hp server rp2470

Table 2.1.1 HP Server rp2470 Specifications

Server model number	rp2470
Server product number	A6890A
Number of Processors	1-2
Supported Processors	
PA-RISC PA-8700 Processor @ 750 MHz	
Cache—Instr/data/CPU (KB)	750/1500
Floating Point Coprocessor included	Yes
TPM estimate (1 CPU-2 CPUs)	17-27K
PA-RISC PA-8700 Processor @ 650 MHz	
Cache—Instr/data/CPU (KB)	750/1500
Floating Point Coprocessor included	Yes
TPM estimate (1 CPU-2 CPUs)	16-25K
Memory	
Memory Slots	8
Min. memory	128 MB
Max. memory capacity	8 GB
Internal Disks	
Max. disk mechanisms	2
Max. disk capacity	146 GB
Standard Integrated I/O	
Ultra2 SCSI—LVD	Yes
Ultra SCSI—Single Ended	Yes
10/100Base-T (RJ-45 connector)	Yes
10Base-T LAN console port	Yes
RS-232 serial ports (multiplexed from DB-25 port)	3
I/O buses and slots	
Total PCI Slots (supports 66/33-MHz × 64/32 bits)	4
2 Independent Twin-Turbo slots (500 MB/s)—two channels per slot; one slot limited to half-length PCI cards	
2 Shared slots—two slots sharing 500 MB/s of peak bandwidth	
Max. Mass Storage Host Bus Adapters—see supported I/O table	
RAID 4si, PCI 4-port Ultra2 SCSI RAID	1
Fibre Channel 2 Gb/s	4
Ultra2 SCSI—LVD	3
Fast/Wide/Differential SCSI	4
Dual Ultra2 SCSI/Dual 10/100Base-TX Combo	1
Dual port FWD SCSI	3
Dual port Ultra2 SCSI—LVD	3
Max. Network Interface Cards—see supported I/O table	
1000Base-TX Gigabit Ethernet	4
10/100Base-TX	4
FDDI	4
Quad Port 10/100Base-TX	4
1000Base-SX	4

[1]TBD = To be determined

Max. Network Interface Cards (cont.)—see supported I/O table	
ATM 155 Mb/s—MMF	4
ATM 155 Mb/s—UTP5	4
ATM 622 Mb/s—MMF	4
802.5 Token Ring 4/16/100 Mb/s	4
Dual port X.25/SDLC/FR	4
Quad port X.25/FR	3
100Base-FX	4
Max. Additional Interface Cards—see supported I/O table	
8 port Terminal Multiplexer	4
64 port Terminal Multiplexer	3
HP Praesidium Speed Card	1
Graphics/USB	1 kit (2 cards)
Electrical Characteristics	
AC Input power	100-240 VAC 50/60 Hz
Current requirements at 200V	1.3 A (650); 1.4 A (750)
Typical Power dissipation (watts)	290 W (650); 300 W (750)
Maximum Power dissipation (watts)	350 W (650); 400 W (750)
Power factor at full load	0.95 at 240V, 0.98 at 120V
kW rating for UPS loading	0.6 kW
Typical Heat dissipation (BTUs/hour)	990 (650); 1025 (750)
Maximum Heat dissipation (BTUs/hour)	1365 (650); 2048 (750)
Site Preparation	
Site planning and installation included	No
Depth (mm/inches) w/o front bezel	635 mm/25 inches
Depth (mm/inches) w/ front bezel	710 mm/28 inches
Deskside Width (mm/inches)—horizontal	430 mm/17 inches
Rack Width (mm/inches)	482 mm/19 inches
Deskside Height (mm/inches)—vertical	533 mm/21 inches
Rack Height (EIA/mm/inches)	2 EIA units/89/3.5 inches
Weight (kg/lbs) Max.	20 kg/45 lbs
Environmental Characteristics	
Acoustics (operator/bystander) at 20°C	< 6.7 Bels LwA
Operating Temperature (up to 5000 ft)	+5 to 35° C
Non-operating Temperature	-40 to +65° C
Maximum rate of temperature change	20° C/hour
Operating relative humidity	15% to 80%, non-condensing
Non-operating relative humidity	5% to 90%, non-condensing
Operating altitude above sea level	To 3.0 km (10,000 ft)
Non-operating altitude above sea level	To 4.5 km (15,000 ft)

Regulatory Compliance		
Electromagnetic interference	FCC Class A. Manufacturer's Declaration to EN55022 Level A, VCCI Registered, Class 1	
Safety	UL Listed, cUL Certified, TUV GS Mark, compliant with EN 60950 and EN 41003	

Overview

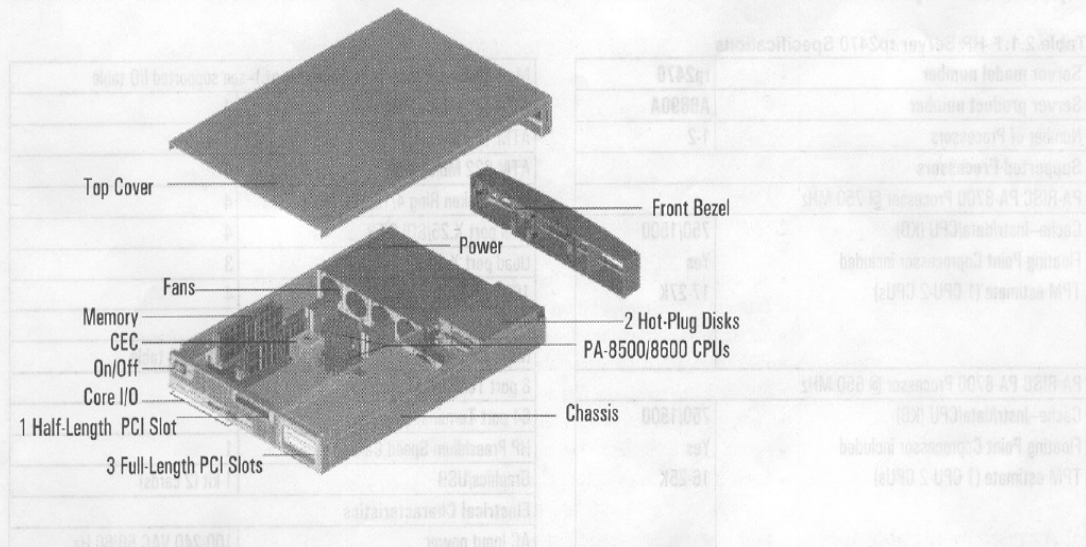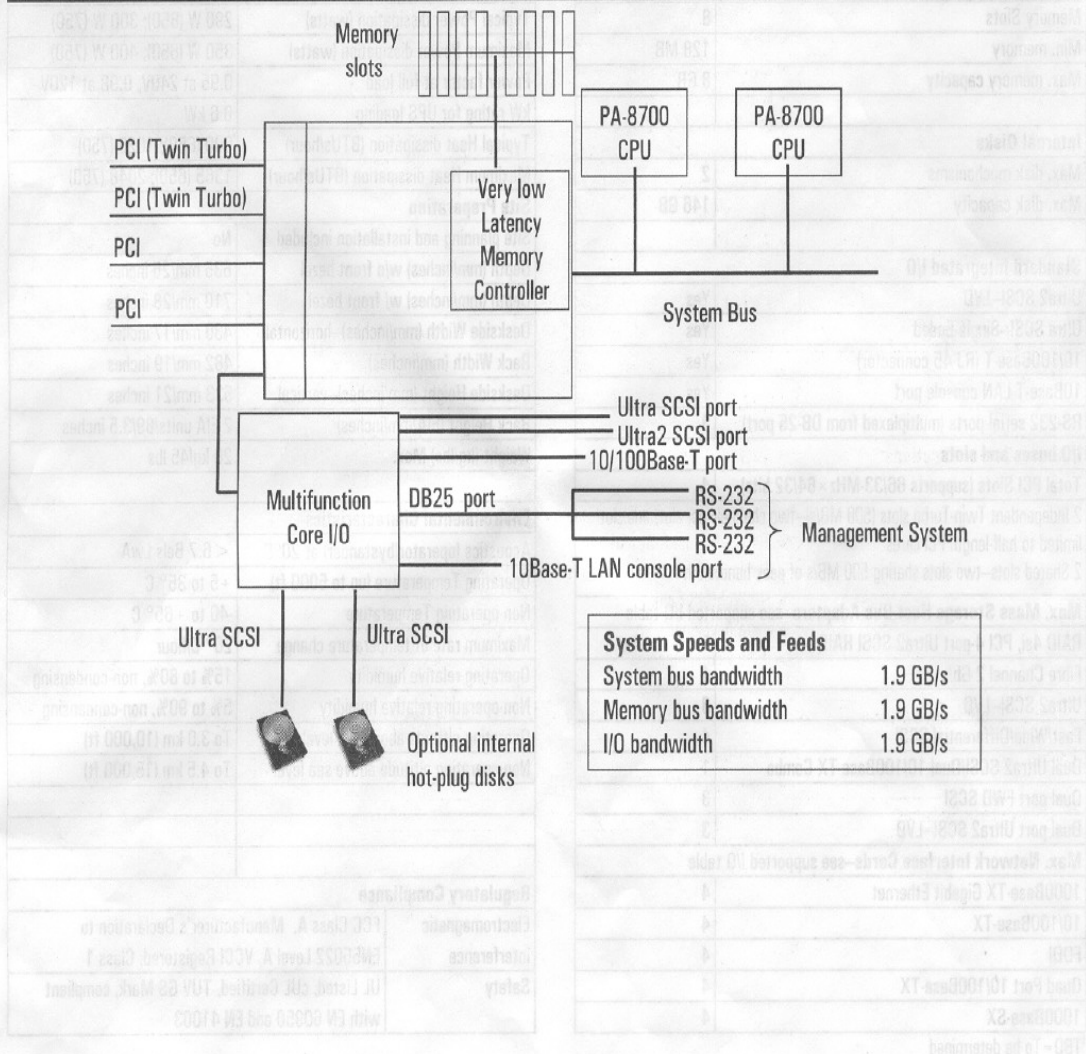### Figure 2.1.1 HP Server rp2470 System Overview

- Top Cover
- Power
- Fans
- Memory
- CEC
- On/Off
- Core I/O
- 1 Half-Length PCI Slot
- 3 Full-Length PCI Slots
- Front Bezel
- 2 Hot-Plug Disks
- PA-8500/8600 CPUs
- Chassis

Figure 2.1.2 HP Server rp2470 System Architecture

- Memory slots
- PCI (Twin Turbo)
- PCI (Twin Turbo)
- PCI
- PCI
- Very low Latency Memory Controller
- PA-8700 CPU
- PA-8700 CPU
- System Bus
- Ultra SCSI port
- Ultra2 SCSI port
- 10/100Base-T port
- Multifunction Core I/O
- DB25 port
- RS-232
- RS-232
- RS-232
- Management System
- 10Base-T LAN console port
- Ultra SCSI
- Ultra SCSI
- Optional internal hot-plug disks

System Speeds and Feeds	
System bus bandwidth	1.9 GB/s
Memory bus bandwidth	1.9 GB/s
I/O bandwidth	1.9 GB/s

Features

Table 2.1.2 HP Server rp2470 Features

Minimum System	• One 64-bit PA-8700 650-MHz or one PA-8700 750-MHz CPU with 2.25 MB on-chip cache • 128-MB SyncDRAM
Maximum Server Capacities	• Two 64-bit PA-8700 650-MHz or two PA-8700 750-MHz CPU with 2.25 MB on-chip cache • 8-GB SyncDRAM • Four 66/33-MHz × 64/32-bit PCI I/O slots—with adaptive signaling technology • Two internal hot-plug LVD SCSI disks
Standard System Features	• 64-bit HP-UX 11 operating system with unlimited user license • External Ultra2 LVD SCSI channel • External SE Ultra SCSI channel • Two Internal SCSI controllers w/dual channels, 1 internal disk per controller • 10/100Base-T LAN (with auto speed sensing) • Extended Fault Management System • Secure Web Console (integrated in core I/O; does not require an I/O card or external peripheral) • RS-232C local and remote console and UPS ports (multiplexed from a single DB-25 port) • 10Base-T LAN console port for system management • Factory integration of CPUs, memory, disk drives, and I/O cards • Rackmountable into 19-inch cabinets; up to 20 servers per 2-meter cabinet • Stackable to 6 servers without a cabinet • Standalone in either horizontal or vertical orientation
High Availability—all standard	• On-line memory page deallocation • ECC protected SyncDRAM memory • Full parity protection of data and address buses • On-chip CPU cache with ECC protection • Dynamic Processor resilience and deallocation • Independent I/O buses • Hot-Plug internal disk support • Two independent UltraSCSI buses for mirroring across internal disks • Two independent buses to two external SCSI ports • Journal file system • Auto reboot • MC/ServiceGuard support • On-line diagnostics and system health monitor
Carrier Grade (Telco)	• See "hp carrier grade servers " at the end of this section for supported and optional carrier grade features
Security	• Separate LAN for system management • Password protection on console port • Disablement of remote console ports
Internet Server Functions	• Internet server (inetd) • Domain name server • Routing (OSPF, BIND, RIP, EGP, HELLO, gateD) • Network Time Protocol • Pre-loaded wireless web server (WAP) • HP WebQoS Peak • Java developer's kit • Java virtual machine • e-Speak development kit
Client Configuration Services	• Automatic configuration for printers, PCs, workstations, and X terminals (DHCP, Bootp, tftp, rbootp)
Email	• Mail, MailX, ELM • Sendmail, MIME, SMTP, ESMTP
Remote Access Services	• Telnet, ftp, anonymous ftp server

Configuration

CPU Configuration

The HP Server rp2470 is a symmetrical multiprocessing (SMP) server supporting one or two high performance 64-bit PA-8700 processors

Processor Details
- 650-MHz and 750-MHz clock speeds (speeds cannot be mixed)
- On-chip 2.25-MB high speed cache (750-KB instruction, 1500-KB data)
- Single-bit cache error correction
- Double clocked 1.9-GB/s System bus
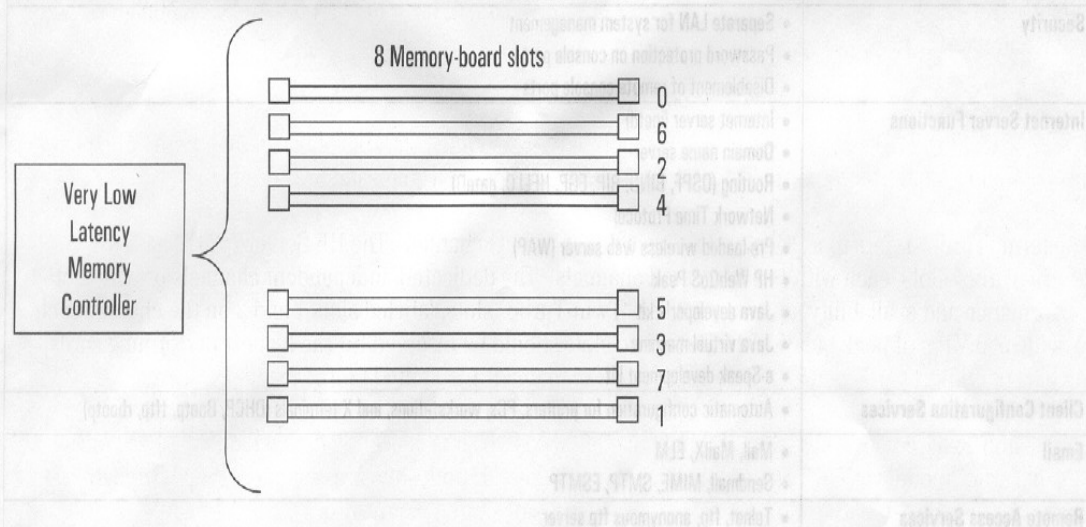- Full PA-RISC 2.0 binary compatibility

Memory Configuration

The HP Server rp2470 supports SyncDRAM (Synchronous Dynamic Random Access Memory) DIMMs with full ECC protection. The server supports up to 8 DIMM modules for a total of 8 GB of main memory. Peak memory bandwidth is 1.9 GB/s.

Memory Loading Rules
- 128-MB DIMM may be installed as a single module
- Higher memory configurations must be installed in pairs of equal density
- Memory is available in modules of 128 MB (1×128 MB), 512 MB (2×256 MB), 1 GB (2× 512 MB), and 2 GB (2x1 GB)
- Minimum memory is 128 MB
- Maximum memory is 8 GB
- DIMMs must be loaded in the following order (see **Figure 2.1.3**): 0, 1, 2, 3, 4, 5, 6, 7
- If growth is planned for the system, then plan on configuring high-density modules to minimize memory slot constraints.
- DIMM sizes may be mixed in the same system. However, use same size DIMMs for optimal performance.

Figure 2.1.3 Memory Slots (Showing Loading Order of DIMM Pairs)

Racking Configurations

The HP Server rp2470 can either be factory-installed in HP cabinets or customer-installed in HP or third-party cabinets. The racking hardware includes slider rails, enabling the server to easily slide out of a cabinet for servicing. The slider takes no additional vertical space, thereby preserving the server's 2U height. Furthermore, the slider rails have adjustable mounting hardware, enabling the server to mount in many non-HP cabinets

HP Cabinets

The HP Server rp2470 was designed for and tested in HP cabinets. HP cabinets are the best option for customers who want to ensure that their rack environment offers the utmost in safety, ease of service, factory integration, and HP field support. The HP cabinet family is made up of the following products:

- A4900A—(25 EIA Units): up to 12 HP Server rp2470s
- A4901A—(33 EIA Units): up to 16 HP Server rp2470s
- A4902A—(41 EIA Units): up to 20 HP Server rp2470s

For factory integration, order racking configuration A5811A in the HP Server rp2470 Order Menu.

Non-HP Cabinets

For customers who choose to use non-HP cabinets, the HP Server rp2470 provides simple options for installation and HP field support. The field rack kit (A5810A) contains an adjustable mounting bracket that fits onto the slider rails. This bracket telescopes to various lengths, allowing the server to be mounted in third-party cabinets that use the four-post EIA mounting system and have mounting depths of 28-31.25 inches.

Once the server is mounted in a non-HP cabinet, it must meet some simple criteria to ensure that HP field personnel can fully support the rack environment.

- **Anti-Tip**—The rack/cabinet must be solidly anchored to the floor both front and rear. This is usually accomplished by anti-tip feet or by direct bolting to the floor.
- **Air Flow**—The HP Server rp2470 uses front to back airflow to cool the unit. Thus a cabinet cannot have a solid front or rear door. Solid doors may have to be removed or changed to an open perforation pattern.
- **Cable Strain Relief**—A proper method of strain relief must be used. This may force the elimination of the rear door in some cases.
- **Front and Rear Access**—For proper cooling and ease of service access, HP recommends 32 inches of unobstructed floor space in the front and rear of rack installations. This recommendation applies to both HP and non-HP racks and cabinets.

I/O Architecture

The HP Server rp2470 contains seven I/O channels, each providing 250 MB/s of peak bandwidth. The channels are laid-out to support two "Twin-Turbo" PCI slots, two shared PCI slots, and the core I/O.

The term "Turbo" refers to a PCI slot that has a dedicated I/O channel. The HP Server rp2470 has two "*Twin*-Turbo" slots, each with *two* dedicated channels. The dedicated, independent channels provide both performance and availability advantages. The "Twin-Turbo" slots, labeled slots 1 and 2 on the chassis, each provide 500 MB/s of peak bandwidth. These two slots should be reserved for the highest performing cards, such as multi-port cards and RAID controllers. Note that slot 1 is limited to half-length PCI cards.

Slots 3 and 4 share two I/O channels. If only one of these two slots is occupied, that slot will operate in "Twin-Turbo" mode, with 500 MB/s of dedicated bandwidth. If both slots are occupied, the I/O controller arbitrates the activity between them, providing 500 MB/s of shared bandwidth.

The seventh and final I/O channel provides 250 MB/s of dedicated bandwidth to the core I/O. Please see the following section for a detailed description of the multifunction core I/O.

All 4 PCI slots in the HP Server rp2470 support 32- and 64-bit PCI cards running at 33- and 66-MHz bus speeds. The slots are keyed to accept 5-volt and Universal PCI cards. The HP Server rp2470 uses HP-developed Adaptive Signaling technology to allow each slot to operate at the full speed of the PCI card. If one 66-MHz card and one 33-MHz card are used in the two shared PCI slots, however, both slots will run at 33 MHz.

Supported I/O Cards

Table 2.1.3 Supported I/O Cards on the HP Server rp2470

I/O Card	Product Number	Full-length Or Half-length[1]	First HP-UX Release	Connector Type(s)	Factory Integration	HP-UX Boot support	Maximum Cards per System
PCI 2 Gb/s Fibre Channel Adapter	A6795A	Half-length	11.00	Duplex SC	Yes	Yes	4
Ultra2 SCSI–LVD	A5149A	Full-length	11.00	VHDCI	Yes	Yes	3
Dual Port Ultra2 SCSI–LVD	A5150A	Full-length	11.00	VHDCI	Yes	Yes	3
Ultra160 SCSI Adapter	A6828A	Full-length	11.00	VHDCI	Yes	Yes	3
Dual Port Ultra160 SCSI Adapter	A6829A	Full-length	11.00	VHDCI	Yes	Yes	3
Fast/Wide/Differential SCSI	A4800A	Half-length	11.00	HD	Yes	Yes	4
Dual Port FWD SCSI	A5159B	Full-length	11.00	VHDCI	Yes	Yes	3
Dual Ultra2 SCSI/Dual 10/100Base-TX Combo[2,3]	A5838A	Full-length	11.00	VHDCI and RJ-45	Yes	Yes	1
RAID 4si, PCI 4 port Ultra2 SCSI RAID	A5856A	Full-length	11.00	VHDCI	Yes	No	3
10/100Base-TX	A5230A	Half-length	11.00	RJ-45	Yes	No	4
Quad Port 100Base-TX	A5506B	Half-length	11.00	RJ-45	Yes	No	4
1000Base-TX Gigabit Ethernet	A6825A	Half-length	11.00	RJ-45	Yes	No	4
1000Base-SX Gigabit Ethernet	A6847A	Half-length	11.00	Duplex SC	Yes	No	4
ATM 155 Mb/s MMF	A5513A	Half-length	11.00	Duplex SC	Yes	No	4
ATM 622 Mb/s MMF	A5483A	Half-length	11.00	Duplex SC	Yes	No	4
FDDI Dual Attach Station LAN Adapter[4]	A3739B	Half-length	11.00	FDDI SC	Yes	No	4
X.25/BX.25 Advanced Communications Controller (ACC) 8-channel	Z7340A	Half-length	11.00	RS-232, V.35, RS-449 or X.21/V.11	No	No	3
X.25/SDLC/FR dual port	J3525A	Half-length	11.00	RS-530, RS-232, V.35, RS-449 or X.21	Yes	No	4
8-port Terminal Multiplexer	A6748A	Half-length	11.00	RS-232	Yes	No	4
64-port Terminal Multiplexer	A6749A	Full-length	11.00	RS-232 or RS-422	Yes	No	3
Secure Web Console PCI Card[5]	A5858A	Half-length	11.00	RS-232 (in) and RJ-45 (out)	Yes	No	1
Graphics/USB kit (2 cards)[6]	A6150B	See note 6	11.00		Yes	No	2
Hyper Fabric 4X (copper)	A6092A	Half-length	11.00	37-pin D-type	Yes	No	2
Hyper Fabric 2 (fiber)	A6386A	Half-length	11.00	LC-duplex short wave	Yes	No	2
802.5 Token Ring 4/16/100 Mb/s	A5783A	Half-length	11.00	RJ-45 and DB-9	Yes	No	4
Public Key Cryptography[7]	A5486A	Half-length	11.00		No	No	1

[1] PCI slot 1 is restricted to half-length cards
[2] The Dual Ultra2 SCSI/Dual 10/100Base-TX Combo card (A5838A) is only supported in PCI slot 2, the full-length, independent PCI slot
[3] HP recommends at least 256 MB of memory be used with the Dual Ultra2 SCSI/Dual 10/100Base-TX Combo card (A5838A)
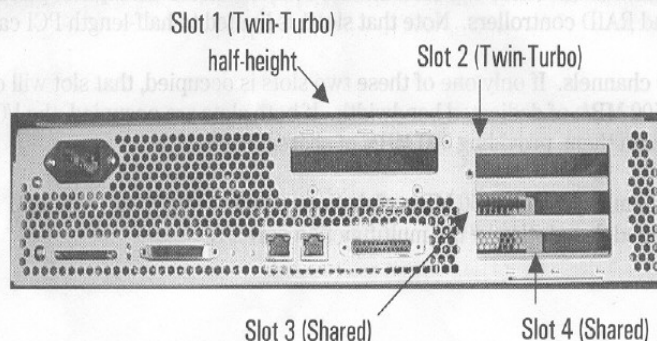[4] HP recommends at least 256 MB of memory be used with the FDDI LAN adapter (A3739B)
[5] The Secure Web Console card must be configured in the initial server order; it cannot be ordered as an accessory at a later date
[6] The graphics card is only supported in PCI slot 1, the half-length, independent PCI slot; the USB card is supported in any slot
[7] The Public Key Cryptography card is only supported in PCI slots 1 and 2, the slots with independent channels
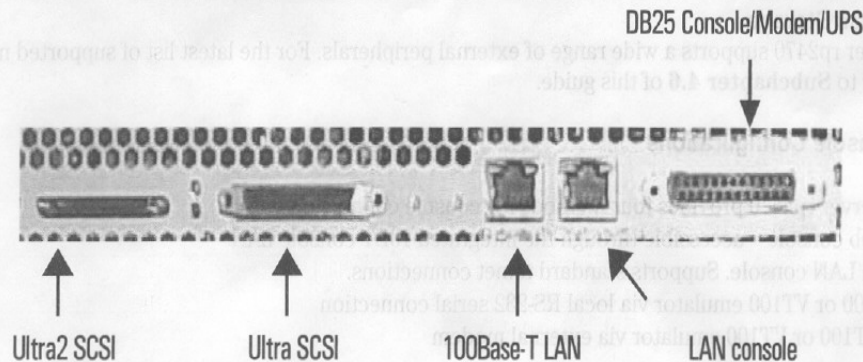
Figure 2.1.4 The HP Server rp2470 Rear Bulkhead and PCI Slots

Slot 1 (Twin-Turbo)
half-height
Slot 2 (Twin-Turbo)
Slot 3 (Shared)
Slot 4 (Shared)

Integrated Multifunction Core I/O

The integrated multifunction I/O provides core I/O functionality and includes the Extended Fault Management System.

Figure 2.1.5 HP Server rp2470 Multifunction Core I/O

- 10/100Base-T LAN with RJ-45 connector—Supports LAN boot for operating system installation as part of Ignite/UX.
- External LVD Ultra2 SCSI (80 MB/s) port (Ultra2 is backward compatible with SE-SCSI)—Order the appropriate cable to connect to external peripherals, example: VH to HD cable
- External Single-Ended, Narrow-Ultra SCSI port—Order the appropriate cable to connect to external peripherals. Note that Wide SCSI devices will not work on this port.
- Two internal SCSI controllers with dual Ultra SCSI (40 MB/s) channels. Each channel independently supports an internal hot plug disk drive.

Extended Fault Management System

- Web Console—A web console that provides a system console interface to any authorized web browser. The HP Server rp2470 and HP Server rp2430 web console solution is integrated into the core I/O. It does not require an I/O card or external peripheral. The HP Server rp2450 and HP Server rp2400 require the A5858A IO card for web console.
- Integrated LAN console—Connection via industry standard telnet interface
- Dedicated 10Base-T management LAN with RJ-45 connector—Provides connectivity for system management, access to LAN consoles, and LAN based UPS
- DB-25 serial port—multiplexed (using W cable) into three RS-232 ports: local console, remote console, and UPS
- Password protected console ports
- Console mirroring between local and remote consoles
- Remote power up and power down control
- Configurable remote access control
- Event notification to system console, email, pager and/or HP response centers
- Telnet capability to other hp server Fault Management Systems (rp7400, rp5400 series, and rp2400 series)
- Interface to system monitoring and diagnostic hardware via an internal I^2C bus

Internal Disk Drives

- The HP Server rp2470 server supports up to two internal, Ultra160 SCSI low profile hot-plug disk drives.
- Two Ultra SCSI controllers provide each disk drive with an independent SCSI channel
- Supported by Mirror/UX across both disk drives and controllers