.

When used with supported Fibre Channel storage switches supporting long-wave optics, distances of up to 10 Km are capable running at either 1Gps or 2Gps data rates.

The adapter can be used to attach devices either directly, or by means of Fibre Channel Switches.

If attaching a device or switch with a SC type fiber connector a converter cable is required:
#2456: LC-SC 50 Micron Fiber Converter Cable
#2459: LC-SC 62.5 Micron Fiber Converter Cable

Fibre Channel boot capability is supported with system firmware at the correct support level. Systems manufactured prior to November 30, 2001, may require a system firmware update. Refer to:
http://www.austin.ibm.com/support/micro/

Fibre Channel boot requires AIX 5.1 at the September 2001 maintenance level or later - along with a disk subsystem on which this boot capability has been qualified.

When mounting in a Blind Swap Cassete, an adapter bracket/clip is available.
The clip PN 44P0406 or 44P2675 is separately orderable and contained in PN 00P4680 - which includes brackets/clips for various adapter cards.

AIX 5.1, or later

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There are now two SerialRAID adapters that use the same type number (4-P). The Advanced SerialRAID Adapter and the Advanced SerialRAID Plus Adapter.

This adapter is essentially the same as FC 6225. However, the base cache option is 64MB. This can be increased to 128MB using FC 6231 Advanced SerialRAID Plus Adapter 128MB DRAM Cache Card.

#6230 is a 4 port (2 loop) Serial Storage Architecture (SSA) adapter providing a data transfer rate of up to 160MB/sec per loop.

It provides:
8-initiator non-RAID capability
2-initiator RAID 1
2-initiator RAID 0 + 1
2-initiator RAID 5
1-initiator RAID 0

FC #6235 32MB Fast-Write Cache Option Card:-

Improves write performance in RAID 0+1, RAID 5 and non-RAID applications
Allows #6230 to be configured in either Single or Dual Initiator Fast-Write Cache Mode.

In Dual Initiator Fast-Write Cache Mode, if one of the two adapters fails, the failing adapter transfers control to the other adapter.

FC #6231 128MB DRAM Option Card:-

Required to fully utilize all 32MB of Fast-Write Cache on the adapters in Dual Initiator Mode.

If the 128MB DRAM Option Card is not used in Dual Initiator Mode, the effective Fast-Write Cache capacity will be 16MB per adapter.

#6230 Supports:-

Connectivity to external disk enclosures and internal SSA configurations
Optional SSA Fiber-Optic Extender (Refer to MT 7133)
RAID 5 config supports (2+P) to (15+P) arrays and up to 6 (15+P) arrays
RAID 1 or RAID 0+1 config supports up to 8 mirrored disk drives and Hot Spares

System Boot:

Supported RS6000 & pSeries systems can be set to boot from #6230 provided a non-RAID SSA disk is included as part of the configuration. Other disks associated with the adapter can be RAID but at least one disk must be a non-RAID SSA disk. The non-RAID SSA disk can be located under the covers of a processor unit or in an external SSA storage unit. If the system is running with AIX 4.3.3 or later, native boot capability is supported.

For factory system orders with AIX preload requested, an internal SCSI disk drive will be preloaded as the native boot disk even if internal SSA disk drive(s) are present. If the system is running with AIX 4.2.1 or AIX 4.3.2, the below procedure applies in order to boot using the Advanced SerialRAID Plus Adapter:

The non-RAID SSA disk can be located under the covers of a processor unit or in an external SSA storage unit.

A supported AIX version of software (with proper updates) must be loaded to the non-RAID SSA disk using AIX's Network Install Manager (NIM) before booting from the non-RAID disk.

The system with a non-RAID SSA disk must have a network connection with another RS/6000 system performing the NIM Master function to perform the install. On RS/6000 SP systems, a similar network install is performed from a control workstation.

Once AIX with updates is installed on the non-RAID SSA disk and the system is configured for booting, booting will take place from the boot disk without any support from the control processor or NIM Master and the system does not have to be connected to the network at boot time.

3-Way Copy Function:

After October 3, 2000, a 3-Way Copy Function will be available. This allows a user to create a third copy to an existing RAID-1 or RAID 0+1 array while mirrored operation continues. 3-Way Copy allows the user, at any time after the copy process has completed, to split the third copy off from the original RAID-1 or RAID 0+1 array to form an independent RAID copy. This third copy or snapshot copy could be typically used to perform a backup or to test some new application.

The 3-Way Copy Function is available only via a code download and can only be gained by going to the SSA web support pages defined below.

SSA publications and other SSA Web sites:
http://www.storage.ibm.com/hardsoft/products/ssa/

SSA support code and download capability:
http://www.storage.ibm.com/hardsoft/products/ssa/rs6k/index.html

Limitations:
Internal ports on the adapter are not supported.

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6231 Advanced SerialRAID Plus Adapter 128MB DRAM Option Card — Serial Link/SSA Adapters

This is a field install only optional feature to the Advanced SerialRAID Adapter FC 6225 or a factory or field option for the Advanced SerialRAID Plus Adapter FC 6230.

This option is recommended for dual-initiator, fail-over, Fast Write Cache (FWC) configurations. The option increases the existing DRAM on the adapter to 128 MB.

In this type of dual-initiator FWC configuration, the existing DRAM does not have enough capacity to completely contain a copy of each adapter's 32MB FWC and also provide additional working space.

The 128 MB DRAM Option Card provides this additional space needed to contain a full copy of each adapters 32 MB FWC content and allows for full 32 MB fail-over protection.

If the 128 MB DRAM Option Card is not used with dual-initiator FWC configurations, the effective FWC capacity is reduced to 16 MB per adapter.

If this feature is ordered as a field upgrade to an existing SerialRAID adapter (#6225 or 6230), a CD-ROM with appropriate software and publications are also provided.

6235 32MB Fast-Write Cache Option Card — Serial Link/SSA Adapters

FC 6235 is a 32MB fast-write optional feature that plugs into the Advanced SerialRAID Adapter FC 6225.

The fast-write cache uses non-volatile RAM - (The data is retained after power off). This means that the write cache card can swapped from a failing adapter to a replacement adapter and retain cache data integrity.

The 32MB fast-write cache provides an significant improvement in data throughput and response time during certain sequence write operations compared to SCSI RAID adapters without the fast-write cache.

The response time and data transfer improvement vary depending upon the data block sizes, the percentage of sequential writes, machine type/model, and application parameters.

The Cache Option Card plugged into FC 6225 will operate in either non-RAID or RAID 5 mode, in a single-initiator configuration.

Requires FC 6225

6239 2 Gigabit Fibre Channel PCI-X Adapter (Type 5704) Fiber

Note: Although similar in function to FC #6228, this adpater is a PCI-X card. The #6228 is a PCI card.

64-bit PCI Bus (64-bit address/data), short form factor PCI-X adapter with LC type external fiber connectors that provides single or dual initiator capability over an optical fiber link or loop.

With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high speed local and remote located storage.

The adapter will auto-negotiate for the highest data rate (1Gbps or 2Gbps) of which the device or switch is capable.

Distances Supported:
Up to 500m at 1Gbps data rate.
Up to 300m at 2Gbps data rate.

When used with supported Fibre Channel storage switches supporting long-wave optics, distances of up to 10 Km are capable running at either 1Gps or 2Gps data rates.

The adapter can be used to attach devices either directly, or by means of Fibre Channel Switches.

If attaching a device or switch with a SC type fiber connector a converter cable is required:
#2456: LC-SC 50 Micron Fiber Converter Cable
#2459: LC-SC 62.5 Micron Fiber Converter Cable

Fibre Channel boot capability is supported with system firmware at the correct support level. Systems manufactured prior to November 30, 2001, may require a system firmware update. Refer to:
http://www.austin.ibm.com/support/micro/

Fibre Channel boot requires AIX 5.1 at the September 2001 maintenance level or later - along with a disk subsystem on which this boot capability has been qualified.

Requires: PCI or PCI-X slot
Length: 175 mm (6.9 in)
Height: 107 mm (4.2 in)
3.3V +/- 5% / 3.6A max

Maximum of 5 adapters per #6563 PCI planar.
Maximum of 10 adapters per #6571 PCI-X planar.

When mounting in a Blind Swap Cassete, an adapter bracket/clip is available.
The clip PN 44P2650 or 44P3912 is separately orderable.

AIX 5.1, or later

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6240 Cable - Integrated Battery Backup to Bulk Power Regulator Primary Rack Cables Miscl

This cable provides a connection between the integrated battery backup features located in the primary rack and the bulk power regulators located in the front and rear bulk power assemblies.

One cable is required for each primary and redundant integrated battery backup feature installed in the primary rack.

6241 Cable - Integrated Battery Backup to Bulk Power Regulator Expansion Pack Cables Miscl

This cable provides a connection between the integrated battery backup featues located in the expansion rack and the bulk power regulators located in the front and rear bulk power assemblies. One cable is required for each primary and redundant integrated battery backup feature installed in the expansion rack feature.

For 7040-61R/W42:
Max: 2
Requires:
Primary or Redundant Integrated Battery Backup FCs 6200/6201

For 9119-595:
Max: 1 from Front BPR in FC #5792 Power Expansion Rack to #8691 IBF in Expansion Rack - Primary backup

6242 Cable - Front Mount IBB to Rear BPR - Primary/Expansion Rack — Rack Related

Cable: Front Mounted Integrated Battery Backup to Rear BPR - Primary/Expansion Rack

This cable provides a connection between the Front Mounted Feature 6200 (Integrated Battery Backup, Primary) - located in the primary and expansion rack - and the bulk power regulators located in the rear bulk power assemblies.

For 7040-W42:
Max: 3

For 9119-595:
Two from Rear BPRs in #5792 Power Expansion Rack to Front IBF in the 5792 Rack (EIA-15) and Front IBF of #8691 Non-Powered Expansion Rack (EIA-13)

6251 Slim Line Doors - System and #5792 Racks — Rack Related

This feature provides Front and Rear Doors for use with the primary system rack or the #5792 Powered Expansion Rack.

This slimline door kit provides a minimized footprint for use where conservation of space is desired.

6252 Acoustic Doors - System and #5792 Racks — Rack Related

This feature provides Front and Rear Doors for use with the primary system rack or the #5792 Powered Expansion Rack.

This door kit provides acoustic dampening for use where a quieter environment is desired.

6253 Slim Line Doors - #8691 Expansion Rack — Rack Related

This feature provides Front and Rear Doors for use with the #8691 bolt on expansion rack.

This slimline door kit provides a minimized footprint for use where conservation of space is desired.

6254 Acoustic Doors - #8691 Expansion Rack — Rack Related

This feature provides Front and Rear Doors for use with the #8691 bolt on expansion rack.

This door kit provides additional acoustic dampening for use where a quieter environment is desired.

6258 36/72GB 4mm Internal Tape Drive — Tape Drives

36/70GB 4mm Internal Tape Drive.
5.25-inch, Half-High, Single-Ended 16-bit Tape Drive for save/restore and archive functions.

Characteristics:
Bexel Color : Black
Capacity : 36GB Native 70GB Compression
Form Factor : 5.25-inch half high
Media : 4mm DAT72 Data Cartridge
Technology : Helical scan, rotating head
Operation : Streaming
Data T/fer Rate : 3MBps Native 6MBps Compression
Interface : SCSI-2 Single Ended Async/Synchronous

Compatability:
R/W: DSS2 4GB / 8GB
R/W: DSS3 12GB / 24GB
R/W: DSS4 36GB / 70GB

Requires:
1x 1.6 inch (41mm) Half-High media bay
1x Internal SCSI-2 S/E 16-bit address

iSeries i5 also requires:
#0140 Logical Partitioning Specify
#0142 Linus Partition Specify and/or
#0145 AIX Partition Specify

Supported by OS levels:
AIX 5.2 or AIX 5.3 or later
AIX 5L for Power V5.2 for IBM eServer
SUSE LINUX Enterprise Server 9 for POWER, or later or
Red Hat Enterprise Linux AS for POWER Version 3

6312 Quad Digital Trunk Telephony PCI Adapter (Type 6312) Other Adapters

The Quad Digital Trunk Telephony PCI Adapter is a highly integrated, intelligent IO adapter designed for use in computer telephony applications.

The adapter is a 4 port, full length, universal PCI 2.2 compliant adapter. It performs voice processing for up to four T1 or E1 digital trunks, providing connectivity for 96 (T1) or 120 (E1) voice channels in a single PCI slot.

The adapter is made up of two separate cards. A base card that interfaces with the host system and performs telephony processing functions, and an adapter that provides the physical interface to the switch. The voice processing function is provided by WebSphere Voice Response for AIX LPP with Direct Talk Technology.

In conjunction with this adapter, network attachment cables using industry-standard RJ-48 connector can be obtained from commercial cable suppliers in a variety of lengths to suit the particular installation.

When 2 to 4 Quad Digital Trunk Telephony PCI Adapters (#6312) are ordered and planned to be used in a single partition, the Artic960RxD Quad DTA, H.100, 4-drop Cable (#2877) is required.

When more than 4 Quad Digital Trunk Telephony PCI Adapters (#6312) are ordered and planned to be used in a single partition, the H.100 Bus 8-Position Cable (#4353) is required.

Limitations: The Quad Digital Trunk Telephony PCI Adapter (#6312) cannot reside in the same system with the IBM ARTIC960RxD Quad Digital Trunk PCI Adapter (#6310).

The Quad Digital Trunk Telephony PCI Adapter (#6312) is only supported in machines running in a full system partition.

Requires: PCI slot and WebSphere Voice Response for AIX LPP application software.

pSeries p5 Specific:

Max: 2 9111-520
Max: 3 9113-550

iSeries i5 Specific:

Requires:
#0140 Logical Partitioning Specify
#0145 AIX Partition Specify

Supported OS levels:

AIX 5.2 or AIX 5.3, or later
AIX 5L for POWER V5.2 for IBM eServer, or later

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6458 Power Cord: Drawer to IBM PDU 250V/10A 14-ft Power Cord

pSeries Description:
Standard IBM rack power cable that goes from the system or I/O drawer to the rack power distribution unit (PDU).

iSeries Description:
#6458 power cord is used from a racked device to a #5160/#5161/#5162/5163/#7188 Power Distribution Unit in that same rack.

6460 Power Cord: Drawer to OEM PDU 125V/15A Plug Type #4 14-ft — Power Cord

pSeries Description:
This power cord goes from the system or I/O drawer to the rack power distribution unit. Plug type #4 (NEMA 5-15).

iSeries Description:
#6460 is a 14-foot 125V/15A power cord which distributes power from a wall outlet to a system unit.

#6460 has a Type 4 plug and an IEC320 C13 connector.

The following countries/regions use the #6460 power cord:

United States, Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Bonnaire, Calicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia, Montsderrrrat, Netherlands Antilles, Nicaragua, Panama, Peru, Phillipines, St. Kitts/Nevis, St. Martin, Taiwan, Tortola (BVI), Trinidad/Tobago, Venezuela.

6469 Power Cord: Drawer to OEM PDU 125V-250V/15A US Plug Type #5 14-ft — Power Cord

pSeries Description:
This power cord goes from the system or I/O drawer to the rack power distribution unit. Plug type #5 (NEMA 6-15).

iSeries Description:
#6469 is a 14-foot 250V/15A power cord which distributes power from a wall outlet to a system unit. #6469 has a Type 5 plug and an IEC320 C13 connector.

The following countries/regions use the #6469 power cord:

United States, Anguilla, Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Bonnaire, Caicos Is., Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, Ecuador, El Salvador, Guam, Guatamala, Haiti, Honduras, Jamaica, Japan, Micronesia, Montserrat, Netherlands Antilles, Nicaragua, Panama, Peru, Phillipines, St. Marten NA, Taiwan, Tortola (BVI), Thailand, Venezuela.

6470 Power Cord: To Wall 125V/15A Plug Type #4 6-ft — Power Cord

pSeries Description:
This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #4 (NEMA 5-15).

iSeries Description:
#6470 is a 6-FT 125V/15A power cable which distributes power from a power source to a system unit or an expansion unit. #6470 has a Type 4 plug and a IEC320 C13 connector.

The following countries/regions use the #6470 power cord:

United States, Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Bonnaire, Calicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia, Montsderrrrat, Netherlands Antilles, Nicaragua, Panama, Peru, Phillipines, St. Kitts/Nevis, St. Martin, Taiwan, Tortola (BVI), Trinidad/Tobago, Venezuela.

6471 Power Cord: Wall/OEM PDU 125V/15A Plug Type #70 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #70 (iNMETRO NBR 6147 NEMA 5-15).

The following countries/regions use the #6471 power cord: Brazil

6472 Power Cord: Wall/OEM PDU 250V/16A Plug Type #18 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #18 (CEE 7 VII).

The following countries/regions use the #6472 power cord:

Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Belarus, Belgium, Benin, Bosnia/Herzegovina, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Conogo, Croatia, Czech Republic, Dahomey, Djibuouti, Egypt, Equatorial Guinea, Eritrea, Estonia, Etrhiopia, Finland, France, French Polynesia, French Guyana, Gabon, Georgia, Germany, Greece, Guadeloupe, Guinea, Guinea-Bissau, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Kazakhstan, Krygystan, Laos, Latvia, Lebanon, Lintuania, Luxembourg, Macau, Macedonia, Mali, Martinigue, Mauritania, Mauritus, Mayotte, Moldova, Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, North Korea (C19 only), Norway, Poland, Portugal, Principe, Reunion, Romania, Russia, Rwanda, St. Thomas, Saudi Arabia, Senegal, Serbia, Slovenia, Somalia, South Korea (C19 only), Spain, Surinam, Sweden, Syria, Tahiti, Tajikistan, Togo, Tunesia, Turkey, Turkmenistan, Ukraine, Upper Volta, Uzbekistan, Vanuatu, Vietnam, Wallis & Futuna, Zaire, Zimbabwe.

6473 Power Cord: Wall/OEM PDU 250V/10A Plug Type #19 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #19 (CEE).

The following countries/regions use the #6473 power cord: Denmark

6474 Power Cord: Wall/OEM PDU 250V/13A Plug Type #23 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #23 (BS 1364A).

The following countries/regions use the #6474 power cord:

Abu Dhabi, Bahrain, Botswana, Brunei, Channel Islands, Cyprus, Dominica, Gambia, Grenada, Grenadines, Guyana, Hong Kong, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar, Nkigeria, Oman, Qatar, Sierra Leone, Singapore, St. Kitts, St. Lucia, Seychelles, Sudan, Tanzania, Trinidad & Tobago, United Arab Emirates, United Kingdom, Yemen, Zambia

6475 Power Cord: Wall/OEM PDU 250V/16A Plug Type #32 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #32 (SII 32-1971).

The following countries/regions use the #6475 power cord: Israel

6476 Power Cord: Wall/OEM PDU 250V/10A Plug Type #24 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #24 (SEV 24507).

The following countries/regions use the #6476 power cord: Lichtenstein, Switzerland

6477 Power Cord: Wall/OEM PDU 250V/16A Plug Type #22 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #22 (SABS 164).

The following countries/regions use the #6477 power cord:

Bangladesh
LeSotho
Maceo
Maldives
Nambia
Pakistan
Samoa
South Africa
Sri Lanka
Swaziland
Uganda

6478 Power Cord: Wall/OEM PDU 250V/16A Plug Type #25 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #25 (CEI 23-16).

The following countries/regions use the #6478 power cord:
Chile
Italy
Libya

6479 Power Cord: Wall/OEM PDU 250V/10A Plug Type #6 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #6 (AS 3112-1964 NZS 198).

The following countries/regions use the #6479 power cord:
Australia
Fiji Islands
Kiribati
Nauru
New Zealand
Papua New Guinea
W. Samoa

6487 Power Cord: To Wall 250V/15A US Plug Type #5 6-ft — Power Cord

pSeries Description:
This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #5 (NEMA 6-15).

iSeries Description:
#6487 is a 6-foot 250V/15A power cord which distributes power to a system unit or expansion tower/rack. #6487 has a Type 5 plug and a IEC320 C13 connector.

The following countries/regions use the #6487 power cord:

United States, Anguilla, Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Bonnaire, Caicos Is., Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, Ecuador, El Salvador, Guam, Guatamala, Haiti, Honduras, Jamaica, Japan, Micronesia, Montserrat, Netherlands Antilles, Nicaragua, Panama, Peru, Phillipines, St. Marten NA, Taiwan, Tortola (BVI), Thailand, Venezuela.

6488 Power Cord: Wall/OEM PDU 125V/15A or 250V/10A Plug Type #2 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet.

The following countries/regions use the #6488 power cord:
Argentina
Paraguay
Uruguay

6493 Power Cord: Wall/OEM PDU 250V/10A Plug Type #62 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #62 (GB 1053).

The following countries/regions use the #6493 power cord: People's Republic of China

6494 Power Cord: Wall/OEM PDU 250V/10A Plug Type #69 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #69 (IS 6538).

The following countries/regions use the #6494 power cord: India

6495 Power Cord: Wall/OEM PDU 250V/10A Plug Type #64 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #64.

The following countries/regions use the #6495 power cord: Brazil

6496 Power Cord: Wall/OEM PDU 250V/10A Plug Type #66 9-ft — Power Cord

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #66 (KETI).

The following countries/regions use the #6496 power cord: North Korea, South Korea

6497 Power Cord: Wall/OEM PDU 250V/15A Plug Type #10 6-ft — Power Cord

pSeries Description:
This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #10 (NEMA L6-15).

iSeries Description:
#6497 is a 6-foot 250V/15A power cord which distributes power to a system unit or expansion tower/rack. #6497 has a Type 10 plug and a IEC320 C13 connector.

The following countries/regions use the #6497 power cord:

Canada, Colombia, Japan, Mexico, United States

6498 Power Cord: Wall/OEM PDU 250V/15A Plug Type #34 6-ft — Power Cord

pSeries Description:
This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #34 (RS 3720U-2).

iSeries Description:
#6498 is a 6-foot 250V/15A power cord which distributes power to a system unit or expansion tower/rack. #6498 has a Type 34 plug and a IEC320 C13 connector.

The following countries/regions use the #6498 power cord:

Canada, Japan, United States

6574 Ultra320 SCSI 4-Pack — SCSI Back Planes

pSeries non p5 Description:

This feature provides an enclosure with backplane that can contain up to 4 Ultra320 SCSI disk drives.

pSeries p5 Description:

This feature provides an enclosure with backplane that can contain up to 4 Ultra3 SCSI disk drives.

For pSeries p5 9111-520

Max: 2 of #6574 and #6594.

iSeries Description:

The #6574 is a disk backplane feature that enables the second set of four disk unit slots in the system to be used.

Disk units plugged into the #6574 are controlled by the integrated base disk controller or by the #5709 (if present).

General Note:

This feature was "renamed and re-announced" in IBM's 10/14/03 pSeries announcement.

Originally released as Ultra160 compliant (Ultra3 SCSI), IBM now determine this feature to be Ultra320 SCSI.

Ultra320 is also known as Ultra4 and Fast160 SCSI
Ultra160 is also known as Ultra3 and Fast80 SCSI

It is unknown how this affects any FRUs/PNs previously announced, ie: 00P5684 Disk Drive Backplane

It may be that this PN always was U320 compliant and someone at IBM does not understand the difference between Ultra3 and Ultra320. In which case, PN compatability is unlikely to be an issue.

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6587 Acoustic Option - Rear Muffler — Miscl

pSeries Description:

This feature provides a rear muffler that will decrease system noise.

The rear muffler adds approximately 5.6 inches to the depth of the system.

iSeries Description:

A decorative rear cover which has sound deadening capability. This cover is for servers which do not have external I/O attached to an HSL loop.

The cover can not be used if HSL cables are attached to the server.

6592 Ultra320 SCSI 4-Pack — SCSI Back Planes

pSeries Description:

This feature provides an enclosure that can contain up to 4 Ultra320 SCSI disk drives.

Requires: Empty enclosure location.

9113-550, 9124-720:
Min: 1
Max: 2

iSeries Description:

The #6592 is a disk backplane feature that enables the second set of four disk unit slots in the system to be used.

Disk units plugged into the #6592 are controlled by the integrated base disk controller or by the #5709 (if present).

Requires: Available disk unit backplane connection slot

6593 Ultra320 SCSI 4-Pack for Disk Mirroring — SCSI Back Planes

This feature provides an enclosure that can contain up to 4 Ultra320 SCSI disk drives. #6593 may be used for Disk Mirroring.

Requires the following (or follow-ons):
FC 5712 PCI-X Dual Channel Ultra320 SCSI Adapter or
FC 5703 PCI-X Dual Channel Ultra320 SCSI RAID Adapter and
FC 4267 PCI-X adapter to hot-swap disk enclosure cable.

Requires: Empty enclosure location.

Supported OS levels:
AIX 5.2 or AIX 5.3 or later
SUSE LINUX Enterprise Server 9 for POWER or later
Red Hat Enterprise Linux AS for POWER Version 3

6594 Ultra320 SCSI 4-Pack for Disk Mirroring — SCSI Back Planes

This feature provides an enclosure that can contain up to 4 Ultra320 SCSI disk drives. #6594 may be used for disk mirroring.

Requires the following (or follow-ons):
FC 5712 PCI-X Dual Channel Ultra320 SCSI Adapter or
FC 5703 PCI-X Dual Channel Ultra320 SCSI RAID Adapter and
FC 4267 PCI-X adapter to hot-swap disk enclosure cable.

Maximum of 2 of #6574 and #6594

Requires: Empty enclosure location.

Supported OS levels:
AIX 5.2 or AIX 5.3 or later
SUSE LINUX Enterprise Server 9 for POWER or later
Red Hat Enterprise Linux AS for POWER Version 3

6851 Slim Line Doors - OEM System and #5792 Racks — Rack Related

This feature provides Front and Rear Doors for use with the primary system rack or the #5792 Powered Expansion Rack.

This slimline door kit provides a minimized footprint for use where conservation of space is desired.

6852 Acoustic Doors - OEM System and #5792 Racks — Rack Related

This feature provides OEM Front and Rear Doors for use with the primary system rack or the #5792 Powered Expansion Rack.

This door kit provides acoustic dampening for use where a quieter environment is desired.

6853 Slim Line Doors - OEM #8691 Expansion Rack — Rack Related

This feature provides Front and Rear Doors for use with the #8691 bolt on expansion rack.

This slimline door kit provides a minimized footprint for use where conservation of space is desired.

6854 Acoustic Doors - OEM #8691 Expansion Rack — Rack Related

This feature provides OEM Front and Rear Doors for use with the #8691 bolt on expansion rack.

This door kit provides additional acoustic dampening for use where a quieter environment is desired.

7160 IBM Rack-Mount Drawer Rail Kit — Mounting Hardware

This feature provides a rack rail kit used to install a rack-mount system in an IBM 19-inch rack.

Feature #7160 or #7161 must be ordered if feature #7918 or #7873 is ordered.

7161 OEM Rack-Mount Drawer Rail Kit — Mounting Hardware

This feature provides a rack rail kit used to install a rack-mount system in an OEM 19-inch rack.

Feature #7160 or #7161 must be ordered if feature #7918 or #7873 is ordered.

7162 IBM Rack-Mount Drawer Rail Kit — Mounting Hardware

This feature provides a rack rail kit used to install a rack-mount system in an IBM 19-inch rack.

Feature #7162 or #7163 must be ordered if feature #7886 or #7874 is ordered.

7163 OEM Rack-Mount Drawer Rail Kit — Mounting Hardware

This feature provides a rack rail kit used to install a rack-mount system in an OEM 19-inch rack.

Feature #7162 or #7163 must be ordered if feature #7886 or #7874 is ordered.

7164 IBM Rack-Mount Drawer Rail Kit — Mounting Hardware

This feature provides a rack rail kit used to install a rack-mount system in an IBM 19-inch rack.

Each drawer in the system requires one rack rail kit, either #7164 or #7165.

7165 OEM Rack-Mount Drawer Rail Kit — Mounting Hardware

This feature provides a adjustable depth rack rail kit used to install a rack-mount system in an OEM 19-inch rack.

Each drawer in the system requires one rack rail kit, either #7164 or #7165.

7305 AAP Software Pre install - SDF Ship — Miscl

Software pre-install indicator for Authorized Assemblers

7600 One Processor Entitlement for Processor Feature #5231 1.5GHz 1-way 0MB L3 — CUoD Processor

This feature number will permanently entitle the processor on a 5231 processor card.

AIX 5.2 or AIX 5.3, or later

7601 One Processor Entitlement for Processor Feature #5239 1.5GHz 1-way 0MB L3 CUoD Processor

This feature number will permanently entitle the processor on a 5239 processor card.

AIX 5.2 or AIX 5.3, or later

7602 One Processor Entitlement for Processor Feature #5226 1.5GHz 1-way 36MB L3 CUoD Processor

This feature number will permanently entitle one processor on a 5226 processor card.

AIX 5.2 or AIX 5.3, or later

7603 One Processor Entitlement for Processor Feature #5264 1.5GHz 2-way 36MB L3 CUoD Processor

This feature number will permanently entitle the first or second processors on feature number 5264.

AIX 5.2 or AIX 5.3, or later

7606 One Processor Entitlement for Processor Feature #5229 1.65GHz 2-way 36MB L3 CUoD Processor

This feature number will permanently entitle one processor on a 5229 processor card.

AIX 5.2 or AIX 5.3, or later

7799 256 Memory Activations for #7835 Memory DIMMS Memory CUoD

This feature provides 256 1GB memory #7970 CUoD memory activations for use on multiple #7835 memory DIMMS.

This feature is provided for ease of ordering.

Provides: 256x #7970 Memory Activations
Requires: 256GB Inactive CUOD Memory on #7835 Memory DIMMS

7801 HMC Ethernet Attachment Cable 6.0m Cables Miscl

This feature provides a 6.0m Ethernet cable for attachment of a Hardware Management Console to the system unit.

7802 HMC Ethernet Attachment Cable 15m Cables Miscl

This feature provides a 15m Ethernet cable for attachment of a Hardware Management Console to the system unit.

7803 Bulk Power Controller Assembly Power Supplies

This power controller provides the base power connections for the internal power cables.

2x #7803 Bulk Power Controller Assemblies are required for the 9119 system rack.

2x Additional #7803 BPCs are required when the optional Powered Expansion Rack (#5792) is ordered.

7807 Cooling Group Miscl

This feature provides two additional cooling fans. It is used when additional cooling is required for the Central Electronics Complex.

9119-590: This feature is required on p5-590 servers equipped with 2x #7981 POWER5 Standard Processor Books.

9119-595: This feature is required on p5-595 servers equipped with one or more #7813 POWER5 Turbo Processor Books or with two or more #7988 POWER5 Standard Processor Books.

7809 DC Power Converter - Processor Book Power Supplies

This feature converts power from the bulk power assembly to the voltage levels required for the components in the processor books for the Central Electronics Complex.

9119-590: Min: 3 Max: 6
9119-595: Min: 3 Max: 12

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7810 Processor Clock Card - Programmable — CPU Regulators

This feature provides programmable processor and system clocking.

Requires: Empty Clock Card Position
9119-590/595: Min: 2 Max: 2

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7811 System Service Processor — Miscl

This feature provides the service processor and associated cables required to control the server.

Requires: Empty service processor position
9119-590/595: Min: 2 Max: 2

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7812 Multiplexer (MUX) Card — Miscl

The multiplexer card provides communication between the individual processor books and the service processor.

One #7812 Multiplexer Card is required per processor book.

9119-590: Min: 1 Max: 2
9119-595: Min: 1 Max: 4

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7813 16-Way POWER5 Turbo CUoD Processor Book 0-Way Active — CUoD Processor

This feature provides a POWER5 Turbo processor book with capacity Upgrade on Demand.

The processors are packaged on two 8-way Multi Chip Modules (MCMs). Each pair of processors is supported by 1.9MB of L2 cache and 36MB of L3 cache.

Each 16-way processor book also provides six RIO-2 loop adapter slots and 16 memory slots.

9119-595: Max: 4

AIX 5L for POWER V5.2 with the 5200-04 Recommended Maintenance package (APAR IY56722) or later, plus APAR IY60347; or AIX 5L V5.3 with APAR IY60349.

7814 4GB DDR2 Memory Card 533MHz — Memory (PCI Bus)

This feature provides one 4GB DDR2, 533MHz memory card.

9119-590: Max: 32
9119-595: Max: 64

7815 #7813 CUoD Processor Book Activation - One Processor — CUoD Processor

This feature permanently activates one processor on CUoD processor feature #7813.

9119-595: Max: 64

AIX 5L for POWER V5.2 with the 5200-04 Recommended Maintenance package (APAR IY56722) or later, plus APAR IY60347; or AIX 5L V5.3 with APAR IY60349.

7816 4GB DDR1 CUoD Memory Card - 2GB Active — Memory (PCI Bus)

This feature provides one 4GB 266MHz DDR1 memory card with 2GB active. It is used to provide memory Capacity Upgrade on Demand.

9119-590: Max: 32
9119-595: Max: 64

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7818 Two Port RIO-2 (Remote I/O) Loop Adapter — RIO/SPCN

This feature provides two RIO-2 connections for the attachment of one RIO-2 loop.

A Maximum of 6 per Processor Book are allowed.

9119-590: Min: 2 Max: 12
9119-595: Min: 2 Max: 24

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7821 Power Cable Group - CEC Primary Fans — Power Control Cable

This cable assembly provides redundant power for the CEC, primary blower assembly.

Requires:
CEC Assy with 1x #7813 16-Way POWER5 Turbo CUoD Processor Book
#7803 Bulk Power Controller Assembly

For 9119-590/595: Min/Max: 1

7822 Power Cable Group - 1st CEC Book — Power Control Cable

This cable group provides redundant power to CEC Node 1

9119-590/595: Min/Max: 1

7823 Power Cable Group - 2nd CEC Book — Power Control Cable

This cable group provides redundant power to CEC Node 2

7824 Power Cable Group - 3rd CEC Book — Power Control Cable

This cable group provides redundant power to CEC Node 3

7825 Power Cable Group - 4th CEC Book — Power Control Cable

This cable group provides redundant power to CEC node 4

7826 Power Cable Group - 7807 Cooling Group — Power Control Cable

This cable assembly provides redundant power for the CEC, secondary blower assembly.

Requires:
CEC assembly with #7807 2nd Node Cooling Group (2 fans)
Second #7813 16-Way POWER5 Turbo CUoD Processor Book

7828 16GB DDR1 Memory Card 266MHz — Memory (PCI Bus)

This feature provides one 16GB DDR1, 266MHz memory card.

9119-590: Max: 32
9119-595: Max: 64

7829 32GB DDR1 Memory Card 200MHz — Memory (PCI Bus)

This feature provides one 32GB DDR1, 200MHz memory card.

9119-590: Max: 32
9119-595: Max: 64

7830 1.65GHz 2-Way POWER5 CUoD Processor Card 0-Way Active — CPU - POWER5

2-way 1.65GHz Processor Card with Capacity Upgrade on Demand.

The two processors share 36MB of L3 cache and 1.9MB of L2 cache.

There are 8x DDR-1 DIMM slots on the processor card which may be used without activating the processors.

OS level required:
AIX 5.2 or AIX 5.3 or later

7832 1.9GHz 2-Way POWER5 CUoD Processor Card 0-Way Active — CPU - POWER5

2-way 1.9GHz processor card with Capacity Upgrade on Demand.

The two processors share 36MB of L3 cache and 1.9MB of L2 cache.

There are 8x DDR-1 DIMM slots on the processor card which may be used without activating the processors.

AIX 5.2 or AIX 5.3 or later

7833 1.9GHz 2-Way POWER5 CUoD Processor Card 0-Way Active — CPU - POWER5

2-way 1.9GHz processor card with Capacity Upgrade on Demand.

The two processors share 36MB of L3 cache and 1.9MB of L2 cache.

There are 8x DDR-2 DIMM slots on the processor card which may be used without activating the processors.

AIX 5.2 or AIX 5.3 or later

7834 1.5GHz 2-Way POWER5 Processor Card 0-Way Entitled — CPU - POWER5

2-way 1.5GHz processor card with no processors entitled.

The two processors share 36MB of L3 cache and 1.9MB of L2 cache.

There are 8x DDR-1 DIMM slots on the processor card.

Feature 7834 requires entitlement of both processors.

Requires:
One processor card slot and two processor entitlements (#7929 and/or #8456)

OS level required:
AIX 5.2 or AIX 5.3 or later

7835 8GB DDR1 CUoD Memory Card 4GB Active — Memory CUoD

This feature provides one 8GB 266MHz DDR1 memory card with 4GB active. It is used to provide memory Capacity Upgrade on Demand.

9119-590: Max: 32
9119-595: Max: 64

7837 Bulk Power Distribution Assembly — Power Supplies

This Power distribution assembly provides connector locations for cable attachment of I/O drawers and CEC DC power converters.

9119-590: Min: 2 Max: 6
9119-595: Min: 2 Max: 8

7839 On/Off Processor Enablement for #7981 — CUoD Processor

This feature enables the server for On/Off Capacity on Demand for processor book feature #7981 16-Way POWER5 Standard CUoD Processor Book, 0-Way Active.

Once enabled, processors may be requested on a temporary basis.

Requires: On/Off Capacity on Demand contract before ordering this feature.

9119-590: Max: 1

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7847 I/O Drawer Cable Group - 8691 Rack/13U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 13U location of the expansion rack.

This cable provides redundant power to EIA13 of the #8691 Bolt-On Expansion Rack when it is attached to the CEC Rack.

This is not the same as cable #6128 which is used when #8691 is attached to the #5792 Powered Expansion Rack.

7848 I/O Drawer Attach Cable Group - Drawer Pos #4419 (Alternate) - 19U — Rack Placement

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 19U location of the expansion rack. It connects the I/O drawer to an alternate power connection location when required for specific server configurations.

This feature is required when FC 6202 Power Cable Group - CEC to Power Controller (Additional Power) is configured on the 7040-681 CEC and a 7040-61D I/O drawer is located in the 19U position (#4419) of the expansion rack.

7849 Drawer Attachment Cable Group: Drawer Position 4423 - 23U — Rack Placement

This feature provides redundant power cabling for a drawer with the bottom of the drawer positioned at the 23U location of the expansion rack.

Requires: Drawer with Placement Feature 4423: Drawer Placement Indicator - 23U Position, Expansion Rack

Max: 1

7850 Drawer Attachment Cable Group: Drawer Position 27U — Rack Placement

This feature provides redundant power cabling for a drawer with the bottom of the drawer positioned at the 27U location of the expansion rack.

For 7045-SW4:
Requires: Drawer with 4427 Drawer Placement Indicator - 27U

7851 Drawer Attachment Cable Group: Drawer Position 31U — Rack Placement

This feature provides redundant power cabling for a drawer with the bottom of the drawer positioned at the 31U location of the expansion rack.

It connects the I/O drawer to an alternate power connection location when required for specific server configurations.

For 7045-SW4:
Requires: Drawer with 4431 Drawer Placement Indicator - 31U

7853 I/O Drawer Cable Group - 5792 Rack/1U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 1U location of the Powered I/O Rack.

7854 I/O Drawer Cable Group - 5792 Rack/5U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 5U location of the Powered I/O Rack.

7855 I/O Drawer Cable Group - 5792 Rack/9U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 9U location of the Powered I/O Rack.

7856 I/O Drawer Cable Group - 5792 Rack/13U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 13U location of the Powered I/O Rack.

7857 I/O Drawer Cable Group - 5792 Rack/19U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 19U location of the Powered I/O Rack.

7858 I/O Drawer Cable Group - 5792 Rack/23U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 23U location of the Powered I/O Rack.

7859 I/O Drawer Cable Group - 5792 Rack/27U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 27U location of the Powered I/O Rack.

7860 I/O Drawer Cable Group - Primary Rack/31U — Cluster Power Control

This feature provides redundant power cabling for an I/O drawer with the bottom of the drawer positioned at the 31U location of the Powered I/O Rack.

7861 PCI Blind Swap Cassette Kit - Single Wide Short Adapters - Type II — Blind Swap Cassette

This feature contains a blind swap cassette for single slot width PCI adapters installed in a 32-bit short PCI slot.

7862 PCI Blind Swap Cassette Kit - Single Wide Adapters - Type II — Blind Swap Cassette

This feature contains a blind swap cassette for single slot width PCI adapters.

It also includes the necessary hardware to adapt the cassette to mount various sizes of PCI cards.

7863 PCI Blind Swap Cassette Kit - Double Wide Adapters - Type II — Blind Swap Cassette

This feature contains a blind swap cassette for double slot width PCI adapters.

It also includes the necessary hardware to adapt the cassette to mount various sizes of PCI cards.

7865 Processor Enclosure And Backplane — CPU Backplane

This feature provides an enclosure and a backplane for up to two processor cards.

Each system drawer requires one #7865 Processor Enclosure And Backplane.

7866 I/O Backplane 6 PCI-X Slots — Miscl Backplane

This feature provides six PCI-X 64-bit, 3.3 volt, 133MHz slots for I/O adapter cards.

OS level required: AIX 5.2 or AIX 5.3

7867 System Midplane — Miscl Backplane

The System Midplane is a riser card that provides interconnections between the modular subsystems in the system drawer.

Each system drawer requires one #7867 System Midplane.

7868 Ultra320 SCSI 6-pack Backplane — SCSI Back Planes

This feature provides an enclosure and backplane connections for up to six Ultra320 SCSI disk drives.

Each system drawer requires one 7868 Ultra320 SCSI backplane.

OS level required:
AIX 5.2 or AIX 5.3

7869 Media Enclosure And Backplane — Miscl Backplane

This feature provides an enclosure and backplane connections for up to two Slimline media devices.

7870 Power Distribution Backplane — Miscl Backplane

The power distribution backplane provides the internal power connections between the power supplies and the other components in the drawer.

Each drawer in the system requires one #7870 Power Distribution Backplane.

7871 One Processor Activation for CUoD Processor Feature #5237 — CUoD Processor

This feature number will activate the first or second processor on the first or second processor FC #5237.

Requires: FC #5237: 1.65GHz 2-way POWER5 CUoD Processor Card 0-Way Active

7875 Processor Power Regulator — Regulator

This feature provides the needed power/voltage to allow the processors to operate.

All configurations with two or more drawers must have three #7875 regulators per drawer.

Drawers with one 1.5GHz or 1.65GHz processor card must have at least one #7875 regulator.

Drawers with two 1.5GHz or 1.65GHz processor cards must have at least two #7875 regulators.

Drawers with one 1.9GHz processor card must have at least two #7875 regulators.

Drawers with two 1.9GHz processor cards must have three #7875 regulators.

7876 Processor Power Regulator — Regulator

This feature is required on the model 550 when a processor is installed in a processor slot.

At least one is required since a model 550 requires one processor card in the minimum configuration.

The regulator provides the needed power/voltage to allow the processors to operate.

9113-550, 9124-720:
Minimum: 1
Maximum: 2

OS levels required:
AIX 5.2 or AIX 5.3 or later

SUSE LINUX Enterprise Server 9 for POWER, or later, or Red Hat Enterprise Linux AS for POWER Version 3

7877 Media Backplane — Miscl Backplane

This feature is required to support the system control panel and any media device installed in the system.

7878 Serial Port Riser Card — Miscl Backplane

This riser card provides two 9-pin serial ports at the rear of the chassis.

Each drawer in the system requires one #7878 card.

7879 System Drawer Enclosure — I/O Drawer

This feature provides the chassis and covers for a single drawer of the system.

7881 Service Processor — Miscl

#7881 is the Model 570 Service Processor.

#7881 contains the system Rack Indicator Port, two SPCN (RS485) ports for control of attached I/O subsystems, and two FSP Ethernet / Hardware Management Console (HMC) ports.

7886 IBM Rack-mount Drawer Bezel and Hardware — Rack Related

Indicates that this order is for a rack-mount system requiring IBM bezel and hardware.

System will ship with IBM mounting rails for installation in an IBM rack.

For pSeries p5 9113-550:
Either FC #7887, #7917, #7886, #7874 must be on initial order.

7887 IBM Deskside Cover Set — Miscl

Indicates that this order is for a deskside system requiring IBM cover set.

For pSeries p5 9113-550:
Either FC #7887, #7917, #7886, #7874 must be on initial order.

7888 1400W AC Power Supply — Power Supplies

This feature provides one 1400 watt AC power supply for a server drawer.

Each server drawer requires two #7888 power supplies.

7889 1475W Hot-Swap AC Power Supply - Base and Redundant **Power Supplies**

This feature provides a 1475 watt AC power supply, either as the primary power supply in the system, or the secondary power supply for redundant power.

For pSeries p5 9113-550, 9124-720:
Each power supply, base and redundant, comes with one power cord

For iSeries i5 9406-550:
#7889 requires an additional CEC line cord feature to be ordered

7890 4/8GB (4x 2048MB) DDR-1 DIMMs CUoD (4GB Active) **Memory CUoD**

This feature provides 8192MB of system memory via 4x 2048MB DIMMs.

4096MB of memory is active.

It is used to provide memory Capacity Upgrade on Demand.

The 4GB of additional memory may be activated in increments of 1GB.

Requires:
Four empty DDR1 memory DIMM positions
Capacity Upgrade on Demand Server

For pSeries p5 9117-570, iSeries i5 9406-570:
Max: 16

7892 2048MB (4x512MB) DIMMs 276-pin 533MHz DDR2 SDRAM **Memory (PCI Bus)**

Provides 2048MB of DDR2 system memory with 4x 512MB DIMMs.

7893 4096MB (4x 1024MB) DDR-2 DIMMs 276-pin 533MHz DDR2 SDRAM **Memory (PCI Bus)**

Provides 4096MB of DDR2 system memory via 4x 1024MB DIMMs.

7897 One Processor Activation for CUoD Processor Feature #7830: 1.65GHz 2-Way POW **CUoD Processor**

This feature number will permanently activate the first or second processor on a #7830: 1.65GHz 2-Way POWER5 CUoD Processor Card.

Max: 16

7898 One Processor Activation for CUoD Processor Feature #7832: 1.9GHz 2-Way POWE **CUoD Processor**

This feature number will permanently activate the first or second processor on a #7832: 1.9GHz 2-Way POWER5 CUoD Processor Card

Max: 16

7899 One Processor Activation for CUoD Processor Feature #7833: 1.9GHz 2-Way POWE **CUoD Processor**

This feature number will permanently activate the first or second processor on a #7833: 1.9GHz 2-Way POWER5 CUoD Processor Card

Max: 16

7912 IBM Deskside Cover Set **Miscl**

Indicates that this order is for a deskside system requiring IBM cover set.

Either #7912 or #7914 must be on initial order.

7914 IBM Rack-mount Drawer Bezel and Hardware **Rack Related**

Indicates that this order is for a rack-mount system requiring IBM bezel and hardware.

Either #7912 or #7914 must be on initial order.

7918 IBM Rack-mount Drawer Bezel and Hardware **Rack Related**

Indicates that this order is for a rack-mount system requiring IBM bezel and hardware.

Either feature #7919, #7916, #7918, or #7873 must be on initial order.

7919 IBM Deskside Cover Set — Miscl

Indicates that this order is for a deskside system requiring IBM cover set.

Either feature #7919, #7916, #7918, or #7873 must be on initial order.

7924 RIO-2 (Remote I/O) Cable 0.6m — RIO/SPCN

This 0.6M Remote I/O cable is utilized to connect between the left and right sections of an I/O drawer.

7925 #7981 CUoD Processor Book Activation - One Processor — CUoD Processor

This feature permanently activates one processor on CUoD processor feature #7981.

9119-590: Min: 8 Max: 32

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7926 30 Days Prepaid Reserve Capacity for #7981 — CUoD Processor

This feature provides 30 processor-days of prepaid reserve capacity for feature #7981 processor book.

To establish reserve processor capacity on the server, select a quantity of inactive processors to be placed in the server's Shared Processor Pool as reserve processors.

Once the server recognizes that non-reserve processors (permanently activated processors) assigned and/or available to the uncapped partitions have been 100% utilized, use of additional processors will cause processor-days (good for a 24-hour period) to be subtracted from the prepaid number of processor-days.

Requires:
#7992 Advanced Power Virtualization
AIX 5L V5.3 with APAR IY60349 /later.

7929 One Processor Entitlement for Processor Feature #7834: 1.5GHz 2-Way POWER5 P — CUoD Processor

This feature number will permanently entitle one processor on a #7834: 1.5GHz 2-Way POWER5 Processor Card

AIX 5.2 or AIX 5.3

7930 On/Off Processor Enablement for CoD — CUoD Processor

The enablement feature gives the customer the authority to self manage the amount of On/Off resources used. Once enabled, the customer can request processors on a temporary basis.

In order to obtain this enablement feature, the customer must sign a contract which obligates them to provide IBM with a monthly usage report.

This feature includes a usage monitor which tracks the customer managed amount of activated processors.

7931 On/Off Processor Billing for CoD — CUoD Processor

Billing for On/Off is implemented by how many processor days are used.

This feature is used to bill the customer for the amount of On/Off resources used.

Once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, on/off usage must be reported to IBM at least monthly.

This information, used to compute billing data, is then provided to the customer's sales channel.

The sales channel will place an order for a quantity of On/Off Processor Day Billing features and bill the customer.

One #7931 should be ordered for each billable processor day.

Requires: #7930 On/Off Processor Enablement feature

7934 Reserve Capacity Prepaid for CoD — CUoD Processor

#7934 provides 30 processor-days of reserve capacity on a Capacity on Demand server.

To establish reserve capacity on the server, select a quantity of inactive processors to be placed in the server's Shared Processor Pool as reserve processors.

When the server recognizes that non-reserve processors (permanently activated processors) assigned and/or available to the uncapped partitions have been 100% utilized, a reserve processor is activated and a Processor Day (good for a 24-hour period) is subtracted from the prepaid amount of days.

7937 Bolt-Down Kit - Low-Raised Floor — Rack Related

This feature provides rack ruggedizing and bolt down hardware for securing rack to a concrete floor beneath a 9.25" to 11.75" (235mm to 298mm) raised floor.

Installation of this feature will help to secure and protect the rack and it's contents from damage when exposed to vibrations and shocks such as those in a seismic event.

7938 Bolt-Down Kit - High-Raised Floor — Rack Related

This feature provides rack ruggedizing and bolt down hardware for securing rack to a concrete floor beneath a 11.75" to 16.0" (298mm to 405mm) raised floor.

Installation of this feature will help to secure and protect the rack and it's contents from damage when exposed to vibrations and shocks such as those in a seismic event.

7939 Bolt-Down Kit - Non-Raised Floor — Rack Related

This feature provides rack ruggedizing and bolt down hardware for securing rack to a concrete floor.

Installation of this feature will help to secure and protect the rack and it's contents from damage when exposed to vibrations and shocks such as those in a seismic event.

7940 Advanced POWER Virtualization — Miscl

This feature allows the customer to create partitions that are in units of less than 1 CPU (sub-CPU LPARs) and allows the same system I/O to be virtually allocated to these partitions.

When Virtualization is installed in the system, all processors must have the Virtualization feature.

A 2-way system requires that two of this feature be ordered.

An encrypted key is supplied to the customer and installed on the system, authorizing the partitioning at the sub-processor level.

Partition Load Manager is included to provide cross partition workload management across the partitions.

OS levels:
AIX 5.3 or later
SUSE LINUX Enterprise Server 9 for POWER or later
Red Hat Enterprise Linux AS for POWER Version 3 or later

7941 Advanced POWER Virtualization — Miscl

This feature allows customers to create partitions in units of less than 1 CPU (sub-CPU LPARs) and allows the same system I/O to be virtually added to these partitions.

An encrypted key is supplied to the customer and installed on the system, authorizing the partitioning at the sub-processor level.

#7941 also includes a software component (Partition Load Manager) to provide cross partition workload management across the partitions.

Advanced POWER Virtualization combines three components:
Firmware feature to turn on micro-partitioning (#7941)
Software feature to activate the I/O Virtualization
Software feature providing partition load management

At initial order entry, selecting FC 7941 will result in micropartitioning to be enabled during manufacture and the enabling software media and publications to be shipped to the customer.

When ordering FC 7941 as an MES, an activation key will be posted on an IBM Web site and the customer must retrieve it and install it on the system. The IBM Web site is:
http://www.ibm.com/servers/eserver/openpower/cod

Other Features of Advanced Power Virtualization:
If any processors in a system have the Virtualization feature, all active processors must have it.

For example:
A 2-way system requires that two of this feature be ordered.
A 4-way system requires that four of this feature be ordered.

Once the Virtualization feature is installed in a system, it cannot be removed.

Virtual Ethernet and Virtual Storage are part of Advanced POWER Virtualization.

Partition Load Manager provides automated CPU and memory resource management across AIX 5.2/5.3 logical partitions.

Advanced POWER Virtualization is supported by the following levels of the AIX and Linux operating systems:
AIX 5L for POWER V5.3, or later
SUSE LINUX Enterprise Server 9 for POWER, or later
Red Hat Enterprise Linux AS for POWER Version 3

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7942 Advanced POWER Virtualization — Miscl

This feature allows the customer to create partitions that are in units of less than 1 CPU (sub-CPU LPARs) and allows the same system I/O to be virtually allocated to these partitions.

The processors on the system can be partitioned into as many as 10 LPARs per processor.

Partition Load Manager is included to provide cross-partition workload management across the LPARs.

An encrypted key is supplied to the customer and installed on the system, authorizing the partitioning at the sub-processor level.

If feature 7942 is ordered on a Model 570, the quantity must be equal to the number of activated processors.

OS level:
AIX 5.3 or later
SUSE LINUX Enterprise Server 9 for POWER or later
Red Hat Enterprise Linux AS for POWER Version 3 or later

7950 1024MB Activation for DDR1 Memory — Memory CUoD

#7950 provides the activation of an additional 1024MB DDR-1 Capacity Upgrade on Demand memory on a CUoD server.

Multiple #7950's are allowed on a CUoD server up to the maximum CUoD memory of the server.

7951 On/Off Processor Enablement — CUoD Processor

This feature is ordered to enable the server for On/Off Capacity on Demand.

Once enabled, processors may be requested on a temporary basis.

Customer must sign an On/Off Capacity on Demand contract before ordering this feature.

7952 On/Off Processor Day Billing for Feature 7830: 1.65GHz 2-Way POWER5 CUoD — CUoD Processor

Billing for On/Off is implemented by how many processor days are used.

This feature is used to bill the customer for the amount of On/Off resources used.

Once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, on/off usage must be reported to IBM at least monthly.

This information, used to compute billing data, is then provided to the customer's sales channel.

The sales channel will place an order for a quantity of On/Off Processor Day Billing features and bill the customer.

One #7952 should be ordered for each billable processor day.

Requires: #7951 On/Off Processor Enablement

7953 On/Off Processor Day Billing for FC #7832: 1.9GHz 2-Way POWER5 CUoD — CUoD Processor

Once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, the customer must report on/off usage to IBM at least monthly.

This information, used to compute billing data, is then provided to the customer's sales channel. The sales channel will place an order for a quantity of On/Off Processor Day Billing features and bill the customer.

One #7953 should be ordered for each billable processor day.

OS level required: AIX 5.2 or AIX 5.3

7954 On/Off Memory Enablement — Memory CUoD

This feature is ordered to enable the server for On/Off Capacity on Demand.

Once enabled, memory can be requested on a temporary basis.

Customer must sign an On/Off Capacity on Demand contract before ordering this feature.

7955 On/Off Processor Day Billing for #7833: 1.9GHz 2-Way POWER5 CUoD — CUoD Processor

Once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, the customer must report on/off usage to IBM at least monthly.

This information, used to compute billing data, is then provided to the customer's sales channel. The sales channel will place an order for a quantity of On/Off Processor Day Billing features and bill the customer.

One #7955 should be ordered for each billable processor day.

OS level required: AIX 5.2 or AIX 5.3

7956 30 Days Prepaid Reserve Capacity for #7830: 1.65GHz 2-way POWER5 CUoD — CUoD Processor

This feature provides 30 processor-days of prepaid reserve capacity for 1.65GHz processors.

To establish reserve processor capacity on the server, select a quantity of inactive processors to be placed in the server's Shared Processor Pool as reserve processors.

When the server recognizes that non-reserve processors (permanently activated processors) assigned and/or available to the uncapped partitions have been 100% utilized, a reserve processor is activated and a Processor Day (good for a 24-hour period) is subtracted from the prepaid amount of days.

Requires: Reserve Capacity on Demand enabled

7957 On/Off Memory 1GB-Day Billing for DDR1 — Memory CUoD

Once an On/Off Memory Enablement feature is ordered and the associated enablement code is entered into the system, the customer must report on/off usage to IBM at least monthly.

This information, used to compute billing data, is then provided to the customer's sales channel.

The sales channel will place an order for a quantity of On/Off Memory Day Billing features and bill the customer.

One #7957 should be ordered for each billable day for each 1GB increment of DDR1 memory.

7959 30 Days Prepaid Reserve Capacity for 1.9GHz Processors #7832/#7833 — CUoD Processor

Applies to features:
#7832: 1.9GHz 2-Way POWER5 CUoD Processor Card
#7833: 1.9GHz 2-Way POWER5 CUoD Processor Card

This feature provides 30 processor-days of prepaid reserve capacity for 1.9GHz processors.

To establish reserve processor capacity on the server, select a quantity of inactive processors to be placed in the server's Shared Processor Pool as reserve processors.

Once the server recognizes that non-reserve processors (permanently activated processors) assigned and/or available to the uncapped partitions have been 100% utilized, use of additional processors will cause processor-days (good for a 24-hour period) to be subtracted from the prepaid number of processor-days.

7960 Compact Handling Option — Miscl

This feature allows the System or expansion rack to pass through doors at the customer location which are less than the 2.02M (79.5") normally required.

With this feature the top 8U section of the rack (including the power subsystem) is removed at the factory and shipped separately for installation at the customer location.

The height of the rack with the upper section removed is approximately 1.65M (65").

If this Compact Handling feature #7960 is desired it must be ordered for the system CEC rack and each #5972 and #8691 rack on the order.

7970 1GB Activation #7816 & #7835 Memory Features — Memory CUoD

This feature permanently activates 1024MB of DDR1 memory for features #7816 or #7835.

9119-590: Max: 128
9119-595: Max: 255

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7971 On/Off Processor Enablement for #7813 — CUoD Processor

This feature is ordered to enable the server for On/Off Capacity on Demand for processor book feature #7813.

Once enabled, processors may be requested on a temporary basis.

Requires: Signed On/Off Capacity on Demand contract before ordering the feature.

AIX 5L for POWER V5.2 with the 5200-04 Recommended Maintenance package (APAR IY56722) or later, plus APAR IY60347; or AIX 5L V5.3 with APAR IY60349.

7972 On/Off Processor Billing for Feature #7813 — CUoD Processor

Once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, on/off usage must be reported to IBM at least monthly.

This information, used to compute billing data, is then provided to the customer's sales channel. The sales channel will place an order for a quantity of On/Off Processor Day Billing features and bill the customer.

One #7972 should be ordered for each billable processor day.

7973 On/Off Memory Enablement — Memory CUoD

This feature can be ordered to enable the server for On/Off Capacity on Demand.

Once enabled, memory may be requested on a temporary basis.

Requires: Signed an On/Off Capacity on Demand contract before ordering the feature.

7974 On/Off Memory Billing — Memory CUoD

Once an On/Off Memory Enablement feature is ordered and the associated enablement code is entered into the system, the customer must report on/off usage to IBM at least monthly.

This information, used to compute the billing data, is then provided to the customer's sales channel.

The sales channel will place an order for a quantity of On/Off Memory Day Billing features and bill the customer.

One #7974 should be ordered for each billable day for each 1GB increment of memory.

7975 30 Days Prepaid Reserve Capacity for #7813 — CUoD Processor

This feature provides 30 processor-days of prepaid reserve capacity for feature #7813 processor book.

To establish reserve processor capacity on the server, select a quantity of inactive processors to be placed in the server's Shared Processor Pool as reserve processors.

Once the server recognizes that non-reserve processors (permanently activated processors) assigned and/or available to the uncapped partitions have been 100% utilized, use of additional processors will cause processor-days (good for a 24-hour period) to be subtracted from the prepaid number of processor-days.

Requires: #7992 Advanced Power Virtualization

7981 16-Way POWER5 Standard CUoD Processor Book 0-Way Active — CUoD Processor

This feature provides a 16-way POWER5 Standard processor book with capacity Upgrade on Demand.

The processors are packaged on two 8-way Multi Chip Modules (MCMs). Each pair of processors is supported by 1.9MB of L2 cache and 36MB of L3 cache.

Each 16-way processor book also provides six RIO-2 loop adapter slots and 16 memory slots.

9119-590: Min: 1 Max: 2

AIX 5L for POWER V5.2 with 5200-04 Recommended Maintenance package (APAR IY56722) /later, plus APAR IY60347; /AIX 5L V5.3 with APAR IY60349.

7988 16-Way POWER5 Standard CUoD Processor Book 0-Way Active — CUoD Processor

This feature provides a 16-way POWER5 Standard processor book with capacity Upgrade on Demand.

The processors are packaged on two 8-way Multi Chip Modules (MCMs). Each pair of processors is supported by 1.9MB of L2 cache and 36MB of L3 cache.

Each 16-way processor book also provides six RIO-2 loop adapter slots and 16 memory slots.

9119-595: Max: 4

AIX 5L for POWER V5.2 with the 5200-04 Recommended Maintenance package (APAR IY56722) or later, plus APAR IY60347; or AIX 5L V5.3 with APAR IY60349.

7990 #7988 CUoD Processor Book Activation - One Processor — CUoD Processor

This feature permanently activates one processor on CUoD processor feature #7988.

9119-595: Max: 64

AIX 5L for POWER V5.2 with the 5200-04 Recommended Maintenance package (APAR IY56722) or later, plus APAR IY60347; or AIX 5L V5.3 with APAR IY60349.

7991 30 Days Prepaid Reserve Capacity for #7988 — CUoD Processor

This feature provides 30 processor-days of prepaid reserve capacity for feature #7988 processor book.

To establish reserve processor capacity on the server, select a quantity of inactive processors to be placed in the server's Shared Processor Pool as reserve processors.

Once the server recognizes that non-reserve processors (permanently activated processors) assigned and/or available to the uncapped partitions have been 100% utilized, use of additional processors will cause processor-days (good for a 24-hour period) to be subtracted from the prepaid number of processor-days.

Requires: #7992 Advanced Power Virtualization

7992 Advanced POWER Virtualization — Miscl

This feature allows the customer to create partitions that are in units of less than one CPU (sub-CPU LPARs) and allows the same system I/O to be virtually allocated to these partitions.

The processors on the system can be partitioned into as many as 10 LPARs per processor.

Partition Load Manager is included to provide cross-partition workload management across the LPARs. An encrypted key is supplied to the customer and installed on the system, authorizing the partitioning at the sub-processor level.

The quantity of #7992 ordered must be equal to the number of activated processors on the system.

9119-590: Min: 8 Max: 32
9119-595: Min: 16 Max: 64

AIX 5L V5.3 with APAR IY60349 /later.

7993 On/Off Processor Billing for Feature #7981 — CUoD Processor

Once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, on/off usage must be reported to IBM at least monthly.

This information, used to compute billing data, is then provided to the customer's sales channel.

The sales channel will place an order for a quantity of On/Off Processor Day Billing features and bill the customer.

One #7993 should be ordered for each billable processor day.

7994 On/Off Processor Enablement for #7988 — CUoD Processor

This feature can be ordered to enable the server for On/Off Capacity on Demand for processor book feature #7998.

Once enabled, processors may be requested on a temporary basis.

Requires: Signed On/Off Capacity on Demand contract before ordering the feature.

7996 On/Off Processor Billing for CoD for Feature #7988 — CUoD Processor

Once an On/Off Processor Enablement feature is ordered and the associated enablement code is entered into the system, on/off usage must be reported to IBM at least monthly.

This information, used to compute billing data, is then provided to the customer's sales channel.

The sales channel will place an order for a quantity of On/Off Processor Day Billing features and bill the customer.

One #7996 should be ordered for each billable processor day.

8052 4096MB (4x1024MB) DIMMs - Express Configuration (Equiv FC 4453) — Express Config

Defines 4096MB (4x 1024MB) DIMM memory for systems being included in Express Configurations.

FC 8052 is equivalent to FC 4453 and is factory only.

FC 8052 is a component in six separate Express Configurations. The quantity required is dictated by the Express Configuration package as follows:

Express Config Package	Qty #8052
FC 8053 pSeries 650 (200M)	1
FC 8054 pSeries 650 (400M)	2
FC 8055 pSeries 650 (800M)	4
FC 8057 pSeries 650 (450M)	2
FC 8058 pSeries 650 (650M)	3
FC 8059 pSeries 650 (850M)	4

AIX 5.1 or later

8131 4.5-meter (15 feet) cable (8128 Attach) Async

Cable which provides attachment between the 128 Port Asynchronous Controller and the first RAN in a daisy chain, or attachment between RANs in the daisy chain.

For all Remote Async Nodes.
8130: 16-Port Remote Async Node - US & Canada
8134: 16-Port Remote Async Node - World Trade
8136: 16 Port EIA-232 (Rack) Remote Async Node
8137: 16 Port EIA-232 (Enhanced) Remote Async Node
8138: 16 Port RS-422 (Enhanced) Remote Async Node

8132 23-cm (9 inch) cable (8128 Attach) Async

9 inch version of FC 8131. Typically used as a RAN to RAN cable with stacked Remote Async Nodes.

For all Remote Async Nodes.
8130: 16-Port Remote Async Node - US & Canada
8134: 16-Port Remote Async Node - World Trade
8136: 16 Port EIA-232 (Rack) Remote Async Node
8137: 16 Port EIA-232 (Enhanced) Remote Async Node
8138: 16 Port RS-422 (Enhanced) Remote Async Node

8133 RJ-45 to DB-25 Converter Cable (8128 Attach) Async

This cable is used to attach devices having a DB25 connector to a 16 port Remote Async Node

For all Remote Async Nodes:-
8130: 16-Port Remote Async Node - US & Canada
8134: 16-Port Remote Async Node - World Trade
8136: 16 Port EIA-232 (Rack) Remote Async Node
8137: 16 Port EIA-232 (Enhanced) Remote Async Node
8138: 16 Port RS-422 (Enhanced) Remote Async Node

Four cables are provided per 8133 feature.

Modified version of FC 8130 or 8134 in an industry-standard 19-inch rack mount chassis.
Can also be configured as a desktop device.

The RAN provides 16 ports of EIA-232 capability with full modem controls on each port and connects to the following 128 Port Controllers.
FC 2933 128 Port Controller ISA Bus
FC 2944 128 Port Controller PCI Bus
FC 8128 128 Port Controller MCA Bus

RANs are connected in daisy-chain fashion with up to 8 RANs per 128 port Async Controller (either version). The 128 Port Controller has two synchronous channels, each of which supports up to four RANs.

Ability to monitor individual port operation, synchronous line station, and other diagnostics from front panel.

Built-in diagnostics can test ports independent of RS/6000 host.

Full modem control supports the following interface signals: TxD, RxD, RTS, CTS, DSR, DCD, DTR, RI.

Individual ports support a maximum EIA-232 distance of 62 meters (200 feet).

Location of RAN up to 330 meters from the host using standard shielded 8-wire twisted pair cabling.

Remote operation via synchronous modems or CSU/DSU extends the distance and allows RANs at locations geographically distant from the host.

Cables:-
8131: 4.5-meter (15 feet) cable. Connects the adapter to the first Remote Async Node on each synchronous channel or can be used to "Daisy Chain" RANs
8132: 23-cm (9-inch) cable. Generally used to "Daisy Chain" when stacking RANs.
8133: RJ-45 to DB-25 Converter Cable (four per order) is used to attach devices with DB-25 connectors to the Remote Async Nodes.
8135: 64-Port to 128-Port Pin-out Converter allows devices currently using 16 Port Concentrators (FC 6401 to attach to 16 Port RANs. Quantity (4) per order.

The following applies to 8136 only:-
All RJ-45 connectors are on the front panel.
The DB-15 synchronous connectors (cabling from Host to RAN and RAN to RAN), power cord and switch are located on the rear panel.
The metal chassis meets FCC Class B /CISPR B.
The power supply is self contained within the unit.

pSeries p5 specific:
Maximum allowed: 48 9111-520
Maximum allowed: 16 9113-550
Maximum allowed: 64 9117-570

OS level required: AIX 5.2 or AIX 5.3, or later

Note: Maximum of 8 per #2944 -- 128-port asynch adapter.

8137 Enhanced Remote Async Node 16 Port EIA-232 — Async

The RAN provides 16 ports of EIA-232 capability with full modem controls on each port and connects to the following 128 Port Controllers.
FC 2933 128 Port Controller ISA Bus
FC 2944 128 Port Controller PCI Bus
FC 8128 128 Port Controller MCA Bus

When connected to a PCI controller, a synchronous channel data rate of 2.4 Mbps is used. If connected to an MCA controller, the synchronous channel runs at the previous 1.2 Mbps data rate.

Each port can be individually programmed to provide a asynchronous connection of 230 Kbaud, but a limited number of ports in a maximum configuration (128 ports) can be supported at this baud rate.

RANs are connected in daisy-chain fashion with up to 8 RANs per 128 port Async Controller (either version). The 128 Port Controller has two synchronous channels, each of which supports up to four RANs.

Ability to monitor individual port operation, synchronous line station, and other diagnostics from front panel.

Built-in diagnostics can test ports independent of RS/6000 host.

Full modem control supports the following interface signals: TxD, RxD, RTS, CTS, DSR, DCD, DTR, RI.

Individual ports support a maximum EIA-232 distance of up to 31 meters (100 feet), depending on the baud rate.

Location of RAN up to 330 meters (sync data rate set at 1.2 Mbps) from host using standard shielded 8-wire twisted pair cabling.

Remote operation via synchronous modems or CSU/DSU extends the distance and allows RANs at locations geographically distant from the host.

Power supplies are included when purchased as a feature.

Cables:-
8131: 4.5-meter (15 feet) cable. Connects the adapter to the first Remote Async Node on each synchronous channel or can be used to "Daisy Chain" RANs
8132: 23-cm (9-inch) cable. Generally used to "Daisy Chain" when stacking RANs.
8133: RJ-45 to DB-25 Converter Cable (four per order) is used to attach devices with DB-25 connectors to the Remote Async Nodes.
8135: 64-Port to 128-Port Pin-out Converter allows devices currently using 16 Port Concentrators (FC 6401 to attach to 16 Port RANs. Quantity (4) per order.

Width: 30.48 cm (12 in)
Depth: 17.78 cm (7 in)
Height: 572 mm (2.25 in)
Weight: 1.13 kg (2.5 lb

Temperature: 5 (degs) to 55 (degs)C
Relative humidity: 20% to 80%
Electrical power: 13.25W
FCC rating: FCC Class A
EMEA emi rating: CE Mark

NOTE: Installation of an FCC Class A feature/device to an FCC Class B system will change the system FCC Class to A.

8195 256GB DDR1 Memory (32x 8GB) — Memory (PCI Bus)

This feature provides a package of 32 fully activated #7835 memory cards for a total 256GB of active DDR1 system memory.

Requires: 32 Empty Memory Slots

9119-590: Max: 1
9119-595: Max: 2

8197 512GB DDR1 Memory (32x 16GB Cards) — Memory (PCI Bus)

This feature provides a package of 32 #7828 16GB memory cards for a total 512GB of active DDR1 system memory.

Requires: 32 Empty Memory Slots

9119-590: Max: 1
9119-595: Max: 2

8198 512GB DDR1 Memory (16x 32GB Cards) — Memory (PCI Bus)

This feature provides a package of 16 #7829 memory cards for a total 512GB of active DDR1 system memory.

Requires: 16 Empty Memory Slots

9119-590: Max: 2
9119-595: Max: 4

8227 Tie Down Strap — Miscl

For securing system unit

Connects system unit via a cable to a more secure item such as a desk, wall, etc.

8244 Audio PCI Adapter for Workstations (Type 8244) — Multi-Media

The Audio PCI Adapter for Workstations is a high performance workstation class audio PCI adapter that is optimized for support in the AIX professional workstation environment.

It is a 3.3V 32-bit PCI Adapter that runs at 33MHz speed and complies with the Intel AC 1997 Version 2.1 Specifications.

The Audio PCI Adapter for Workstations provides external jacks for headphones, speaker output, line input and microphone input - as well as an internal connector for CD or DVD Drive audio input.

AIX 5.1 with May 2002 update CD or later
AIX 5.2 with May 2002 update CD

8430 Power Cord Carry Over Indicator #9800 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9800 specify

8431 Power Cord Carry Over Indicator #9802 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9802 specify

8432 Power Cord Carry Over Indicator #9820 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9820 specify

8433 Power Cord Carry Over Indicator #9821 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9821 specify

8434 Power Cord Carry Over Indicator #9825 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9825 specify

8435 Power Cord Carry Over Indicator #9827 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9827 specify

8436 Power Cord Carry Over Indicator #9828 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9828 specify

8437 Power Cord Carry Over Indicator #9829 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9829 specify

8438 Power Cord Carry Over Indicator #9830 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9830 specify

8439 Power Cord Carry Over Indicator #9831 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9831 specify

8440 Power Cord Carry Over Indicator #9833 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9833 specify

8441 Power Cord Carry Over Indicator #9834 - Model Conversion Only — Power Cord

This is an administrative feature that is valid only for model conversion orders.

A quantity of one power cord carry over indicator should be ordered for each display or remote access node that will be transferred to the new model.

The existing power cord is assigned the new feature code, which enables the ordering configurator to assure that the correct quantity of power cords is included in the order.

Provides: Power cord quantity tracking for #9834 specify

8450 Zero-priced Value Pak Processor Activation Code for #5237: 1.65GHz 2-way POW — CUoD Processor

This feature number will provide a customer with one or two free processor activations.

Only available with IBM p5 550 Value Paks.

8452 Zero-priced Value Pak Processor Activation Code for #7830: 1.65GHz 2-Way POW — CUoD Processor

This feature provides a customer with one processor activation at no additional charge.

Available only with IBM eServer p5 Model 570 Value Paks.

8453 Base Customer Special Placement — Miscl

This FC initiates the following:

Requests that IBM deliver the system to the customer according to the slot in drawer hardware placement defined within the LPAR Verification Tool (LVT).

Eliminates the need to have these parts relocated in the customers environment as would happen if the order is placed without this feature code.

Requires account team to submit output of LVT into IBM manufacturing via a Web site.

Requires account team to assure that the LVT information submitted always reflects the actual order placed.

8454 Zero-priced Value Pak Processor Activation Code for #7832: 1.9GHz 2-Way POWE — CUoD Processor

This feature provides a customer with one processor activation at no additional charge.

Available only with IBM eServer p5 Model 570 Value Paks.

Requires: Qualifying Model 570 Value Pak

8455 Zero-priced Value Pak Processor Activation Code for #7833: 1.9GHz 2-Way POWE — CUoD Processor

This feature provides a customer with one processor activation at no additional charge.

Available only with IBM eServer p5 Model 570 Value Paks.

Requires: Qualifying Model 570 Value Pak

8456 Zero-priced Value Pak Processor Entitlement for #7834: 1.5GHz 2-Way POWER5 0 — CUoD Processor

This feature provides a customer with one processor entitlement at no additional charge.

Available only with IBM eServer p5 Model 570 Value Paks.

Requires: Qualifying Model 570 Value Pak

8462 Zero-priced Value Pak Processor Entitlement for #5231 1.5GHz 1-way 0MB L3 CPU - POWER5

This feature provides a customer with one processor entitlement at no additional charge.

Available only with IBM eServer p5 Model 520 Value Paks.

AIX 5.2 or AIX 5.3, or later

8463 Zero-priced Value Pak Processor Entitlement for #5239 1.5GHz 1-way 0MB L3 CPU - POWER5

This feature provides a customer with one processor entitlement at no additional charge.

Available only with IBM eServer p5 Model 550 Value Paks.

AIX 5.2 or AIX 5.3, or later

8464 Zero-priced Value Pak Processor Entitlement for #5226 1.5GHz 1-way 36MB L3 CPU - POWER5

This feature provides a customer with one processor entitlement at no additional charge.

Available only with IBM eServer p5 Model 520 Value Paks.

AIX 5.2 or AIX 5.3, or later

8465 Zero-priced Value Pak Processor Entitlement for #5264 1.5GHz 2-way 36MB L3 CPU - POWER5

This feature provides a customer with one or two processor entitlements at no additional charge.

Available only with IBM eServer p5 Model 550 Value Paks.

AIX 5.2 or AIX 5.3, or later

8474 Zero-priced Value Pak Processor Entitlement for #5229 1.65GHz 2-way 36MB L3 CPU - POWER5

This feature provides a customer with one processor entitlement at no additional charge.

Available only with IBM eServer p5 Model 520 Value Paks.

AIX 5.2 or AIX 5.3, or later

8677 Line Cord 8AWG 14ft No Plug Power Cord

14ft 8AWG line cord with no plug. It may be utilized for 50A 240VAC or 30A 480V circuits.

8686 Line Cord 6AWG 14ft IEC309 100A Plug Power Cord

14ft 6AWG line cord equipped with an IEC309 100A plug. It provides connection to an 80A 240VAC circuit.

100 amp service requires a raised floor installation to support cable routing.

8687 Line Cord 6AWG 6ft IEC309 100A Plug Power Cord

6ft 6AWG line cord equipped with an IEC309 100A plug. It provides connection to an 80A 240VAC circuit.

100 amp service requires a raised floor installation to support cable routing.

8688 Line Cord 6AWG 14ft IEC309 60A Plug Type W Power Cord

14ft 6AWG Type W line cord equipped with a 60A IEC309 plug. It provides connection to a 60A 240VAC circuit.

8689 Line Cord 6AWG 6ft IEC309 60A Plug Type W Power Cord

6ft 6AWG Type W line cord equipped with a 60A IEC 309 plug. It may be utilized for 60A 240VAC circuits.

8691 42U Expansion Rack - 24-inch Rack Related

This expansion rack feature provides an additional 42U of 24" rack space. When installed, one side cover of the 7040-61R rack is removed, the expansion rack is bolted to the 7040-61R rack, and the side cover is placed on the expansion rack. Devices mounted in the expansion rack feature utilize power provided by the base 7040-61R rack.

Max: 1
Initial Order/MES: Both

8694 Line Cord 6AWG 14ft - No Plug **Power Cord**

This feature provides a 14 ft 6AWG line cord with no plug.

It may be utilized for 200-415V circuits at loadings up to 63A.

8697 Line Cord 8AWG 14ft IEC309 30A Plug **Power Cord**

This feature provides a 14 ft, 8AWG line cord equipped with an IEC309 30A plug.

It provides connection to an 30A, 480VAC circuit.

8698 Line Cord 8AWG 6ft IEC309 30A Plug **Power Cord**

This feature provides a 6 ft, 8AWG line cord equipped with an IEC309 30A plug.

It provides connection to an 30A, 480VAC circuit.

8841 Mouse - Stealth Black with Keyboard Attachment Cable **Mouse / Input Device**

This feature provides a three button mouse and a cable for attachment to a keyboard.

This info brief is based upon various industry sources, including published IBM documentation, technical publications and marketing materials:

Reference URLs: (http://www.)
IBM Public Announcements: ibm.com/common/ssi/OIAccess.wss
IBM SalesManual: ibm.com/common/ssi/OIAccess.wss
eServerInfoCenter
http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/
pSeries Facts and Features
ibm.com/servers/eserver/pseries/hardware/factsfeatures.pdf
Various Whitepapers redbooks.ibm.com
RISC Analysis riscanalysis.com

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