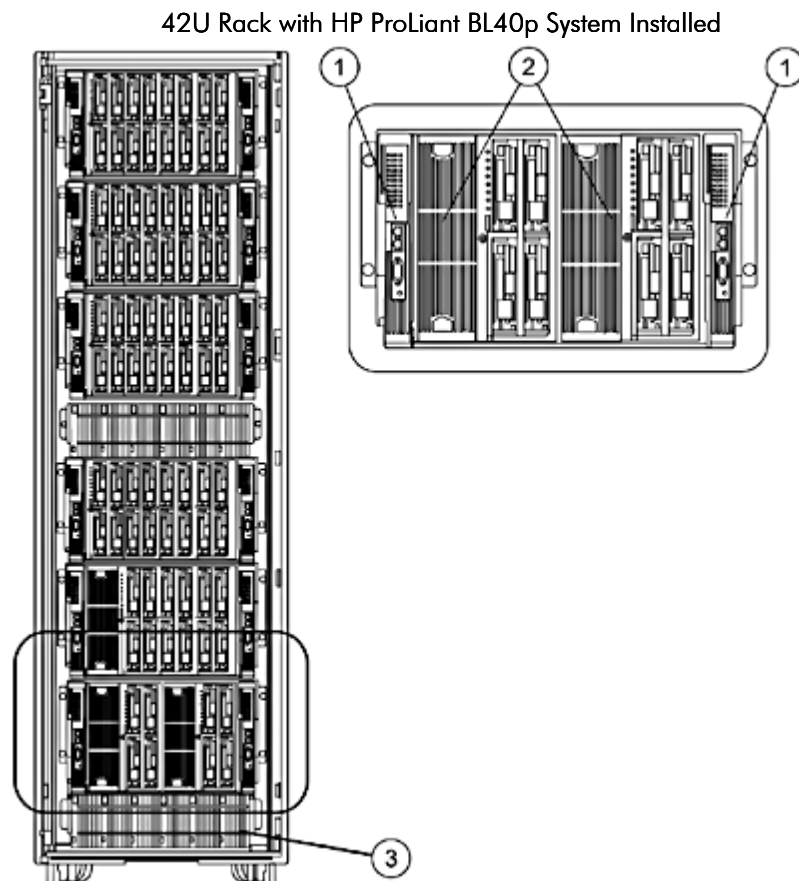


Overview



1. BL p-Class Interconnects (2) in HP BladeSystem p-Class server blade enclosure (interconnect switch shown)
2. HP ProLiant BL40p server blades (2) in HP BladeSystem p-Class server blade enclosure
3. HP BladeSystem p-Class 3U power enclosure with hot-plug power supplies (6)

What's New

- New HP BladeSystem p-Class 1 U Power Enclosure
- The HP BladeSystem Management Suite is delivered in a convenient to purchase pack which includes a BL p-Class Server Blade Enclosure with enhanced backplane components, a single copy of Systems Insight Manager (SIM) and 8 licenses for each of the following products: Rapid Deployment Pack (RDP), Performance Management Pack (PMP) and the Vulnerability and Patch Management Pack (VPM).

HP ProLiant BL40p Server Blade includes:

- Intel Xeon MP FC-PGA 3.0GHz\4MB or 2.2GHz\2MB processor (quad capability)
- ServerWorks GC-LE Chipset
- 512-MB or 1024 MB of 2-way interleaved PC2100 ECC DDR (2 x 1 Interleaved Memory), expandable to 12 GB
- Advanced Memory Protection with Online Spare
- Five NC7781 PCI-X Gigabit NICs (embedded) with WOL (Wake On LAN) and Preboot eXecution Environment (PXE)
- One additional 10/100T NIC dedicated to Integrated Lights-Out (iLO) Management
- Smart Array 5i Plus Controller with battery-backed write cache (integrated on system board) standard on the 3.0GHz/4M model, optional on the 2.2GHz/2M model
- Wide Ultra3 SCSI Drive Cage standard supports up to four 1" hot plug hard drives

Overview

- Two PCI-X slots (64b/100MHz capable) for redundant SAN connectivity
- Integrated Lights-Out (iLO) Management (ASIC on motherboard)
- Plugs vertically into p-Class server enclosure
- Up to 12 HP ProLiant BL40p server blades fit in 42U rack

What's Needed

HP BladeSystem p-Class Server Blade Enclosure:

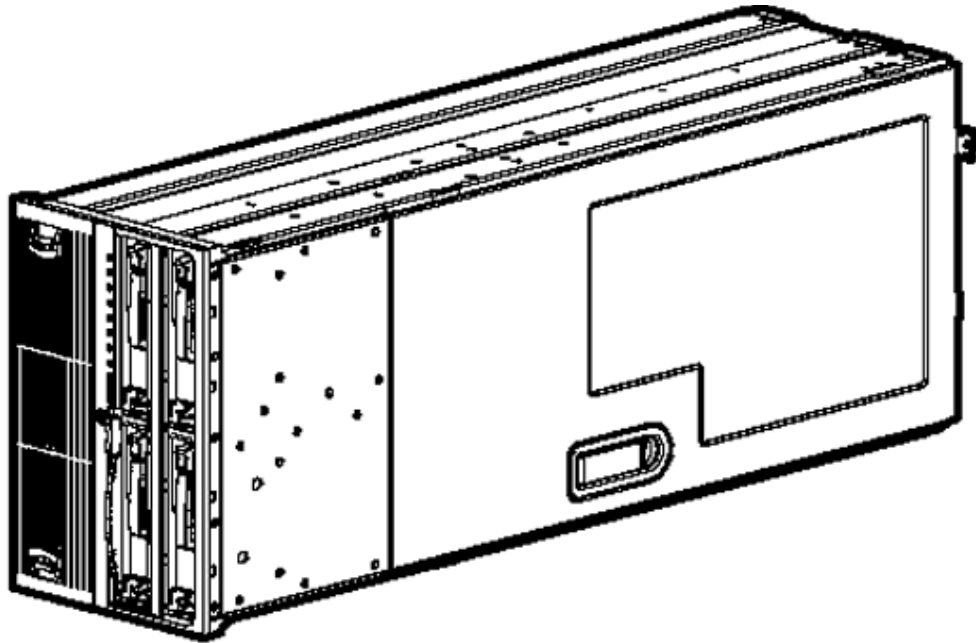
- Server blades and interconnects slide into p-Class server blade enclosures for network connection and power
- Server blade enclosure is 6U high and 10 bays across. The server blade enclosure bays consist of 2 (outer) interconnect bays and 8 server bays. One server blade enclosure can hold up to 2 HP ProLiant BL40p server blades and 2 interconnects
- Types of interconnects available: GbE Interconnect Switches, GbE2 and CGESM Interconnect Switches with optional Fibre Channel pass through, Patch Panels or Patch Panel 2 with Fibre Channel pass through

HP BladeSystem p-Class Power Enclosures:

- Use BL p-Class sizing tool to determine power based on your configuration
<http://h30099.www3.hp.com/configurator/powercalcs.asp>
- Choose the HP BladeSystem p-Class 3U power enclosure or the HP BladeSystem p-Class 1U power enclosure
- Choose single-phase or three-phase power
- HP BladeSystem power enclosures with power supplies are not needed if using facility -48VDC \pm 10%, in this case purchase facility DC option kit

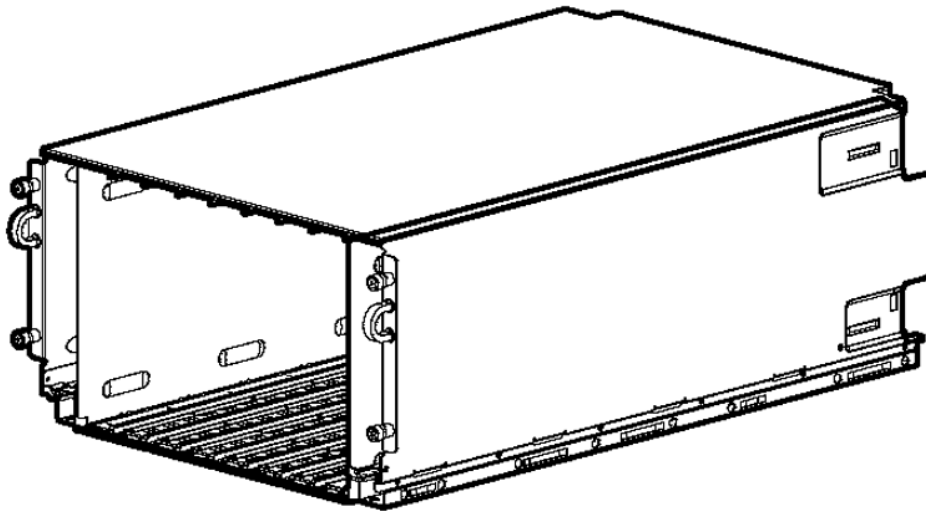
HP BladeSystem p-Class Power Distribution (only required with the 3U power enclosure):

- Distributes power from the power enclosure to the server blade enclosures
- Four power distribution choices:
 - HP BladeSystem p-Class scalable bus bar
 - HP BladeSystem p-Class mini bus bar
 - HP BladeSystem p-Class power bus box
 - Dual power input kit for mini bus bar (required for support of two power enclosures)
- **NOTE:** Power requirements for a HP BladeSystem p-Class: 200V - 240V AC, 30 amp or facility DC -48V \pm 10%.
- HP ProLiant BL40p server blade, p-Class server blade enclosures, interconnects and power enclosures protected by a limited three year warranty with optional service uplifts available
- SATA drives have a 1 year warranty



HP ProLiant BL40p Server Blade

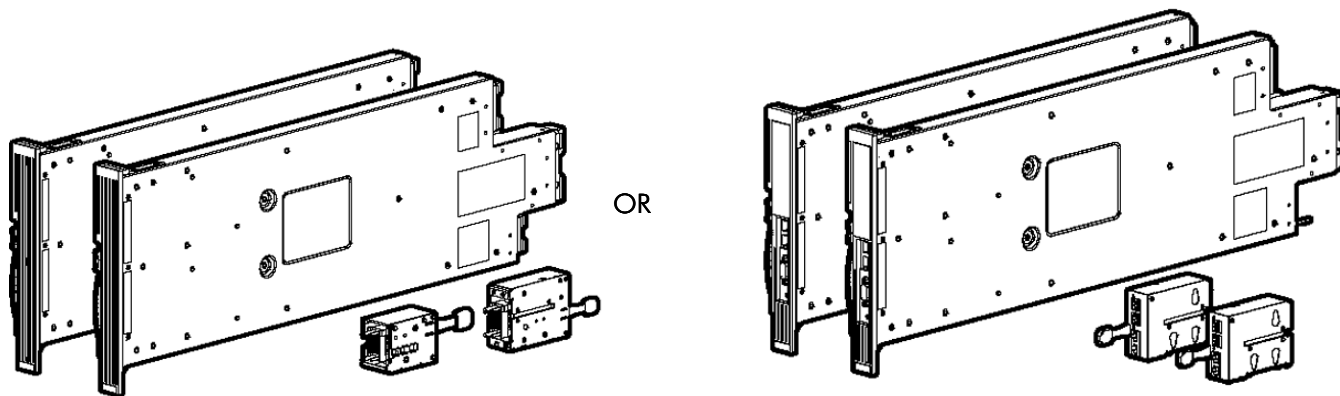
+



HP BladeSystem p-Class Server Blade Enclosure

+

Overview



Patch Panel (shown) or Patch Panel 2

GbE Interconnect Switch (shown) or GbE2 Interconnect Switch or CGESM Interconnect Switch (fiber or copper-based)

HP BladeSystem p-Class Interconnects

+

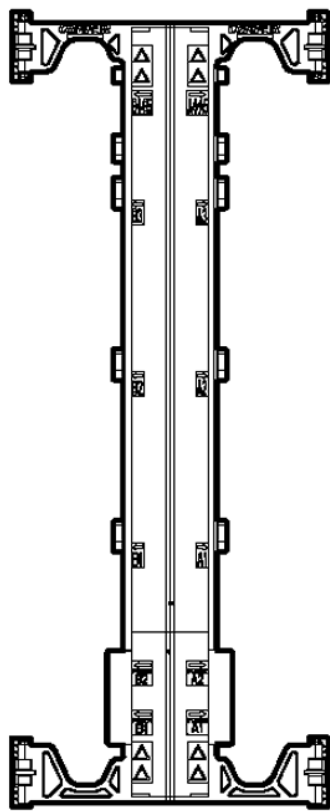


HP BladeSystem p-Class 3U power enclosures and power supplies
OR



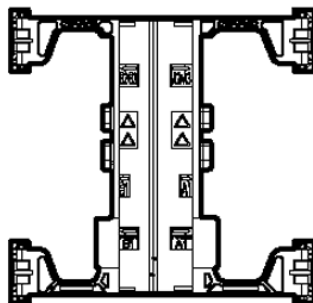
HP BladeSystem p-Class 1U power enclosures and power supplies
OR
Facility DC
+

Overview



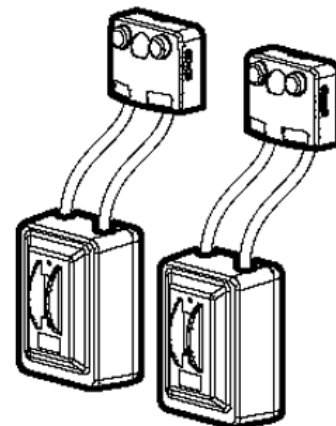
Scalable bus bar

OR



HP BladeSystem p-Class power distribution

OR



Bus boxes

Configuration Steps

For a complete configuration of the HP ProLiant BL40p server blade, do the following:

1. Select a HP ProLiant BL40p server blade:
Single Xeon MP 2.2GHz processor, 512-MB RAM (2 x 256MB) (345628-B21)
Or
Single Xeon MP 3.0GHz processor, 1-GB RAM (2 X 512M) (344286-B21)
NOTE: Additional options include processors, memory, and PCI-X HBAs.

PLUS

2. Decide how many HP BladeSystem p-Class Server Blade Enclosures to purchase (each enclosure can hold up to 2 HP ProLiant BL40p server blades):

HP BladeSystem p-Class server blade enclosure with enhanced backplane components with 8 Rapid Deployment Pack licenses (281404-B22)

Or

HP BladeSystem p-Class server blade enclosure with enhanced backplane components with Rapid Deployment Pack trial (243564-B22)

Or

HP BladeSystem p-Class server blade enclosure with enhanced backplane components and the HP BladeSystem Management Suite which is delivered in a convenient to purchase pack that includes a single copy of Systems Insight Manager (SIM) and 8 licenses for each of the following products: Rapid Deployment Pack (RDP), Performance Management Pack (PMP) and the Vulnerability and Patch Management Pack (VPM).(380625-B22)

Or

Optional HP BladeSystem p-Class Server Blade Enclosure Upgrade Kit(354100-B21)

Overview

PLUS

Select an Interconnect Kit. Each Interconnect Kit contains a pair of interconnects except the Cisco GESM which contains a single switch per kit. One pair of interconnects is required with each ProLiant BL p-Class server blade enclosure:

BL p-Class RJ-45 Patch Panel (with 32 RJ-45 connectors) (230766-B21)

Or

Quantity (2) Cisco Gigabit Switch Module for HP BladeSystem p-Class Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 2 RJ-45 10/100/1000 T/TX/T uplink ports, and 4 SFP ports) (378926-B21), with or without any combination of up to 4 10/100/1000 T/TX/T RJ-45 SFP Module (378928-B21) or 1000BASE SX Fiber SFP Module (378929-B21), with or without ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLxxp xx Fibre Channel connectivity when using the CGESM Interconnect Switch)

Or

Quantity (2) Cisco Gigabit Switch Module for HP BladeSystem p-Class Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 2 RJ-45 10/100/1000 T/TX/T uplink ports, and 4 SFP ports populated with 2 10/100/1000 T/TX/T SFP modules) (378927-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLxxp xx Fibre Channel connectivity when using the CGESM Interconnect Switch)

Or

BL p-Class C-GbE2 Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 6 RJ-45 10/100/1000 T/TX/T uplink ports) (283192-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLxxp xx Fibre Channel connectivity when using the GbE2 Interconnect Switch) or BL p-Class F-GbE2 Interconnect (with 16 10/100/1000 T/TX/T downlink ports, 4 LC 1000 SX and 2 RJ-45 10/100/1000 T/TX/T uplink ports) (283193-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLxxp xx Fibre Channel connectivity when using the GbE2 Interconnect Switch)

Or

BL p-Class C-GbE Interconnect Kit (with 4 RJ-45 10/100/1000 T/TX/T uplink ports and 16 RJ-45 10/100 T/TX downlink ports) (249655-B21)

Or

BL p-Class F-GbE Interconnect Kit (with 4 LC 1000 SX uplink ports and 16 RJ-45 10/100 T/TX downlink ports) (279720-B21)

Or

BL p-Class server blade enclosure with enhanced backplane components with 8 Rapid Deployment Pack licenses (281404-B22)

Or

BL p-Class server blade enclosure with enhanced backplane components with 8 Rapid Deployment Pack trial (243564-B22)

Or

Quantity (2) Cisco Gigabit Switch Module for HP BladeSystem p-Class Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 2 RJ-45 10/100/1000 T/TX/T uplink ports, and 4 SFP ports) (378926-B21), with or without any combination of up to 4 10/100/1000 T/TX/T RJ-45 SFP Module (378928-B21) or 1000BASE SX Fiber SFP Module (378929-B21), with or without ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLxxp xx Fibre Channel connectivity when using the CGESM Interconnect Switch)

Or

Quantity (2) Cisco Gigabit Switch Module for HP BladeSystem p-Class Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 2 RJ-45 10/100/1000 T/TX/T uplink ports, and 4 SFP ports populated with 2 10/100/1000 T/TX/T SFP modules) (378927-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLxxp xx Fibre Channel connectivity when using the GbE2 Interconnect Switch) or BL p-Class C-GbE2 Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 6 RJ-45 10/100/1000 T/TX/T uplink ports) (283192-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLxxp xx Fibre Channel connectivity when using the CGESM Interconnect Switch)

Or

BL p-Class F-GbE2 Interconnect (with 16 10/100/1000 T/TX/T downlink ports, 4 LC 1000 SX and 2 RJ-45 10/100/1000

Overview

T/TX/T uplink ports) (283193-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLxp xx Fibre Channel connectivity when using the GbE2 Interconnect Switch)

Or

BL p-Class C-GbE Interconnect Kit (with 4 RJ-45 10/100/1000 T/TX/T uplink ports and 16 RJ-45 10/100 T/TX downlink ports) (249655-B21)

Or

BL p-Class F-GbE Interconnect Kit (with 4 LC 1000 SX uplink ports and 16 RJ-45 10/100 T/TX downlink ports) (279720-B21)

3. Select a HP ProLiant BL40p server blade:

Single Xeon MP 2.2GHz processor, 512-MB RAM (2 x 256MB) (345628-B21)

Or

Single Xeon MP 3.0GHz processor, 1-GB RAM (2 X 512M) (344286-B21)

NOTE: Additional options include processors, memory, and PCI-X HBAs.

PLUS

4. Decide how many HP BladeSystem p-Class Server Blade Enclosures to purchase (each enclosure can hold up to 2 HP ProLiant BL40p server blades):

HP BladeSystem p-Class server blade enclosure with enhanced backplane components and the HP BladeSystem Management Suite which is delivered in a convenient to purchase pack that includes a single copy of Systems Insight Manager (SIM) and 8 licenses for each of the following products: Rapid Deployment Pack (RDP), Performance Management Pack (PMP) and the Vulnerability and Patch Management Pack (VPM).(380625-B22)

NOTE: The HP ProLiant BL40p server blade does not currently support (PMP). Future support is planned.

PLUS

5. Select a HP BladeSystem p-Class power enclosure and power supplies based on configuration. Use p-Class sizing tool to help determine power configuration: <http://h30099.www3.hp.com/configurator/powercalcs.asp>

NOTE: Power enclosures and supplies are not needed if using facility DC (-48V ± 10%).

Single phase 3U power enclosure with four hot-plug power supplies (NA/JPN- 239162-001) (Single-phase 3U power enclosure holds a max of four power supplies; no need to order additional power supplies with this option kit) (INTL - 239162-421)

Or

Three-phase 3U power enclosure with six hot-plug power supplies (NA/JPN- 230769-001) (INTL - 230769-421) (Three-phase 3U power enclosure holds a max of six power supplies no need to order additional power supplies with this option kit) (Power enclosures and power supplies can also be purchased separately. See options list below.)

Or

1U power enclosure with six power supplies (378284-B21)

Or

1U power enclosure with two power supplies (380314-B21) (Additional power supplies can also be purchased separately. See options list below.)

PLUS

Select power distribution (only required with 3U power enclosures):

Scalable bus bar - Supports up to 5 server blade enclosures* (240560-B21)

Or

Mini bus bar - Supports up to 3 server blade enclosures* (240559-B21)

Or

Power Bus Box - Supports only 1 server blade enclosure* (240562-B21)

Or

Dual Power Input Kit for Mini Bus Bar - required for support of two power enclosures. (364565-B21)

Overview

Or

HP Modular Distribution Unit 40 Amp (NA/JPN) (P/N 252663-D75)**

Or

HP Modular Distribution Unit 40 Amp (Int'l) (P/N 252663-B34)** Or HP Modular Distribution Unit 32 Amp (Int'l) (P/N 252663-B33)**

Or

HP Modular Distribution Unit 24 Amp (NA/JPN) (P/N 252663-D74)**

*NOTE: Maximum depends upon power input.

**NOTE: The Modular Distribution Unit Kits excludes the extension bars as they are not required with the HP BladeSystem p-class 1U power enclosure.

Standard Features (Server Blade)

HP ProLiant BL40p Server Blade

Processor Xeon MP processor 3.0 GHz/4MB
 One of the following depending on Model: Xeon MP processor 2.2 GHz/2MB

Upgradeability Upgradeable to quad processing

Cache Memory 4-MB Level 3 Cache (on the 3.0GHz Model)
 2-MB Level 3 Cache (on the 2.2GHz Models)

Chipset ServerWorks GC-LE chipset
NOTE: For more information regarding ServerWorks, please see the following URL:
<http://www.serverworks.com/products/overview.html>.

Memory Protection Advanced Memory Protection with Online Spare

Memory	Type	2-way interleaved PC2100 ECC DDR	(2 X 256 MB)
	Standard	512MB	
		(1 processor model)	
	Maximum	12,288 MB	(2 X 512MB)
	Standard	1024MB	
		(2 processor model)	
	Maximum	12,288 MB	

NOTE: Memory must be installed in pairs. Advanced Memory Protection with Online Spare.

Network Controller Six network adapters total:
 Five NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE
 One 10/100T iLO NIC dedicated to management

Manageability Integrated Lights-Out (iLO) Management Advanced (ASIC on the System Board)

Internal Storage	Hard Drives	None ship standard	
Maximum Internal Storage	SCSI	1200 GB (internal drive cage)	(4 x 300 GB)

NOTE: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds.

Standard Features (Server Blade)

Expansion Slots	Two Dedicated PCI-X slots (64b/100MHz capable) for redundant SAN connectivity
I/O cable	I/O cable connectors: (2)USB ports, (1) video port, (1) iLO port and (1) kernel debug port (2) I/O cables ship with every server blade enclosure Tested USB devices (keyboard, mouse, floppy) are listed in options section of this QuickSpecs

Dimensions	6U high x 7" wide. Fits within p-Class Server Blade Enclosure. One HP ProLiant BL40p server blade takes up four (4) server blade bays within a server blade enclosure. Two HP ProLiant BL40p server blades can fit within one server blade enclosure.
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Standard Features (Server Blade Enclosure and Interconnects)

HP BladeSystem p-Class Server Blade Enclosure and ProLiant BL p-Class Interconnects

HP BladeSystem p-Class Server Blade Enclosure 6U (10.5-inch), 19-inch wide
Holds up to 2 HP ProLiant BL40p server blades; 8 HP ProLiant BL20p server blades; or a combination of both.

10 bays per server blade enclosure:

- 8 bays for server blades
- 2 outside bays for interconnect modules (RJ-45 Patch Panels, RJ-45 Patch Panel 2, GbE2 Interconnect Switches, GbE Interconnect Switch or CGESM Interconnect Switch)

Server blades slide in and connect to the server blade enclosure back plane for power and data connections

Up to 6 BL p-Class server blade enclosures fit in a 42U rack

Server blade management module attached to the back of each BL p-Class server blade enclosure to report all server events and provide asset and inventory information

HP BladeSystem p-Class Power Requirements Redundant 200V - 240V AC, 30 amp single-phase for NA and International
Redundant 208V 30amp 3-phase 4 wire, NA
Redundant 380 - 415V 20A 3-phase 5 wire, Intl
Redundant -48VDC \pm 10%

HP ProLiant BL p-Class Interconnect Switch Option (Two switches per kit)
(Every HP BladeSystem p-Class server blade enclosure requires two interconnect switches OR two RJ-45 patch panels)

Provides up to a 32 to 1 server networking cable reduction per server enclosure depending on the mix of HP ProLiant BL20p, HP ProLiant BL20p G2, and HP ProLiant BL40p server blades. Each interconnect switch (two per enclosure) reduces up to sixteen internal server network (NICs) ports to six external ports (four on a modular rear mounting interconnect module and two on the switch front panel). This provides a total of twelve external ports per server blade enclosure. Only one to all twelve external ports may be used per server blade enclosure.

The Cisco Gigabit Ethernet Switch Module (CGESM) Interconnect Kit is for applications that require network adapter consolidation to 1000 Mbps (Gigabit Ethernet) in a Cisco infrastructure. The CGESM supports the same HP ProLiant BL40p G2 Fibre Channel pass-through as the GbE2.

The Cisco Gigabit Ethernet Switch Module Interconnect kit includes one CGESM Interconnect Switch or one CGESM Interconnect Switch populated with two (2) RJ-45 10/100/1000 T/TX/T Small Form Factor Pluggable (SFP) Modules.

Quantity 2 Cisco Gigabit Ethernet Switch Module Interconnect kits provide two Interconnect Switches providing any combination of up to twelve (12) RJ-45 10/100/1000 T/TX/T or Fiber SX external ports per server blade enclosure.

The GbE2 Interconnect Kits (C-GbE2 and F-GbE2) are for applications that require network adapter consolidation to 1000 Mbps (Gigabit Ethernet) and BL25p Fibre Channel pass-through.

- The ProLiant BL p-Class F-GbE2 Interconnect Kit includes two GbE2 Interconnect Switches and two QuadSX Interconnect Modules that provide eight (8) LC 1000 SX and two (4) RJ-45 10/100/1000 T/TX/T external ports per server blade enclosure.
- The ProLiant BL p-Class C-GbE2 Interconnect Kit includes two GbE2 Interconnect Switches and two QuadT2 Interconnect Modules that provide twelve (12) RJ-45 10/100/1000 T/TX/T external ports per server blade enclosure.
- The optional ProLiant BL p-Class Storage Connectivity Kit (321745 -B21) is required for BL25p Fibre Channel pass-through when using either the CGESM, C-GbE2 or F-GbE2 Interconnect Kit.

Also included (per Interconnect Switch):

Standard Features (Server Blade Enclosure and Interconnects)

- One (1) RS-232 DB-9 front panel out-of-band management port
- Redundant crosslink ports connecting the two interconnect switches
- Redundant power inputs and on-board redundant fans
- Hot-plug and hot-remove with configuration retention and no need to cable/re-cable
- Power ON, management, and per port status and speed LED indicators
- Reset/power momentary push-button switch
- HP ProLiant BL Interconnect Switch Management Utilities and User Documentation CD
- Fully pre-configured for rapid deployment and immediate operation
- ProLiant BL Interconnect Switch Management System and Utilities:

Full featured web-based and scriptable command line (CLI) interfaces, password protected multi-level user accounts, Telnet, SNMP, BootP client, port mirroring, port-based VLANs and VLAN tagging, EtherChannel compatible multi-port trunking, network time protocol, spanning tree protocol, broadcast/multicast storm control, flow control, human readable/writeable configuration file, TFTP client, IP address security restrictions, auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support, and more.

HP ProLiant BL p-Class RJ-45 patch panel 6U (10.5-inch), Plugs into BL p-Class 6U server blade enclosures
 Used to pass NIC signals from all server blades in server blade enclosure out as RJ-45 connections
 (Two patch panels per kit) Supports Gigabit Ethernet network controllers. 16 RJ-45 connectors on the back of each BL p-Class 6U
 (Every HP BladeSystem p-Class server blade enclosure requires two interconnect switches OR two RJ-45 patch panels) RJ-45 patch panel (32 RJ-45 connections per server blade enclosure).

Required Network Cabling	10Base-T	Categories 3, 4 or 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	100Base-TX	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	1000Base-T	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	1000Base-SX	50/125 μ m Multimode Fiber, 400 MHz/Km (500 meters) 50/125 μ m Multimode Fiber, 500 MHz/Km (550 meters) 62.5/125 μ m Multimode Fiber, 160 MHz/Km (220 meters) 62.5/125 μ m Multimode Fiber, 200 MHz/Km (275 meters)

Standard Features (Power System and Rack Information)

HP BladeSystem p-Class Power System and Rack information **NOTE:** To determine power configuration please refer to the ProLiant BL p-Class Overview and Planning Whitepaper and sizing tool, please see the following URL:
<http://h18000.www1.hp.com/products/servers/proliant-bl/p-class/20p/index.html>

HP BladeSystem p-Class 3U Power Enclosure 3U (5.25-inch), 19-inch wide, 29-inch deep (0.48-meter wide, 0.74-meter deep), Dual input single phase and three phase models available. HP BladeSystem 3U p-Class power enclosure provides external, shared hot-plug power. Each three-phase power enclosure houses up to six hot-plug power supplies each single-phase power enclosures hold up to four hot-plug power supplies to power the BL p-Class server blades and interconnects.
Please use the sizing utility to determine the power needed for each configuration.
<http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls>
Power enclosures and power supplies are not needed if using facility DC (-48V DC \pm 10%). If using facility DC, only Facility DC Power Connection kit part number (240563-B21) is needed.

HP BladeSystem p-Class 1U Power Enclosure 1U (1.75-inch), 19-inch wide, 29-inch deep (0.48-meter wide, 0.74-meter deep), Multi-input single phase or three phase operation.
HP BladeSystem p-Class 1U power enclosure provides external, hot-plug power. Each 1U power enclosure houses up to six hot-plug power supplies to power up to one server blade enclosure, fully populated with BL p-Class server blades and interconnects.
Please use the sizing utility to determine the power needed for each configuration
<http://www.hp.com/go/bladeSystem/powercalculator>.
Power enclosures and power supplies are not needed if using facility DC (-48V DC \pm 10%). If using facility DC, only Facility DC Power Connection kit part number (240563-B21) is needed.

HP BladeSystem p-Class Power Distribution (only required with 3U power enclosures) In the HP BladeSystem p-Class infrastructure, redundant -48 VDC power (from the power enclosures or facility DC power) is distributed from the power enclosures to the server blade enclosures through a bus bar system. Hinges attach the HP BladeSystem bus bars to the rails in a rack. The bus bars swing open from the center to enable easy rear access to the server blades and network cables. Power is distributed redundantly through independent A- and B-sided bus bars.
Three different power distribution solutions are available depending on the maximum number of server blade enclosures planned for the rack:

- HP BladeSystem p-Class scalable bus bar
- HP BladeSystem p-Class mini bus bar
- HP BladeSystem p-Class power bus box

NOTE: To support a full 42U rack server blades (6 server blade enclosures), two mini bus bars are needed.

Standard Features (Power System and Rack Information)

Required Power Source	Two 30-amp redundant power feeds per power enclosure	
Connectors	NEMA receptacles (NA/Japan)	
	NA 1-phase	L6-30, 250v, 30A 3-wire
	NA 3-phase	L15-30, 250V, 30A, 4-wire
	IEC 309 Pin & Sleeve connectors (International)	
	Intl 1-phase	250V, 32A, 3- pin (2 pole + ground)
	Intl 3-phase	380-415V, 32A, 5--pin (4 pole + ground)
	Optimized for power cabling from bottom and network cabling from top	

Standard Features

ProLiant Essentials Foundation Pack Software for the ProLiant BL Server Blades

ProLiant Essentials Rapid Deployment Pack (RDP) is an automated deployment and provisioning solution for all ProLiant servers. RDP includes the Altiris Deployment Solution and ProLiant Integration Module featuring ProLiant server pre-configured events for OS installation, and optimized software drivers, firmware and management agents. Every RDP CD includes 10-node trial licenses for evaluation purposes. RDP requires a license for each server deployed and are available for purchase with blade servers. For more information, visit <http://www.hp.com/servers/rdp>.

HP Systems Insight Manger HP Systems Insight Manager (HP SIM) help maximize system uptime and performance and reduce system maintenance costs by providing proactive notification of problems before those problems result in unplanned downtime or reduced productivity. HP SIM is easy to set up to work with the Insight Management Agents, integrated Light-Out and Remote Insight Light-Out Edition, and Version Control Agents to deliver robust fault, configuration, and asset management as well as remote administration. With HP Systems Insight Manager customers will also be able to take advantage of role-based security; the ability to manage ProLiant, Integrity, and HP9000 systems; and plug-ins for storage, client, printer, and power management as well as server rapid deployment, performance management, and workload management. For more details on HP Systems Insight Manager visit <http://www.hp.com/go/hpsim>.

Management Agents The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to HP Systems Insight Manager and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, please visit the management Web site at <http://www.hp.com/servers/manage>.

Subscriber's Choice Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at <http://www.hp.com/go/subscriberschoice> and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.

ROMPaq, support software, and configuration utilities The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available in the RDP CD, SmartStart or downloadable from Software and Drivers download pages, linked from the SmartStart website at <http://www.hp.com/go/support>

Insight Diagnostics Online Edition The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips, available in SmartStart.

NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: <http://www.hp.com/servers/proliantessentials>

Standard Features

Optional ProLiant Essentials Value Packs

Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:

- Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions.
- Performance Management Pack - a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources
- Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.
- Vulnerability and Patch Management Pack - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats
- Workload Management Pack - provides easier management of complex environments, improving overall server utilization and enabling Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to <http://www.hp.com/servers/proliantessentials> or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

SmartStart

SmartStart is a tool that simplifies single server setup, providing a rapid way to deploy reliable and consistent server configurations. SmartStart 7.00 and later can now deploy the HP ProLiant BL20P G3 and HP ProLiant BL40P server blades, using the I/O port with an attached USB CD-ROM device. To obtain a copy of SmartStart for your blade server, redeem the coupon that is included with your Blade server or order your copy from the SmartStart web site. For more information, please visit the SmartStart Web site at <http://www.hp.com/servers/smartstart>.
SmartStart version supported (minimum): SmartStart 6.20

OS Support

Microsoft® Windows 2000 Advanced Server
Red Hat Linux 8.0
Red Hat Enterprise Linux AS
SuSE Linux Enterprise Server 7
United Linux
Microsoft Windows Server 2003
VMware Virtualization Software

NOTE: For a complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: <http://www.hp.com/go/supportos>.

NOTE: For an up-to-date listing of the latest drivers available for the HP ProLiant BL p-Class, please see: <http://h18004.www1.hp.com/support/files/server/us/family/model/5342.html>.

NOTE: For a more complete and up-to-date information on Linux support, please visit HP Linux Web site at: <http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html>.

NOTE: For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at:

<http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html>.

Standard Features

Intelligent Manageability Integrated Lights-Out Advanced (iLO)

- Virtual CD-ROM
- Virtual Floppy *
- Virtual Power Button Control
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) Security
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privileges

Automatic Server Recovery-2 (ASR-2)

Insight Manager 7

HP Systems Insight Manager

Redundant ROM

Remote Flash ROM

ROM Based Setup Utility (RBSU)

Advanced Configuration and Power Interface Specification Ready (ACPI)

Server Health Logs

HP Redundant Power Supply Utility

Pre-Failure Warranty (covers processors, as well as hard drives and memory)

HP Interconnect Switch Management System and Utilities (interconnect switch option)

Integrated Management Log (IML)

Dynamic sector repairing and drive parameter tracking (with Smart Array controllers) Redundant/adaptive load balancing NIC Support

* Advanced features such as Graphical Remote Console and Virtual Floppy are included with the BL p-Class server.

Availability

Power redundancy: Redundant AC feeds into power enclosures; redundant DC feeds from power enclosure to server blade enclosures, 1 + 1 redundant power supplies

Four hot-plug SCSI hard drive bays and integrated RAID (Smart Array 5i Plus Controller with 64-MB total Memory on the 5i Plus Memory Module) on every server blade. Battery Backed Write Cache Enabler Module standard on the 2 processor model and optional on the 1 processor model. Redundant ROM on each server blade

ECC Memory

Interconnects Switch Availability

- Hot-plug and hot- remove with configuration retention and no need to cable/re-cable
- Two network connections per server blade bay (four NICs total) routed to two redundant interconnect switches
- Redundant inter-switch communication with two sets of redundant uplink ports per each interconnect switch
- Redundant front panel ports per each interconnect switch for diagnostics, management, and additional uplinks
- Redundant serial ports
- Compatibility with PVST+ (CGESM or GbE2 switch) and 802.1D Spanning tree protocol support for loop-free path redundancy
- Static IEEE 802.3ad (EtherChannel compatible) trunking with automatic port load balancing and failover
- Redundant switch configuration images in memory (GbE2 switch)
- Redundant fans per each interconnect switch
- Redundant 1+1 power to each interconnect switch
- Support for ProLiant network adapter teaming

Standard Features

- Redundant configurable community strings and SNMP trap manager hosts
 - Redundant configurable syslog server, DNS server, and default gateways (GbE2 switch)
-

Security	Power-on password Administrator's password Integrated Lights-Out has 12 customizable user accounts and SSL encryption Integrated Lights-Out can be disabled via a Global Setting Interconnect switch multilevel user names and passwords, management interface time out period setting, SSH*, SCP secure copy protocol*, port-based IEEE 802.1Q tagged VLANs, RADIUS user authentication and authorization*, and IP address restriction * CGESM and GbE2 Interconnect Switch only .
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Minimum Rack Requirements	Mounts in HP Telco racks and Third Party racks that meet the following criteria: <ul style="list-style-type: none">• Compatible with 19-inch Standard EIA rail sets• EIA rail-to-rail depth is 29 - 30"• Cabinet depth must be at least 36-inch deep overall (Additional min. 3.5-inch clearance from rear RETMA rail to rear door, inclusive in the 36-inch overall depth)• Ample room for top and bottom cable egress (approximately 8 square inches for full rack configuration with patch panel)• Must be capable of supporting 1600 lb (for full rack configuration)• Perforated front and rear doors to accommodate front-to-back cooling• Must have 65% open perforation on server blade enclosure doors to support airflow requirements• Optimized for use with the 10000 Series racks
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NOTE: If using 7000 Series rack, Rack Extension Kit and High Air Flow Rack Door options are required.

Rack Airflow Requirements	Rack 10000 series Cabinets The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.
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CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- **Front and rear doors:** If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- **Side:** The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: <http://h18000.www1.hp.com/products/servers/proliant-bl/p-class/40p/documentation.html>.

Standard Features

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA3000 & EVA5000, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to <http://www.hp.com/go/factory-express>.

Service and Support

Three-year limited warranty, including hardware diagnostic support, pre-failure warranty (coverage of processors, memory and SCSI hard drives.) The warranty is fully supported by HP Services and a worldwide network of resellers and service providers. In addition 90-day's getting started software telephone support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services.

NOTE: Server Blade Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

NOTE: Server Blade Enclosure and Interconnects Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

NOTE: SATA drives have a 1 year warranty.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials and VMWare-based IT solutions helping to deliver high level of application availability. Response times range from 30 mins for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

HP Care Pack services for ProLiant BL p-Class server blades, cover the server blade and the p-Class blade enclosure that the server blade is installed in as well as interconnects, power enclosure with power supplies and power distribution.

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at: <http://www.hp.com/hps/carepack>

NOTE: For more complete information on HP Services offerings, customers and resellers, please visit us at: <http://www.hp.com/hps>

NOTE: Additional information regarding worldwide limited warranty and technical support is available at:

<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Models

ProLiant BL40p P3.0-4MB, 1GB (2P) 344286-B21	Processor(s)	(2) Xeon MP 3.0 GHz standard (up to 4 supported)
	Cache Memory	4-MB Level 3 Cache (per processor)
	Memory	1024 MB (Standard) of 2-way interleaved PC2100 ECC DDR (2 X 512 MB)
	Network Controller	Five NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One additional 10/100T NIC dedicated to iLO Management
	Storage Controller	Smart Array 5i Plus Controller (integrated on system board) with BBWC
	Hard Drives	None ship standard
	Internal Storage	Up to 1200 GB maximum
	Optical Drive	None
	Form Factor	6U high x 7" wide. Fits within p-Class Server Blade Enclosure
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ProLiant BL40p P2.2-2MB, 512MB (1P) 345628-B21	Processor(s)	(1) Xeon MP 2.2 GHz standard (up to 4 supported)
	Cache Memory	2-MB Level 3 Cache (per processor)
	Memory	512 MB (Standard) of 2-way interleaved PC2100 ECC DDR (2 X 256 MB)
	Network Controller	Five NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One additional 10/100T NIC dedicated to iLO Management
	Storage Controller	Smart Array 5i Plus Controller (integrated on system board)
	Hard Drives	None ship standard
	Internal Storage	Up to 1200 GB maximum
	Optical Drive	None
	Form Factor	6U high x 7" wide. Fits within p-Class Server Blade Enclosure

Options

HP ProLiant BL40p server blade Unique Options	Xeon MP 3.0GHz 4MB Processor Option Kit	344287-B21
	Xeon MP 2.2GHz 2MB Processor Option Kit	345627-B21
	HP BladeSystem p-Class Diagnostic Station Upgrade Kit for the HP ProLiant BL40p server blade	309329-B21

ProLiant Essentials Value Pack Software	<p>ProLiant Essentials Intelligent Networking Pack</p> <p>ProLiant Essentials Intelligent Networking Pack, Single Server License 372906-B21</p> <p>NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.</p> <p>NOTE: For additional ProLiant Intelligent Networking Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11925_div/11925_div.HTML</p> <p>ProLiant Essentials Performance Management Pack</p> <p>ProLiant Essentials Performance Management Pack, Single-Server License 306696-B21</p> <p>NOTE: For use with a single server. Contains one license with a unique license activation key, HP Management CD and documentation.</p> <p>NOTE: The most recent version of the software can always be downloaded at http://www.hp.com/products/pmp.</p> <p>NOTE: For additional ProLiant Performance Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11925_div/11925_div.HTML</p> <p>ProLiant Essentials Rapid Deployment Pack Windows Edition and Linux Edition Release</p> <p>Rapid Deployment Pack, Single-Server License 267196-B21</p> <p>NOTE: This license allows 1 server to be deployed and managed via RDP.</p> <p>Rapid Deployment Pack, Single-Server License (Japan) 267196-291</p> <p>NOTE: This license allows 1 server to be deployed and managed via RDP.</p> <p>NOTE: For additional ProLiant Essentials Rapid Deployment Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.HTML http://h18000.www1.hp.com/products/quickspecs/11713_div/11713_div.HTML</p> <p>ProLiant Essentials Server Migration Pack</p> <p>ProLiant Essentials Server Migration Pack, Single-Migration License 375345-B21</p> <p>NOTE: Contains one license, enabling 1 server migration, with a unique license activation key and documentation.</p> <p>NOTE: This license allows 1 server to be migrated from a physical server to a virtual machine. Or this license can be used to migrate a virtual machine from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.</p> <p>NOTE: For additional ProLiant Server Migration Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12170_div/12170_div.HTML</p> <p>ProLiant Essentials Workload Management Pack</p> <p>ProLiant Essentials Workload Management Pack, Single Server License 303284-B21</p> <p>NOTE: For additional ProLiant Workload Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11452_div/11452_div.HTML</p>
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Options

ProLiant Essentials Workload Management Pack		
ProLiant Essentials Workload Management Pack, Single Server License		303284-B21
NOTE: For additional ProLiant Workload Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11452_div/11452_div.HTML		
ProLiant Essentials Virtual Machine Management Pack		
ProLiant Essentials Virtual Machine Management Pack, Single-Server License		372214-B21
NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.		
NOTE: For additional ProLiant Virtual Machine Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12110_div/12110_div.HTML		
ProLiant Essentials Vulnerability and Patch Management Pack		
ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License		371645-B21
NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.		
NOTE: For additional ProLiant Vulnerability and Patch Management Pack License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12111_div/12111_div.HTML		
NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.		
NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials .		

Processor	Xeon MP 3.0GHz 4MB Processor Option Kit	344287-B21
	Xeon MP 2.2GHz 2MB Processor Option Kit	345627-B21

Memory (DDR DIMMs)	512MB of PC2100 ECC DDR DIMM Memory Kit (2x256MB)	300678-B21
	1024MB of PC2100 ECC DDR DIMM Memory Kit (2x512MB)	300679-B21
	2048MB of PC2100 ECC DDR DIMM Memory Kit (2x1024MB)	300680-B21
	4096MB of PC2100 ECC DDR DIMM Memory Kit (2x2048MB)	300682-B21

Options

Hard Drives	Wide Ultra320 – Universal Hot Plug	
	300-GB 10,000 rpm U320 Universal Hard Drive (1")	350964-B22
	146.8-GB 10,000 rpm U320 Universal Hard Drive (1")	286716-B22
	72.8-GB 10,000 rpm U320 Universal Hard Drive (1")	286714-B22
	146.8-GB 15,000 rpm U320 Universal Hard Drive (1")	347708-B22
	72.8-GB 15,000 rpm U320 Universal Hard Drive (1")	286778-B22
	36.4-GB 15,000 rpm U320 Universal Hard Drive (1")	286776-B22

NOTE: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds.

NOTE: Please see the Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:

U320 Hard Drive QS:

http://h18000.www1.hp.com/products/quickspecs/11531_div/11531_div.HTML
(Worldwide)

http://h18000.www1.hp.com/products/quickspecs/11531_na/11531_na.HTML
(North America)

Storage Controllers	Battery Backed Write Cache Enabler Option Kit	255514-B21
	Battery Backed Write Cache Enabler Option Kit (Japan)	255514-291
	Smart Array 6402/128 Controller	273915-B21
	Smart Array 6404/256 Controller	273914-B21
	Smart Array 642 Controller	291967-B21
	256MB DDR, Battery-Backed Cache Upgrade Kit for SA-6400	273913-B21
	NOTE: This 256-MB Battery-Backed Cache Module upgrade kit supports the Smart Array 6400 series controller only.	
	128MB Battery-Backed Cache Enabler	
	NOTE: This 128MB BBWC supports the Smart Array 641 Controller and Smart Array 642 Controller.	
	NOTE: Please see the following Controller or SCSI Adapter QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, SCSI Protocols supported, SCSI Peak Data Transfer Rate, Channels, SCSI Ports, Drives supported, Cache, RAID support, and additional information:	

http://h18000.www1.hp.com/products/quickspecs/11063_div/11063_div.HTML
(Smart Array 5i Plus)

http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.HTML
(Smart Array 6400 Series)

http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.HTML
(Smart Array 642)

Tape Libraries	HP StorageWorks MSL6000 Tape Library	
	Ultrium 960 technology	
	MSL6030, 1 drive, 30 slots, Ultrium 960	AD606A
	MSL6030, 2 drive, 30 slots, Ultrium 960	AD607A
	MSL6030, 1 drive, 30 slots, Ultrium 960, with embedded FC router	AD608A
MSL6030, 2 drive, 30 slots, Ultrium 960, with embedded FC router	AD609A	

Options

MSL6060, 2 drive, 60 slots, Ultrium 960	AD610A
MSL6060, 2 drive, 60 slots, Ultrium 960, with embedded FC router	AD611A

SDLT 600 technology

MSL6026, 1 drive, 26 slots, SDLT 600	AD582A
MSL6026, 2 drive, 26 slots, SDLT 600	AD583A
MSL6026, 1 drive, 26 slots, SDLT 600, with embedded FC router	AD584A
MSL6026, 2 drive, 26 slots, SDLT 600, with embedded FC router	AD585A
MSL6052, 2 drive, 52 slots, SDLT 600	AD587A
MSL6052, 2 drive, 52 slots, SDLT 600, with embedded FC router	AD588A

Ultrium 460 technology

MSL6030, 1 drive, 30 slots, Ultrium 460	AD598A
MSL6030, 2 drive, 30 slots, Ultrium 460	AD599A
MSL6030, 1 drive, 30 slots, Ultrium 460, with embedded FC router	AD600A
MSL6030, 2 drive, 30 slots, Ultrium 460, with embedded FC router	AD601A
MSL6060, 2 drive, 60 slot Ultrium 460	AD603A
MSL6060, 2 drive, 60 slot Ultrium 460, with embedded FC router	AD604A

NOTE: Please reference the [MSL6000 Tape Library QuickSpecs at http://www.hp.com/go/automation](http://www.hp.com/go/automation) for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>.

HP StorageWorks MSL5026S2 Tape Library

MSL5026S2, 1 DRV, SDLT320, RM Library	293472-B22
MSL5026S2, 2 DRV, SDLT320, RM Library	293472-B23
MSL5026S2, 1 DRV, SDLT320, Fibre Channel, RM Library	293472-B24
MSL5026S2, 2 DRV, SDLT320, Fibre Channel, RM Library	293472-B25

NOTE: Please reference the [MSL5026S2 Tape Library QuickSpecs at http://www.hp.com/go/automation](http://www.hp.com/go/automation) for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>.

HP StorageWorks MSL5052S2 Tape Library

MSL5052S2, 2 DRV, SDLT320, RM Library	293474-B21
MSL5052S2, 2 DRV, SDLT320, Fibre Channel, RM Library	293474-B24

NOTE: Please reference the [MSL5052S2 Tape Library QuickSpecs at http://www.hp.com/go/automation](http://www.hp.com/go/automation) for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>.

HP StorageWorks MSL5060 Tape Library

MSL5060, 2 drive, 60 slots, Ultrium 230, RM with embedded FC router	301899-B22
MSL5060, 2 drive, 60 slots, Ultrium 230, TT	301899-B23

NOTE: Please reference the [MSL5060 Tape Library QuickSpecs at http://www.hp.com/go/automation](http://www.hp.com/go/automation) for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>.

HP StorageWorks ESL E-Series Tape Libraries

ESL Extended 712e Tape Library, 0 drive, 712 LTO slots	AA934B
ESL Extended 630e Tape Library, 0 drive, 630 SDLT slots	AA935B

Options

ESL Extended 322e Tape Library, 0 drive, 322 LTO slots	AA939B
ESL Extended 286e Tape Library, 0 drive, 286 SDLT slots	AA940B
ESL E-Series Ultrium 960 drive kit	AD595A
ESL E Ultrium 460 drive kit	AA937A
ESL E Ultrium 460-FC drive kit	AA941A
ESL E SDLT 320 drive kit	AA936A
ESL E e2400-FC Interface Controller	AA928A

NOTE: Please reference the ESL E-Series Tape Libraries QuickSpecs at <http://www.hp.com/go/automation> for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>

Magneto-Optical Jukeboxes

HP StorageWorks 9.1 GB Mid-range Optical Jukeboxes	
300mx, 2 drive, 32 slot jukebox	C1150M
600mx, 4 drive, 64 slot jukebox	C1160M
700mx, 2 drive, 76 slot jukebox	C1170M

NOTE: Please reference the Magneto-Optical Jukebox data sheets at <http://www.hp.com/go/optical> for additional information needed to create a complete solution

HP StorageWorks 9.1 GB High-end Optical Jukeboxes	
1200mx, 4 drive, up to 128 slots	C1104M
1200mx, 6 drive, up to 128 slots	C1105M
2200mx, 4 drive, up to 238 slots	C1111M
2200mx, 6 drive, up to 238 slots	C1107M
2200mx, 10 drive, up to 238 slots	C1110M

HP BladeSystem p-Class Server Blade Enclosures

HP BladeSystem p-Class Server Blade Enclosure with enhanced backplane components and the HP BladeSystem Management Suite	380625-B22
NOTE: Includes a HP BladeSystem p-Class Server Blade Enclosure with enhanced backplane components, a single copy of Systems Insight Manager (SIM) and 8 licenses for each of the following products: Rapid Deployment Pack (RDP), Performance Management Pack (PMP) and the Vulnerability and Patch Management Pack (VPM).	
NOTE: The HP ProLiant BL40p server blade does not currently support (PMP). Future support is planned.	
HP BladeSystem p-Class Server Blade Enclosure with enhanced backplane components (ProLiant Essentials Rapid Deployment Pack Trial)	243564-B22
HP BladeSystem p-Class Server Blade Enclosure with enhanced backplane components (8 ProLiant Essentials Rapid Deployment Licenses)	281404-B22
HP BladeSystem p-Class Server Blade Enclosure Upgrade Kit (option)	354100-B21
NOTE: Server Blade Enclosure Upgrade Kit (354100-B21) contains enhanced backplane components and enables a field upgrade of a blade enclosure to support BL p-class blades and provide a single, physical iLO port for the enclosure.	

Options

<p>HP BladeSystem p-Class Interconnects</p>	<p>ProLiant BL p-Class RJ-45 Patch Panel 2 with Fibre Channel pass-through (pair) (required for ProLiant BL20p G2 Fibre Channel connectivity when using the RJ-45 Patch Panel 2) NOTE: Only one interconnect kit required per server blade enclosure.</p> <p>ProLiant BL p-Class RJ-45 Patch Panel (pair) NOTE: Only one interconnect kit required per server blade enclosure.</p> <p>ProLiant BL p-Class C-GbE2 Interconnect Kit (with pair of GbE2 Interconnect Switches and two QuadT2 Interconnect Modules) NOTE: Only one interconnect kit required per server blade enclosure.</p> <p>ProLiant BL p-Class F-GbE2 Interconnect Kit (with pair of GbE2 Interconnect Switches and two QuadSX Interconnect Modules) NOTE: Only one interconnect kit required per server blade enclosure.</p> <p>Cisco Gigabit Ethernet Switch Module for HP BladeSystem p-Class Interconnect Kit Base Unit only NOTE: Two CGESM interconnect kits required per server blade enclosure.</p> <p>Cisco Gigabit Ethernet Switch Module for HP BladeSystem p-Class Interconnect Kit Base Unit (with two RJ-45 10/100/1000 T/TX/T Small Form Factor Pluggable (SFP) Modules. NOTE: Two CGESM interconnect kits required per server blade enclosure.</p> <p>Cisco RJ-45 10/100/1000 T/TX/T SFP Module</p> <p>Cisco Fiber SX SFP Module</p> <p>ProLiant BL p-Class Storage Connectivity Kit (with pair of OctalFC Interconnect Modules and two Fibre Channel signal conditioning cards) NOTE: Required for BL20P G3 Fibre Channel signal pass through when using the CGESM or GbE2 Interconnect Switch. NOTE: Only one Storage Connectivity Kit required per each GbE2 Interconnect Kit. NOTE: Only one Storage Connectivity Kit required for (2) CGESM Interconnect Kit.</p> <p>ProLiant BL p-Class C-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two QuadT Interconnect Modules) NOTE: Only one interconnect kit required per server blade enclosure. NOTE: The GbE Interconnect Switch supports server NIC speeds to 100 Mbps. It is recommended that the GbE2 Interconnect Switch or a patch panel option be used if server NIC speeds to 1000 Mbps are required. NOTE: To meet applicable radio frequency (RF) emission limits, the sidewall panels on the ends of any individual rack or a series of coupled racks and the front and rear doors must be installed in any racks containing more than one ProLiant BL p-Class GbE Interconnect Kit.</p> <p>ProLiant BL p-Class F-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two DualTSX Interconnect Modules) NOTE: Only one interconnect kit required per server blade enclosure. NOTE: The GbE Interconnect Switch supports server NIC speeds to 100 Mbps. It is recommended that the GbE2 Interconnect Switch or a patch panel option be used if server NIC speeds to 1000 Mbps are required. NOTE: To meet applicable radio frequency (RF) emission limits, the sidewall panels on the ends of any individual rack or a series of coupled racks and the front and rear doors must be installed in any racks containing more than one ProLiant BL p-Class GbE Interconnect Kit.</p> <p>ProLiant BL p-Class Storage Connectivity Kit (with two Fibre Channel signal conditioning cards and two OctalFC Interconnect Modules) (required for ProLiant BL20p G2 Fibre Channel connectivity when using the GbE2 Interconnect Switch)</p>	<p>306465-B21</p> <p>230766-B21</p> <p>283192-B21</p> <p>283193-B21</p> <p>378926-B21</p> <p>378927-B21</p> <p>378928-B21</p> <p>378929-B21</p> <p>321745-B21</p> <p>249655-B21</p> <p>279720-B21</p> <p>321745-B21</p>
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Options

<p>HP BladeSystem p-Class Power options</p>	<p>NOTE: Use p-Class sizing tool to help determine power configuration: http://www.hp.com/products/configurator.</p>	
	Single Phase 3U Power Enclosure with 4 power supplies (NA/JPN) (Single Phase 3U Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	239162-001
	Single Phase 3U Power Enclosure with 4 power supplies (Int'l) (Single Phase 3U Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	239162-421
	3 Phase 3U Power Enclosure with 6 power supplies (NA/JPN) (3 Phase 3U Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	230769-001
	3 Phase 3U Power Enclosure with 6 power supplies (Int'l) (3 Phase 3U Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	230769-421
	Single 3U Phase Power Enclosure (empty) (NA/JPN) (Holds up to 4 power supplies; power supplies are not included in this kit)	231710-001
	Single 3U Phase Power Enclosure (empty) (Int'l) (Holds up to 4 power supplies; power supplies are not included in this kit)	231710-421
	3 3U Phase Power Enclosure (empty) (NA/JPN) (Holds up to 6 power supplies; power supplies are not included in this kit)	231709-001
	3 3U Phase Power Enclosure (empty) (Int'l) (Holds up to 6 power supplies; power supplies are not included in this kit)	231709-421
	Single 3UPower Supply	239161-B21
	Facility DC Power Connection	240563-B21
	1U Power Enclosure with six power supplies	378284-B21
	1U Power Enclosure with two power supplies	380314-B21
	Single 1U Power Supply	380312-B21
<p>Power Distribution (only required with 3U power enclosures)</p>	<p>HP BladeSystem p-Class Scalable Bus Bar</p> <p>HP BladeSystem p-Class Mini Bus Bar</p> <p>HP BladeSystem p-Class Bus Power Box</p> <p>HP Modular Distribution Unit 40 Amp (NA/JPN)*</p> <p>HP Modular Distribution Unit 40 Amp (Int'l)*</p> <p>HP Modular Distribution Unit 32 Amp (Int'l)*</p> <p>HP Modular Distribution Unit 24 Amp (NA/JPN)*</p> <p>*NOTE: The Modular Distribution Unit Kits excludes the extension bars as they are not required with the HP BladeSystem p-class 1U power enclosure.</p> <p>HP BladeSystem Power Extension Kit</p> <p>NOTE: When upgrading a standard server blade enclosure(s) to enhanced server blade enclosure(s) and using mini bus bars, this option kit allows a second, redundant 3U power enclosure to be installed above the server blade enclosure(s) rather than below. The option kit consists of two extension cable assemblies - one for each side (A and B) of the power infrastructure.</p>	<p>240560-B21</p> <p>240559-B21</p> <p>240562-B21</p> <p>252663-D75</p> <p>252663-B34</p> <p>252663-B33</p> <p>252663-D74</p> <p>381686-B21</p>

Options

Diagnostic Options	HP BladeSystem p-Class Diagnostic Station	230743-B21
	NOTE: The Diagnostic Station allows access to the ProLiant p-Class server blades and the BL p-Class interconnect switches outside of the server enclosure. The option provides power and a data interface so that "offline" upgrade and diagnostic functions may be performed.	
	HP BladeSystem p-Class Diagnostic Station Upgrade Kit for the HP ProLiant BL40p server blade	309329-B21
SAN Switches	McDATA 4Gb SAN Switch	A8001A
	HP StorageWorks SANtegrity Enhanced License	T4263A
	Brocade 4GB SAN Switch, Base	A7533A
	Brocade 4GB SAN Switch, full fabric	A7534A
	Brocade 4GB SAN Switch, power pack	A7535A
Other Options	HP BladeSystem BL p-Class Server Enclosure Shipping Bracket Option Kit	293121-B21
	NOTE: Used to secure one server blade enclosure in a rack when moving.	
	HP BladeSystem BL p-Class Power Enclosure Shipping Bracket Option Kit	365044-B21
	NOTE: Used to secure one power enclosure in a rack when moving.	
External Storage - Rack	HP StorageWorks Modular Smart Array 20	335921-B21
	NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies.	
	HP StorageWorks Modular Smart Array 20 Starter Kit	366172-B21
	NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. Includes Smart Array 6402/128 Controller.	
	NOTE: The Modular Smart Array Enclosure 20 Family supports the SATA 1.5Gb/s 1" Hot Plug Hard Drives.	
	HP StorageWorks Modular Smart Array 30 SB	302969-B21
	NOTE: Rack-mountable 14 drive enclosure with single bus, redundant power supplies	
	HP StorageWorks Modular Smart Array 30 DB	302970-B21
	NOTE: Rack-mountable 14 drive enclosure with dual bus, redundant power supplies	
NOTE: The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 1" Hot Plug Hard Drives.		
Redundant Power Supply 499W	338296-B21	
Ultra320 Dual Bus I/O Module for MSA30	287483-B21	
Ultra320 Single Bus I/O Module for MSA30	287484-B21	

Options

HP StorageWorks Modular Smart Array 500	HP StorageWorks Modular Smart Array 500 Generation 2 NOTE: Please see the Modular Smart Array 500 Generation 2 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/11956_na/11956_na.HTML (North America) http://h18000.www1.hp.com/products/quickspecs/11956_div/11956_div.HTML (Worldwide)	335880-B21
HP StorageWorks Modular Smart Array 1500 cs	Modular Smart Array 1500 Controller Shelf NOTE: Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at: http://www.hp.com/go/MSA1500cs	AA986A
HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000 Modular Smart Array 1000 Controller Modular Smart Array Fibre Channel I/O Module Modular Smart Array hub 2/3 NOTE: Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML (North America) http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML (Worldwide)	201723-B22 218231-B22 218960-B21 286763-B21
Controllers and Host Bus Adapters	FCA2404DC 2Gb PCI-X-to-FC HBA for W2K and Windows Server 2003 FCA2404 2Gb PCI-X HBA for W2K and Windows Server 2003 FCA2214 2Gb PCI-X FC HBA for Windows and Linux FCA2214DC 2 Gb Dual Channel PCI-X FC HBA for Windows	323264-B21 305573-B21 281541-B21 321835-B21
Cluster Options	HP Serviceguard for Linux ProLiant Cluster, A.11.15 (2 license version - SUSE SLES8) HP Serviceguard for Linux ProLiant Cluster, A.11.16 (2 license version - Red Hat EL 3&4, SUSE SLES9) HP Serviceguard for Linux, A.11.15 (single license version - SUSE SLES8) NOTE: For additional information regarding the HP Serviceguard for Linux License, please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11518_na/11518_na.html ProLiant Cluster Kit with OpenView Storage Mirroring ProLiant Cluster Starter Kit NOTE: For additional information regarding the ProLiant Cluster for HA/F100, HA/F200 for Modular Smart Array 1000 please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11035_na/11035_na.html (North America) http://h18000.www1.hp.com/products/quickspecs/11035_div/11035_div.html (Worldwide) ProLiant Cluster F500 for the Enterprise SAN	305199-B24 305199-B26 307754-B24 364025-B21 364023-B21 364024-B21

Options

NOTE: For additional information regarding the HP ProLiant Cluster for ProLiant Cluster HA/F500 for Enterprise Virtual Array please see the following QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11055_na/11055_na.html
(North America)

http://h18000.www1.hp.com/products/quickspecs/11055_div/11055_div.html
(Worldwide)

NOTE: For additional information regarding the HP ProLiant Cluster for HA/F500 please see the following QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/10232_na/10232_na.html
(North America)

http://h18000.www1.hp.com/products/quickspecs/10232_div/10232_div.html
(Worldwide)

StorageWorks Enterprise Modular Array 16000 FC	StorageWorks Director 2/64 NOTE: Please see the StorageWorks SAN Director 2/64 QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/11003_na/11003_na.HTML (North America) http://h18000.www1.hp.com/products/quickspecs/11003_div/11003_div.HTML (Worldwide)	286809-B21
USB Options	USB 1.44-MB External Diskette Drive (Carbonite) USB 2-Button Optical Mouse (Carbonite) USB 2-Button Scroll Mouse (carbonite) 256MB Hp Drive Key II (USB 2.0)	DC141B DC172B DD441B PH657A
HP Rack 5000 Series	HP5642 Rack-Unassembled	358254-B21
Rack Options for Rack 5000 Series	Stabilizer Kit for 5642 Rack (Graphite Carbon) NOTE: The stabilizer kit is used to prevent rack from tipping over. Baying Kit for 5642 Rack (Graphite Carbon) NOTE: The baying kit is used to join two or more HP 5642 rack.	374493-B21 374499-B21

Options

HP Rack 10000 Series (Graphite Metallic)	Rack, HP Infrastructure 42U (HV)	379005-001	
	Rack, HP Infrastructure 42U (LV)	379006-001	
	HP S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22	
	HP Rack 10842 (42U) - Pallet	257415-B21	
	NOTE: Server Blade Enclosures must be field integrated into the 10842 racks. Factory integration of Server Blade Enclosures into the 10842 is not supported.		
	HP Rack 10842 (42U) - Shock Pallet	257415-B22	
	NOTE: Server Blade Enclosures must be field integrated into the 10842 racks. Factory integration of Server Blade Enclosures into the 10842 is not supported.		
	HP Rack 10842 (42U, 800mm wide) - Pallet	245160-B21	
	HP Rack 10842 (42U, 800mm wide) - Shock Pallet	245160-B23	
	HP Rack 10647 (47U) - Pallet	245161-B21	
	HP Rack 10647 (47U) - Crated	245161-B22	
	HP Rack 10642 (42U) - Pallet	245161-B23	
	HP Rack 10642 (42U) - Shock Pallet	245162-B21	
	HP Rack 10642 (42U) - Crated	245162-B22	
	HP Rack 10636 (36U) - Pallet	245162-B23	
	HP Rack 10636 (36U) - Shock Pallet	245163-B21	
	HP Rack 10636 (36U) - Crated	245163-B22	
	HP Rack 10622 (22U) - Pallet	245163-B23	
	NOTE: -B21 (pallet) used to ship empty racks shipped on a truck		
	NOTE: -B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)		
NOTE: -B23 (crated) used for air shipments of empty racks			
NOTE: Not all HP equipment is qualified to be shipped in the Rack 10000 series.			

Rack Options for HP Rack 10000 Series	HP Rack Light Kit (Neon)	361589-B21
	HP Rack Plinth Kit (Carbon)	251960-B21
	800mm Wide Stabilizer Kit (Graphite)	255488-B21
	NOTE: Supported by the Rack 10842 cabinet only.	
	600mm Stabilizer Kit – Graphite	246107-B21
	Baying Kit for Rack 10000 series (Carbon)	248929-B21
	42U Side Panel – Graphite Metallic	246099-B21
	110V Fan Kit (Graphite)	257413-B21
	NOTE: Roof Mount Includes power cord with IEC320-C13 to Nema 5-15P.	
	220V Fan Kit (Graphite)	257414-B21
	NOTE: Roof Mount Includes power cord with IEC320-C13 to Nema 6-15P.	
	36U Side Panel – Graphite Metallic	246102-B21
	47U Side Panel – Graphite Metallic	255486-B21
	9000/10000 Series Offset Baying Kit (42U)	248931-B21
	NOTE: This kit can be used to connect 9000 and 10000 series racks of the same U height together. Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks.	

Options

NOTE: For additional information regarding Rack Options, please see the following URL: <http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html>.

Ballast Option Kit	120672-B21
9000/10000 Series Offset Baying Kit (42U)	248931-B21

NOTE: This kit can be used to connect 9000 and 10000 series racks of the same U height together. Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks.

NOTE: For additional information regarding Rack Cabinets, please see the following URL: <http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html>

100 kg Sliding Shelf	234672-B21
Monitor/Utility Shelf - Graphite	253449-B21
Depth Adjustable Fixed Rail	332558-B21
Cable Management D-Rings Kit	168233-B21
TFT5600 Rack Keyboard Monitor	221546-xx1
TFT7210R Rack Mounted 17" Monitor	348373-B21
TFT5600 Rack Keyboard Monitor	221546-xx1
1U Rack Keyboard & Drawer (Carbon)	257054-xx1

Country Code Key (for TFT5600 RKM Rack Keyboard Monitor (P/N 221546-xx1) and 1U Rack Keyboard & Drawer (Carbon)(P/N 257054-xx1))

XX = 00	US	XX = 09	Norway
XX = 03	UK	XX = 10	Sweden/Finland
XX = 04	Germany	XX = 11	Switzerland
XX = 05	France	XX = 13	Portugal
XX = 06	Italy	XX = 18	Belgium
XX = 07	Spain	XX = 29	Japan
XX = 08	Denmark	XX = B3	International

NOTE: For a complete list of Monitors please view the following URL:

<http://h18004.www1.hp.com/products/monitors/>

NOTE: For additional information regarding Rack Options, please see the following

URL: <http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html>.

Options

HP KVM Switch Options	IP Console Switch Box (KVM/IP), 1 x 1 x 16	262585-B21
	IP Console Switch Box (KVM/IP), 3 x 1 x 16	262586-B21
	Serial Interface adapter - 1 Pack with power supply	373035-B21
	Interface adapter - USB 1.0 (single pack)	336047-B21
	CAT5e Cable 3', 4 pack	263474-B21
	CAT5e Cable 6', 8 pack	263474-B22
	CAT5e Cable 12', 8 pack	263474-B23
	CAT5e Cable 20', 4 pack	263474-B24
	CAT5e Cable 40', 1 pack	263474-B25

Rack Options for Telco Racks	Bus Bar Telco Rail Option Kit	245249-B21
	Enclosure Telco Rail Option Kit	266076-B21

Service and Support Offerings (HP Care Pack Services)

NOTE: The HP Care Pack service part numbers below for ProLiant BL p-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.

Hardware Services On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UD187E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UD188E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UD189E

The HP Care Pack service part numbers below for HP BladeSystem p-Class server blade enclosure covers the enclosure including patch panels, HP supported Ethernet interconnects, power enclosure with power supplies and power distribution.

Hardware Services On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	HC031E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HC032E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HC033E

NOTE: The HP Care Pack service part numbers below covers the HP BladeSystem Brocade and McData SAN Switches.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	UC007E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UC008E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UC009E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UC023E

Options

Installation & Start-up Services

HP Installation & Startup Service for HP BladeSystem Infrastructure - provides for an integrated hardware and software implementation that includes remote service planning, onsite deployment of hardware and software, installation verification testing and customer orientation. Hardware deployment covers the installation of a single BladeSystem enclosure that include server blades (up to 16), Ethernet network interconnect, and power options. Software deployment covers the installation and configuration of HP Systems Insight Manager (SIM), HP Rapid Deployment Pack (RDP), and deploy up to two operating system editions of either Windows or Linux, using scripted operating system installation software. UC905E

ProLiant BL p-Class Blade Server Hardware Installation, Electronic UA219E

HP BladeSystem p-Class Enclosure and Server Blade Hardware Installation, Electronic U4971E

Provides for the Installation and Start-up of Rapid Deployment Pack on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office hours, standard office days. Electronic. U5683E

Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic) (Electronic) UA042E

HP ProLiant Essentials Vulnerability and Patch Management Pack Installation and Startup Service. Service coverage: onsite installation of the Vulnerability and Patch Management (VPM) software on a customer designated server, configuration of the VPM software to acquire security patches, enabling the VPM software to scan up to five (5) systems, applying the security patches to the designated servers, generating a report from VPM that shows the vulnerability assessment results, and providing customer with an orientation to the software. UC929E

Provides for the Installation and Start-up of System Insight Manager (Electronic) UA041E

Provides for the Installation and Start-up of System Insight Manager (Electronic) UA040E

NOTE: For more information, customer/resellers can contact

<http://www.hp.com/hps/carepack/services/>

Software Operating Environment Care Packs

Microsoft Software Operating Environment Software Telephone 9x5 - 3 incident (Electronic) U8169E

Red Hat Software Operating Environment Software Telephone 9x5 - 10 incident (Electronic) U3402E

SUSE Software Operating Environment Software Telephone 9x5 - 3 incident (Electronic) U9615E

ProLiant Essentials Operating Environment, - 5 Day, 8x5, 1 year, 3 incident (Electronic) U8222E

Memory

HP ProLiant BL40p Server Blade (2P Model)

Standard Memory

1024-MB of 2-way interleaved PC2100 ECC DDR installed (2 x 512-MB SDRAM DIMM)

Standard Memory Plus Optional Memory

Up to 9216-MB of 2-way interleaved PC2100 ECC DDR memory is available with the installation of optional DDR DIMM memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 12288-MB of 2-way interleaved PC2100 ECC DDR memory is available with the removal of standard memory and the installation of optional DDR DIMM memory expansion kits.

Memory		Slot					
		1	2	3	4	5	6
Standard	1,024MB	512 MB	512 MB	Empty	Empty	Empty	Empty
Optional	9,216MB	512 MB	512 MB	2048 MB	2048 MB	2048 MB	2048 MB
Maximum	12,288 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB

Following are memory options available from HP:

- 2512MB of PC2100 ECC DDR DIMM Memory Kit (2x256MB) 300678-B21
- 1024MB of PC2100 ECC DDR DIMM Memory Kit (2x512MB) 300679-B21
- 2048MB of PC2100 ECC DDR DIMM Memory Kit (2x1024MB) 300680-B21
- 4096MB of PC2100 ECC DDR DIMM Memory Kit (2x2048MB) 300682-B21

HP ProLiant BL40p Server Blade (1P Model)

Standard Memory

512MB of 2-way interleaved PC2100 ECC DDR installed (2 x 256-MB SDRAM DIMM)

Standard Memory Plus Optional Memory

Up to 8704-MB of 2-way interleaved PC2100 ECC DDR memory is available with the installation of optional DDR DIMM memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 12288-MB of 2-way interleaved PC2100 ECC DDR memory is available with the removal of standard memory and the installation of optional DDR DIMM memory expansion kits.

Memory		Slot					
		1	2	3	4	5	6
Standard	512MB	256 MB	256 MB	Empty	Empty	Empty	Empty
Optional	4,608MB	256 MB	256 MB	2048 MB	2048 MB	2048 MB	2048 MB
Maximum	12,288MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB

Memory

Following are memory options available from HP:

- 512MB of PC2100 ECC DDR DIMM Memory Kit (2x256MB) 300678-B21
- 1024MB of PC2100 ECC DDR DIMM Memory Kit (2x512MB) 300679-B21
- 2048MB of PC2100 ECC DDR DIMM Memory Kit (2x1024MB) 300680-B21
- 4096MB of PC2100 ECC DDR DIMM Memory Kit (2x2048MB) 300682-B21

Technical Specifications

HP BladeSystem p-Class Server Blade Enclosure	Dimensions	Height	10.5 in (26.67 cm)	
		Width	17.60 in (44.70 cm)	
		Depth	28.86 in (73.30 cm)	
	Input Specifications	Rated input voltage	-43 VDC to -53 VDC Nominal -48 VDC	
		Rated input current	62.5 A at -48 VDC	
		Rated input Power	3000 W	
	Individual server blade bay ratings	Rated input voltage	-43 VDC to -53 VDC Nominal -48 VDC	
		Rated input current	6.25 A at -48 VDC	
		Rated input Power	300 W	
	Temperature range	Operating	50° to 95° F (10° to 35° C)	
Non-Operating		-22° to 140° F (-30° to 60° C)		
Relative humidity (non-condensing)	Operating	20% to 80%		
	Non-Operating	5% to 95%		
Wet bulb temperature	Operating	82.4° F (28° C)		
	Non-Operating	101.7° F (38.7° C)		

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

HP BladeSystem p-Class Server Blade Enclosure with enhanced backplane components	Dimensions	Height	10.5 in (26.67 cm)	
		Width	17.60 in (44.70 cm)	
		Depth	28.86 in (73.30 cm)	
	Input Specifications	Rated input voltage	-43 VDC to -53 VDC Nominal -48 VDC	
		Rated input current	125 A at -48 VDC	
		Rated input Power	6000 W	
	Individual server blade bay ratings	Rated input voltage	-43 VDC to -53 VDC Nominal -48 VDC	
		Rated input current	14.6 A at -48 VDC	
		Rated input Power	700 W	
	Temperature range	Operating	50° to 95° F (10° to 35° C)	
Non-Operating		-22° to 140° F (-30° to 60° C)		
Relative humidity (non-condensing)	Operating	20% to 80%		
	Non-Operating	5% to 95%		
Wet bulb temperature	Operating	82.4° F (28° C)		
	Non-Operating	101.7° F (38.7° C)		

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Technical Specifications

Operating and Performance Specifications for HP ProLiant BL40p Server Blade	Dimensions	Height	1.69 in (4.29 cm)
		Width	10.29 in (26.14 cm)
		Depth	28.00 in (71.12 cm)
	Weight (maximum)	18.0 lb (8.17 kg)	
		Temperature range	Operating
	Non-operating		
	Shipping		-40° to 140° F (-40° to 60° C)
	Storage		-4° to 140° F (-20° to 60° C)
	Relative humidity (non-condensing)		Operating
		Non-operating	
		Shipping	10% to 90%
		Storage	10% to 95%
	Maximum wet bulb temperature	82° F (28° C)	

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for RJ-45 Patch Panel 2 with Fibre Channel pass through	Dimensions	Height	10.405 in (26.43 cm)	
		Width	1.535 in (3.899 cm)	
		Depth	27.697 in (70.35 cm)	
	Capability	IEEE 802.2, 802.3, 802.3u		
		Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
			10 Base-T (full-duplex)	20 Mbps
			100 Base-TX (half-duplex)	100 Mbps
			100 Base-TX (full-duplex)	200 Mbps
			1000 Base-TX (full-duplex)	1000 Mbps
	Connector	Network	RJ-45 in the back	
		Fibre Channel SAN	Pluggable SFP optical slot in the front	
	Cable Support	10 Base-TX	Categories 3, 4, or 5 UTP (2 or 4 pair); up to 328 ft (100 m)	
		100 Base-TX	Category 5 UTP (2 pair); up to 328 ft (100 m)	
1000 Base-TX		Category 5E (4 pair); up to 328 ft (100 m)		
Power requirements	200 mA at + 5V DC; 500 mA at -48V			
Temperature range	Operating	50° to 95° F (10° to 35° C)		
	Non-operating	-22° to 140° F (-30° to 60° C)		
Relative humidity (non-condensing)	Operating	20% to 80%		
	Non-operating	5% to 95%		
Wet bulb temperature	Operating	82.4° F (28° C)		
	Non-operating	101.7° F (38.7° C)		

Technical Specifications

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for RJ-45 Patch Panel	Dimensions	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)
	Capability	IEEE 802.2, 802.3, 802.3u	
	Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
		10 Base-T (full-duplex)	20 Mbps
		100 Base-TX (half-duplex)	100 Mbps
		100 Base-TX (full-duplex)	200 Mbps
		1000 Base-TX (full-duplex)	1000 Mbps
	Connector	RJ-45	
	Cable Support	10 Base-TX	Categories 3, 4, or 5 UTP (2 or 4 pair); up to 328 ft (100 m)
		100 Base-TX	Category 5 UTP (2 pair); up to 328 ft (100 m)
		1000 Base-TX	Category 5E (4 pair); up to 328 ft (100 m)
	Power requirements	200 mA at + 5V DC; 500 mA at -48V	
	Temperature range	Operating	50° to 95° F (10° to 35° C)
Non-operating		-22° to 140° F (-30° to 60° C)	
Relative humidity (non-condensing)	Operating	20% to 80%	
	Non-operating	5% to 95%	
Wet bulb temperature	Operating	82.4° F (28° C)	
	Non-operating	101.7° F (38.7° C)	

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for ProLiant BL p-Class GbE Interconnect Switch	Dimensions	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)
	Weight	11.5 lb/5.2 kg per interconnect switch	
	Performance	9.6 Gbps external port bandwidth per server blade enclosure (full duplex)	
		Forwarding rate 0.15 million pps per 10/100 port, 1.5 million pps per gigabit port, (64-byte packets)	
		Non-blocking, full-wire speed for all connections	
		Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support	
	Forwarding Mode	Store and forward	
	MAC Addresses	8,191 per interconnect switch; MAC address based filtering and MAC address packet priority configuring	
Forwarding table age time	Maximum age: 1 to 1,000,000 seconds; default: 300 seconds		

Technical Specifications

Memory	32MB Main, 6MB flash and 16MB packet buffer per interconnect switch	
Compliance	IEEE 802.3, 802.3u, 802.3ab, 802.3x, 802.3z (F-GbE only), 802.1D, 802.1p, 802.3ac, 802.3ad (Static), and 802.1Q SNMP v1 (RFC 1157) and RMON v1 (RFC 1757) groups 1, 2, 3, and 9 MIB-II (RFC 1213), Bridge MIB (RFC 1493), Interface Group MIB (RFC 2863), Ethernet MIB (RFC 1643), 802.1Q Extended Bridge MIB (RFC 2674), Entity MIB (RFC 2037), SNMP Trap Convention (RFC 1215), Bridge Trap (RFC 1493), Remote Monitoring Traps (RFC 1757), and HP Enterprise Switch MIBs and Environmental Traps IGMP v1 (RFC 1112), IGMP v2 (RFC 2236), SNTP (RFC 1361), Telnet (RFC 854), TFTP client (RFC 783), BootP client, (RFC 2132), DHCP client, (RFC 2131) and Modem,	
Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
	10 Base-T (full-duplex)	20 Mbps
	100 Base-TX (half-duplex)	100 Mbps
	100 Base-TX (full-duplex)	200 Mbps
	1000 Base-TX (half and full-duplex)	2000 Mbps
	1000 Base-SX (full-duplex)	2000 Mbps
Connector	12 RJ-45, 2 DB-9 (C-GbE Interconnect Kit) 4 LC fiber, 8 RJ-45, 2 DB-9 (F-GbE Interconnect Kit)	
EMI	FCC Class A ICES-003 Class A AS/NZS 3548 Class A VCCI Class A	
Safety	UL/CUL Listed Accessory CE	
Power Requirements	-48VDC: 1050 mA, 50 W maximum (per interconnect switch)	
Temperature Range	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-22° to 140° F (30° to 60° C)
Relative humidity (non-condensing)	Operating	20% to 80%
	Non-operating	5% to 95%
Wet Bulb Temperature	Operating	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for GbE2 Interconnect Switch	Dimensions	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)
	Weight	12.0 lb/5.4 kg per interconnect switch	

Technical Specifications

Performance	24 Gbps External port bandwidth per server blade enclosure (full duplex) Forwarding rate 1.5 million pps per gigabit port (64-byte packets) Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support	
Forwarding Mode	Store and forward	
MAC Addresses	2,048 per interconnect switch	
Forwarding table age time	Maximum age: 1 to 65535 seconds; default: 300 seconds	
Memory	128MB Main, 32MB flash and 2MB packet buffer per interconnect switch	
Compliance	IEEE 802.3, 802.3u, 802.3ab, 802.3x, 802.3z (F-GbE2 only), 802.1D, 802.1s, 802.3ac, 802.3ad (Static), and 802.1Q SNMP v1 (RFC 1157), MIB-II (RFC 1213), Bridge MIB (RFC 1493), Interface Group MIB (RFC 2863), Ethernet MIB (RFC 1643), 802.1Q Extended Bridge MIB, Entity MIB (RFC 2037), RADIUS Authentication MIB, 802.3-2002 MIB, SNMP Trap Convention (RFC 1215), Bridge Trap (RFC 1493), Remote Monitoring Traps (RFC 1757) and HP Enterprise Switch MIBs and Environmental Traps RADIUS (RFC 2138), Telnet (RFC 854), TFTP client (RFC 783), SSH v1.5, SCP v1.5, NTP v2 (RFC 1119), BOOTP client (RFC 2132), and XModem	
Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
	10 Base-T (full-duplex)	20 Mbps
	100 Base-TX (half-duplex)	100 Mbps
	100 Base-TX (full-duplex)	200 Mbps
	1000 Base-TX (half and full-duplex)	2000 Mbps
	1000 Base-SX (full-duplex)	2000 Mbps
Connector	12 RJ-45, 2 DB-9 (C-GbE2 Interconnect Kit) 8 LC fiber, 4 RJ-45, 2DB-9 (F-GbE2 Interconnect Kit)	
EMI	FCC Class A ICES-003 Class A AS/NZS 3548 Class A VCCI Class A	
Safety	UL/CUL Listed Accessory CE	
Power Requirements	-48VDC: 2040 mA, 98 W maximum (per interconnect switch without Storage Connectivity Kit) -48VDC: 2355 mA, 113 W maximum (per interconnect switch with Storage Connectivity Kit)	
Temperature Range	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-22° to 140° F (30° to 60° C)
Relative humidity (non-condensing)	Operating	20% to 80%
	Non-operating	5% to 95%
Wet Bulb Temperature	Operating	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa.

Technical Specifications

Operating and Performance Specifications for GbE Interconnect Switch	Dimensions	Height	10.41 in (26.43 cm)
		Width	1.54 in (3.9 cm)
		Depth	27.7 in (70.35 cm)
	Weight	11.5 lb/5.2 kg per interconnect switch	
	Performance	9.6 Gbps external port bandwidth per server blade enclosure (full duplex)	
		Forwarding rate 0.15 million pps per 10/100 port, 1.5 million pps per gigabit port, (64-byte packets)	
		Non-blocking, full-wire speed for all connections	
		Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support	
	Forwarding Mode	Store and forward	
	MAC Addresses	8,191 per interconnect switch; MAC address based filtering and MAC address packet priority configuring	
	Forwarding table age time	Maximum age: 1 to 1,000,000 seconds; default: 300 seconds	
	Memory	32MB Main, 6MB flash and 16MB packet buffer per interconnect switch	
	Compliance	IEEE 802.3, 802.3u, 802.3ab, 802.3z, 802.1D, 802.1p, 802.3ac, 802.3ad (Static), 802.1Q, and 802.3x	
		SNMP v1 (RFC 1157) and RMON v1 (RFC 1757) groups 1, 2, 3, and 9	
		MIB-II (RFC 1213), Bridge MIB (RFC 1493), Interface Group MIB (RFC 2863), Ethernet MIB (RFC 1643), 802.1Q Extended Bridge MIB (RFC 2674), Entity MIB (RFC 2037), SNMP Trap Convention (RFC 1215), Bridge Trap (RFC 1493), Remote Monitoring Traps (RFC 1757), and HP Enterprise Switch MIBs and Environmental Traps	
	IGMP v1 (RFC 1112), IGMP v2 (RFC 2236), SNTP (RFC 1361), Telnet (RFC 854), TFTP client (RFC 783), BOOTP client, (RFC 2132), DHCP client, (RFC 2131) and ZModem		
Network transfer rate	10 Base-T (half-duplex)	10 Mbps	
	10 Base-T (full-duplex)	20 Mbps	
	100 Base-TX (half-duplex)	100 Mbps	
	100 Base-TX (full-duplex)	200 Mbps	
	1000 Base-TX (half and full-duplex)	2000 Mbps	
	1000 Base-SX (full-duplex)	2000 Mbps	
Connector	12 RJ-45, 2 DB-9 (C-GbE Interconnect Kit)		
	4 LC fiber, 8 RJ-45, 2 DB-9 (F-GbE Interconnect Kit)		
EMI	FCC Class A		
	ICES-003 Class A		
	AS/NZS 3548 Class A		
	VCCI Class A		
Safety	UL/CUL Listed Accessory		
	CE		
Power Requirements	48V: 1050 mA, 50 W maximum (per interconnect switch)		
Temperature Range	Operating	50° to 95° F (10° to 35° C)	
	Non-operating	-22° to 140° F (-30° to 60° C)	

Technical Specifications

Relative humidity (non-condensing)	Operating	20% to 80%
	Non-operating	5% to 95%
Wet bulb temperature	Operating	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for CGESM Interconnect Switch

Dimensions	Height	10.405 in (26.43 cm)
	Width	1.6 in (4.06 cm)
	Depth	28 in (71.12 cm)
Weight	11.5 lb/5.2 kg per interconnect switch	
Performance	28 Gbps Maximum Forwarding Bandwidth. 38.7mpps Maximum Forwarding Rate (64 Byte Packets)	
	9018Bytes Jumbo Frames MTU	
	Non-blocking architecture. Wire Speed Performance on all ports	
	Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support	
Forwarding Mode	Store and forward	
MAC Addresses	8000 MAC/physical address Table Size	
Memory	128MB DRAM Memory. 16MB Flash Memory	
Compliance	IEEE 802.1s, IEEE 802.1w, IEEE 802.1x, IEEE 802.3ad, IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and, IEEE 802.1D Spanning-Tree Protocol, IEEE 802.1p CoS Prioritization, IEEE 802.1Q VLAN, IEEE 802.3 10BASE-T specification, IEEE 802.3u 100BASE-TX specification, IEEE 802.3ab 1000BASE-T specification, IEEE 802.3z 1000BASE-X specification	
	RMON I and II standards, SNMPv1, SNMPv2c, and SNMPv3 (RFC1493) , CISCO-CDP-MIB, CISCO-CLUSTER-MIB, CISCO-CONFIG-MAN-MIB, CISCO-ENTITY-FRU-CONTROL-MIB, CISCO-ENVMON-MIB, CISCO-FLASH-MIB, CISCO-FTP-CLIENT-MIB, CISCO-IGMP-FILTER-MIB, CISCO-IMAGE-MIB, CISCO IP-STAT-MIB, CISCO-MAC-NOTIFICATION-MIB, CISCO-MEMORY-POOL-MIB, CISCO-PAGP-MIB, CISCO-PING-MIB, CISCO-PROCESS-MIB, CISCO-RTTMON-MIB, CISCO-STP-EXTENSIONS-MIB, CISCO-SYSLOG-MIB, CISCO-TCP-MIB, CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB, CISCO-VLAN-MEMBERSHIP-MIB, CISCO-VTP-MIB, ENTITY-MIB, ETHERLIKE-MIB, IF-MIB (in and out counters for VLANs are not supported), IGMP-MIB, OLD-CISCO-CHASSIS-MIB, OLD-CISCO-FLASH-MIB, OLD-CISCO-INTERFACES-MIB, OLD-CISCO-IP-MIB, OLD-CISCO-SYS-MIB, OLD-CISCO-TCP-MIB, OLD-CISCO-TS-MIB, RFC1213-MIB (per the agent capabilities specified in the, CISCO-RFC1213-CAPABILITY.my), RFC1253-MIB, RMON-MIB, RMON2-MIB, SNMP-FRAMEWORK-MIB, SNMP-MPD-MIB, SNMP-NOTIFICATION-MIB, SNMP-TARGET-MIB, SNMPv2-MIB, TCP-MIB, UDP-MIB	
	1000BASE-T ports, 1000BASE-X (SFP), 1000BASE-SX	
Network transfer rate	10 Base-T (half-duplex)	10 Mbps
	10 Base-T (full-duplex)	20 Mbps
	100 Base-TX (half-duplex)	100 Mbps

Technical Specifications

	100 Base-TX (full-duplex)	200 Mbps
	1000 Base-TX (half and full-duplex)	2000 Mbps
	1000 Base-SX (full-duplex)	2000 Mbps
Connector	4 SFP, 2 RJ-45 10/100/1000 T/TX/T, 1 DB-9	
EMI	FCC Part 15 Class A	
	EN 55022: 1998 (CISPR22)	
	EN 55024: 1998 (CISPR24)	
	CNS 13438 Class A MIC	
	CD	
	MIC	
	AS/NZS 3548 Class A CE	
	VCCI Class A	
Safety	UL to UL 60950, Third Edition	
	C-UL to CAN/CSA C22.2 No. 60950-00, Third Edition	
	TUV/GS to EN 60950:2000	
	CB to IEC 60950 with all country deviations	
	NOM to NOM-019-SCFI	
	CE Marking	
Power Requirements	-48VDC: 1050 mA, 125 W maximum (per interconnect switch)	
Temperature Range	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-22° to 140° F (-30° to 60° C)
Relative humidity (non-condensing)	Operating	20% to 80%
	Non-operating	5% to 95%
Wet bulb temperature	Operating	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for 3U Power Enclosures (North America/Japan)

		Single-Phase Model	Three-Phase Model
Dimensions	Height	5.25 in (13.34 cm)	5.25 in (13.34 cm)
	Width	27.15 in (68.96 cm)	27.15 in (68.96 cm)
	Depth	17.60 in (44.7 cm)	17.60 in (44.7 cm)
Weights	No hot-plug power supplies	47.5 lb (21.55 kg)	47.5 lb (21.55 kg)
	All hot-plug power supplies	99.5 lb (45.13 kg)	125.5 lb (56.93 kg)
Input requirements	Rated input voltage	200 VAC to 240 VAC	200 VAC to 240 VAC line to line
	Rated input frequency	50 Hz to 60 Hz	50 Hz to 60 Hz
	Rated input current per side	24A	24A per phase
	Rated input power per side	5760 W	9976 W

Technical Specifications

	Power cord	1 NEMA L6-30P per side	1 NEMA L15-30 per side
Output voltage specifications	Rated output voltage	-48.8 VDC to -54 VDC	-48.8 VDC to -54 VDC
	Rated output current	99A	170A
	Rated output power	4298 W	8310 W
	Nominal power	4158 W at 208 VAC	7202 W at 208 VAC
Ambient temperature range (See NOTE)	Operating	50° to 95° F (10° to 35° C)	50° to 95° F (10° to 35° C)
	Shipping	-22° to 140° F (-30° to 60° C)	-22° to 140° F (-30° to 60° C)
Relative humidity, non-condensing (See NOTE)	Operating	20% to 80%	20% to 80%
	Non-operating	5% to 95%	5% to 95%
Wet bulb temperature	Operating	82.4° F (28° C)	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for 3U Power Enclosures (International)

		Single-Phase Model	Three-Phase Model
Dimensions	Height	5.25 in (13.34 cm)	5.25 in (13.34 cm)
	Width	27.15 in (68.96 cm)	27.15 in (68.96 cm)
	Depth	17.60 in (44.7 cm)	17.60 in (44.7 cm)
Weights	No hot-plug power supplies	47.5 lb (21.55 kg)	47.5 lb (21.55 kg)
	All hot-plug power supplies	99.5 lb (45.13 kg)	125.5 lb (56.93 kg)
	Input requirements	Rated input voltage	200 VAC to 240 VAC
	Rated input frequency	50 Hz to 60 Hz	50 Hz to 60 Hz
	Rated input current per side	24A	24A per phase
	Rated input power per side	5760 W	10,552 W
	Power cord	1 IEC 309 3-pin, 32A per side	1 IEC 309 5-pin, 32A per side
Output voltage specifications	Rated output voltage	-48.8 VDC to -54 VDC	-48.8 VDC to -54 VDC
	Rated output current	99A	180A
	Rated output power	4798 W	8790 W
	Nominal power	4598 W at 208 VAC	8790 W at 208 VAC
Ambient temperature range (See NOTE)	Operating	50° to 95° F (10° to 35° C)	50° to 95° F (10° to 35° C)
	Shipping	-22° to 140° F (-30° to 60° C)	-22° to 140° F (-30° to 60° C)

Technical Specifications

Relative humidity, non-condensing (See NOTE)	Operating	20% to 80%	20% to 80%
	Non-operating	5% to 95%	5% to 95%
Wet bulb temperature	Operating	82.4° F (28° C)	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for Power Distribution Devices	Power Bus Box	Mini Bus Bar	Scalable Bus Bar
Power enclosures or facility DC feeds supported (3U each)	1	1	2
Server blade enclosures supported (6U each)	1	3	5
Total rack height of supported enclosures	9U	21U	36U
Dimensions			
Height	5.1 in (12.95 cm)	19.45 in (49.40 cm)	48.57 in (123.37 cm)
Width	3.6 in (9.14 cm) each	19.74 in (50.14 cm)	19.74 in (50.14 cm)
Depth	3.25 in (8.26 cm)	2.2 in (5.59 cm)	2.2 in (5.59 cm)
Weight	3.62 lb (1.64 kg)	13.2 lb (5.9 kg)	26 lb (11.79 kg)
Rated operating voltage	-43.2 VDC to -54 VDC	-43.2 VDC to -54 VDC	-43.2 VDC to -54 VDC
Max total power supported	3000 W	9000 W	15,000 W
Total max input current at minimum voltage	69.44 A at -43.2VDC	208.32 A at -43.2 VDC	347.2 A at -43.2 VDC (equivalent of 175A per feed)
Total max input current at nominal voltage	62.5 A at -48VDC	187.5 A at -48 VDC	312.5 A at -48 VDC (equivalent of 175A per feed)
Max current per power feed	70A	210A	210A
Max local ambient temperature	149° F (65° C)	149° F (65° C)	149° F (65° C)

NOTE: All systems support redundant A & B feeds. Scalable bus bar supports dual A and dual B feeds.

Technical Specifications

Operating and Performance Specifications for Facility DC

Voltage	Nominal input voltage	-48 VDC
	Operating voltage range	-48VDC \pm 10% or -43.2 VDC to -52.8 VDC
	Max Input voltage slew rate	0.5V/ μ S
	Redundant feed voltages* (A & B)	*A and B feeds must differ by no more than 5VDC during steady state operation
	Ripple/Noise	480 mV PARD**
	Overshoot	Must remain within regulation limits on all feeds during startup or shutdown
	Voltage transients	Must not exceed -60 VDC
Current	Max steady state input current	62.5A per server blade enclosure installed at -48VDC
	Max steady state current per feed/total	
	Power bus boxes	70 A/70A
	Mini bus bars	210 A/210A
	Scalable bus bars	210 A/350A or equivalent of 175A per feed*
In-rush current	Must support up to 2X the maximum operating current per server blade enclosure (125 A) for up to 1.0 mS	
Input over-current	Customer provided fusing for facility DC feeds that protects the system from catastrophic over-current within 20 μ S. Fuse should sustain all in-rush and operating currents.	
Max Input Current Slew Rate	1A/ μ S	
Max Rated Power	3000W per server blade enclosure	
Connections and Cables	HP provided facility DC cable connection kit:	

- The facility DC connection kit supports the connection of up to four -48VDC, RETURN pairs and ground.

The power cable assemblies consist of 1/0AWG, color-coded, flexible cable rated at 105° C, terminated with bus mating connectors at one end and unterminated at the other end. The cable length provided enables the customer to route to a fuse panel within or adjacent to the rack.

NOTE: *All systems support redundant A and B feeds. Scalable bus bars support dual A and dual B feeds.

** Periodic and random noise (PARD). Maximum allowable peak-to-peak ripple and noise (as measured at the load on any output channel). The ripple and noise is measured over a 20 Hz to 100 MHz frequency band. A resistive load (non-electronic) is used for this measurement. Each output is by-passed to return by a 10 μ F tantalum capacitor with an ESR less than 100 milli-Ohms in parallel with a 0.47 μ F ceramic capacitor, at the point of load. The load cable is 12 feet of twisted wire capable of carrying the current. The printed wiring board assembly is installed in its enclosure for this measurement, or the measurement leads are properly shielded with Earth grounds applied to the insert.

Technical Specifications

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