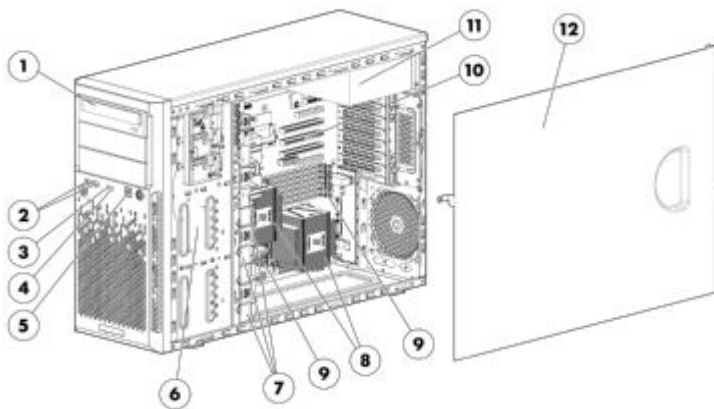


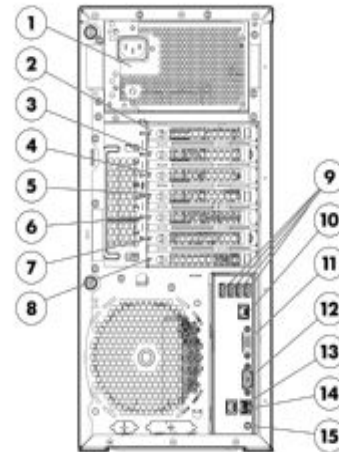
Overview

The HP ProLiant ML350e Gen8 v2 is a dual processor tower platform, which is built on the latest Intel® Xeon® E5-2400 v2 processors to create a unique system architecture. This unique architecture, as well as flexible deployment options, allows businesses to scale as needed so they can optimize their IT spending dollars. The HP ProLiant ML350e Gen8 v2 delivers the industry's most powerful embedded management technology, HP integrated Lights-Out 4 (iLO4), enabling businesses to manage the servers anytime and from anywhere.



Front View:

1. Optical Drive
2. USB2.0 Connectors (2)
3. Health LED
4. NIC Status LED
5. Power On/Standby Button and System Power LED
6. Drive Bays
7. Fans
8. Heat Sink
9. DIMM Slots
10. PCIe Slots
11. Non-hot-plug Power Supply
12. Access Panel



Rear View:

1. Non-hot-plug Power Supply
2. PCIe Slot 6 (for processor 1)
3. PCIe Slot 5 (for processor 1)
4. PCIe Slot 4 (for processor 2)
5. PCIe Slot 3 (for processor 2)
6. PCIe Slot 2 (for processor 1)
7. PCIe Slot 1 (for processor 1)
8. Slot Cover
9. USB 2.0 Connectors (4)
10. iLO Connector
11. Video Connector
12. Serial Connector
13. NIC Connector 1
14. NIC Connector 2
15. UID/LED button

What's New

- Up to 25% performance increase with the new Intel® Xeon® E5-2400 v2 processors
- New low voltage DIMMs running at 1600 MHz to reduce energy bills
- Latest HP Smart Array Controllers designed to maximize data availability, performance and capacity
- Simplify user experience with the new configuration and management tool, Smart Storage Administrator
- First controller-based encryption solution to provide an extra level of data protection
- New dedicated GPU support for graphics-intensive applications

Standard Features

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor

One of the following
depending on Model

E5-2400 v2 Series Processors

Ten-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

Intel® Xeon® E5-2470 v2 (2.4GHz/10-core/95W/25MB) Processor

Eight-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

Intel® Xeon® E5-2450 v2 (2.5GHz/8-core/95W/20MB) Processor

Intel® Xeon® E5-2440 v2 (1.9GHz/8-core/95W/20MB) Processor

Six-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

Intel® Xeon® E5-2430 v2 (2.5GHz/6-core/80W/15MB) Processor

Intel® Xeon® E5-2420 v2 (2.2GHz/6-core/80W/15MB) Processor

Quad-Core Processors

NOTE: All support up to 1333MHz DDR3 memory speeds.

Intel® Xeon® E5-2407 v2 (2.4GHz/4-core/80W/10MB) Processor

Intel® Xeon® E5-2403 v2 (1.8GHz/4-core/80W/10MB) Processor

E5-2400 Series Processors

Eight-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

Intel® Xeon® E5-2470 (2.3GHz/8-core/95W/20MB) Processor

Intel® Xeon® E5-2450 (2.1GHz/8-core/95W/20MB) Processor

Intel® Xeon® E5-2450L (1.8GHz/8-core/70W/20MB) Processor

Six-Core Processors

NOTE: All support up to 1333MHz DDR3 memory speeds.

Intel® Xeon® E5-2440 (2.4GHz/6-core/95W/15MB) Processor

Intel® Xeon® E5-2430 (2.2GHz/6-core/95W/15MB) Processor

Intel® Xeon® E5-2430L (2.0GHz/6-core/60W/15MB) Processor

Intel® Xeon® E5-2420 (1.9GHz/6-core/95W/15MB) Processor

Quad-Core Processors

NOTE: All support up to 1066MHz DDR3 memory speeds.

Intel® Xeon® E5-2407 (2.2GHz/4-core/80W/10MB) Processor

Intel® Xeon® E5-2403 (1.8GHz/4-core/80W/10MB) Processor

NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

NOTE: Up to 2 processors supported. Mixing different processor models is not supported.

NOTE: For the Intel® C600 Chipset E5-2400 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2400x v#, 2 = number of CPUs in a Node, 4 is socket/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) = version number.

Standard Features

Cache Memory

One of the following
depending on Model

25MB (1 x 25MB) Level 3

NOTE: For Ten-core processors.

20MB (1 x 20MB) Level 3

NOTE: For Eight-core processors.

15MB (1 x 15MB) Level 3

NOTE: For Six-core processors.

10MB (1 x 10MB) Level 3

NOTE: For Quad-core processors.

Chipset

Intel® C600 Chipset

Intel® E5-2400 v2 Processor Family

NOTE: For more information regarding Intel® chipsets, please see the following URL:
<http://www.intel.com/products/server/chipsets/>.

Upgradeability

Upgradeable to two processors

NOTE: Total 8, 12, 16 or 20 cores

NOTE: Processor upgrade available from Intel® Xeon® Processors E5-2400 to E5-2400 v2. Please contact HP Technology Sales (<http://www.hp.com/support>), your local HP Re-seller, or reference the following Customer Advisory: [ProLiant Servers-Instructions for Upgrading an HP ProLiant Gen8 Server from an Intel Xeon Processor E5-2400 to an Intel Xeon Processor E5-2400v2](#), regarding critical details before upgrading. An explanation of requirements and limitations are provided. Customer Advisory: [ProLiant Servers-Instructions for Upgrading an HP ProLiant Gen8 Server from an Intel Xeon Processor E5-2400 to an Intel Xeon Processor E5-2400 v2](#).

Up to 12 DIMM slots available for higher memory capacity

Up to 16 SFF hard drives or 8 LFF hard drives for expanded storage

4 PCIe 3.0 and 2 PCIe 2.0 I/O slots for additional communications and storage expansion

Redundant Power Supplies (92% and 94% efficiency)

Tower to rack conversion

Optical drive bays (up to 2)

On System Management HP iLO (Firmware: HP iLO4)

Chipset

NOTE: For more information, visit: <http://www.hp.com/go/ilo>

Memory Protection

Advanced ECC

Online Spare

Lock-step mode

Standard Features

Memory

One of the following depending on model

Type	HP SmartMemory DDR3 Registered (RDIMM) or Unbuffered (UDIMM)
DIMM Slots Available	12 DIMM slots (6 DIMM slots per CPU)
Maximum (RDIMM)	192 GB (12 x 16 GB) RDIMM
Maximum (UDIMM)	96 GB (12 x 8 GB) UDIMM

NOTE: HP memory from previous generation servers are not fully compatible with the HP ProLiant ML350e Gen8 v2 Server.

NOTE: To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html

NOTE: If one processor is installed, only 6 DIMM slots are available. When populating with two processors 12 DIMM slots are available.

NOTE: Depending on the memory configuration and processor model, the memory speed may run up to 1600MHz or at 1333MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

NOTE: Redundant PSU Kit (PN 738661-B21) is required for RDIMMs.

Network Controller

HP Ethernet 1Gb 2-port 361i Adapter

Expansion Slots

Expansion Slot #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
6	PCIe 2.0	x1	X4	0	Half Length/Full Height	Activated when installed with Processor 1
5	PCIe 2.0	x4	x8	0	Full-length/Full Height	Activated when installed with Processor 1
4	PCIe 3.0	X8	X16	32	Full Length/Full Height	Activated when installed with Processor 2
3	PCIe 3.0	x16	x16	32	Full Length/Full Height	Activated when installed with Processor 2
2	PCIe 3.0	X16	X16	0	Full Length/Full Height	Activated when installed with Processor 1
1	PCIe 3.0	X4	X8	0	Full Length/Full Height	Activated when installed with Processor 1

NOTE: Bus number - Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number.

Standard Features

HP Server ROM

HP ROM (Read Only Memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (Integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration (using the HP ROM-Based Setup Utility (RBSU)).

NOTE: For further information, please refer to HP's RBSU (ROM based setup utility) user guide: www.hp.com/support/rbsu.

Storage Controller One of the following depending on model

HP Dynamic Smart Array B120i/512MB FBWC SATA Controller (RAID 0,1, 5, 10)

Internal Storage Devices

Optical Drives

HP Half-Height SATA DVD-ROM/RW Optical Drive

NOTE: DVD ROM is standard in base tower models.

Hard Drives

None ship standard

Hard Drive Bays

One of the following
depending on model

(4) Non-hot plug LFF SATA HDD bays

(4) Hot plug LFF SAS/SATA HDD bays; upgradable to (8)

(8) Hot plug SFF SAS/SATA HDD bays; upgradable to (16)

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit. These part numbers for single HDD blanks below are also provided should the customer require replacement HDD blanks for their server.

Standard Features

Maximum Internal Storage

One of the following depending on model

Hot Plug LFF SAS	32TB	8 x 4TB
Hot Plug LFF SATA	32TB	8 x 4TB
Hot Plug SFF SAS	19.2TB	16 x 1.2TB
Hot Plug SFF SATA	16TB	16 x 1TB
Non-Hot Plug LFF SATA	16TB	4 x 4TB
Hot Plug SFF SAS SSD	1.6TB	16 x 100GB
Hot Plug LFF SATA SSD	1TB	8 x 100GB

Interfaces

Serial	1
Video	1 (rear)
Network RJ-45 (Ethernet)	3 (1 dedicated for HP Integrated Lights-Out)
HP iLO Remote Management Network Port	1 Gb Dedicated
SD slot	1 (internal) NOTE: The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.
USB 2.0	8 (2 front, 4 rear, 2 internal)

Industry Standard Compliance

ACPI 2.0b Compliant
PCIe 3.0 Compliant
PXE Support
WOL Support
Novell Certified
IPMI 2.0, SMASH CLP, DCMI 1.0 compliant
Microsoft® Logo certifications
USB 2.0 Support
SMBIOS 2.7.1

Server Power Cords

ProLiant ML servers in a rack-mount configuration no longer ship standard with NEMA power cords that allow connection to 110V US wall outlets in a home or office. These servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant ML rack-mount server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately. The 12' cord (AF556A) or 6' cord (187335-001) can be purchased online at HP.COM. In a tower configuration, the servers ship standard with a 6' country specific NEMA power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific sku. Please see the following power cord matrix: <http://www.hp.com/go/powercordmatrix>.

Standard Features

Power Specifications

To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor.

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

Common Slot Power Supplies

NOTE: The ML350e Gen8 v2 supports three power supply models, a 460W Multi-Output Power Supply, and a 460W and 750W Common Slot Platinum Plus Power Supplies. The 460W Multi-Output Power Supply is a non-redundant power supply.

NOTE: Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.

HP's Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HP Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HP CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. HP CS power supply options provide efficiency ratings of up to 94% (80 Plus Platinum) and are available in power output options - 460W, 750W - allowing the customer to "right-size" a power supply for their specific server configuration. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations.

NOTE: Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail.

HP CS Platinum power supplies are required when enabling HP's Intelligent Power Discovery (IPD) solution. IPD is the first technology to create an automated, energy-aware network between IT systems and facilities. This allows your company to reclaim millions of dollars in wasted power capacity and downtime costs across data centers. For more information on HP's IPD solution, go to www.hp.com/go/ipd.

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs. HP Power Advisor can be accessed at: www.hp.com/go/hppoweradvisor.

NOTE: The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on 80Plus.org.

Redundant Power: Optional (1 + 1 redundant) power supplies can be purchased through power supply option kits (see Power Supplies for part numbers).

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

System Fans

Two (2) Non-hot plug, non-redundant fans ship standard (support up to 3 fans).

NOTE: Third fan is shipped with 2nd CPU Kit. Third fan is only required in 2P configurations.

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers

- Microsoft Windows Server
- Red Hat Enterprise Linux (RHEL)
- SUSE Linux Enterprise Server (SLES)
- Canonical Ubuntu
- VMware

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page <http://www.hp.com/support/ML350eGen8v2>

Graphics

Integrated Matrox G200 video standard

- 1280 x 1024 (32 bpp)
- 1920 x 1200 (16 bpp)

HP iLO 4 On System Management Memory

- 16 MB Flash
- 256 MB DDR 3 with ECC (112 MB after ECC and video)

Form Factor

Tower 5U
Rackable with the purchase of tower to rack conversion tray kit

On System Management

HP iLO Management Engine

HP iLO Management Engine is a comprehensive set of embedded management features supporting the complete lifecycle of the server, from initial deployment, through ongoing management, to service alerting and remote support. HP iLO Management Engine comes standard on all HP ProLiant Gen8 servers. The HP iLO Management Engine portfolio includes:

- **HP iLO:** The HP iLO (Integrated Lights-Out) management processor is the core foundation for the HP iLO Management Engine
- **HP Agentless Management:** Provides built in server health monitoring and alerting capability without OS agents, that starts working the moment a power cord and an Ethernet cable are connected.
- **HP Active Health System:** Always on, continuous monitoring for increased stability and shorter downtimes; 100% configuration history; Health and service alerts and easy export and upload to Service and Support.
- **HP Intelligent Provisioning:** Lets customers provision and configure a single server without any separate media. No more SmartStart CDs or Smart Update Firmware DVD are needed.
 - To start Intelligent Provisioning:
 - Press the F10 key during the ProLiant Gen8 server boot process (also known as power on self test or POST).
 - Please go to the Intelligent Provisioning website at www.hp.com/go/intelligentprovisioning for additional information and to view usage videos.

○



Standard Features

- Use the Service Pack for ProLiant (SPP) at:
www.hp.com/go/spp to get firmware and software updates.
- **HP iLO Mobile App:** Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: www.hp.com/go/ilo/mobileapp

NOTE: For more information, visit: <http://www.hp.com/go/ilo> or HP iLO Management Engine technologies whitepaper

HP Insight Management HP Service Pack for ProLiant

HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) provide a comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation, HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support for each Service Pack for ProLiant release.

The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application provides a straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.

The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment.

NOTE: The Service Pack for ProLiant (which includes HP SUM) can be downloaded from www.hp.com/go/spp/download. More information can be found: <http://www.hp.com/go/SmartUpdate>, www.hp.com/go/spp and <http://www.hp.com/go/hpsum>

Standard Features

Security

- Power-on password
- Setup password
- Serial interface control
- Power switch security
- Administrator's password

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Optional Features

HP Insight Management HP Insight Control

HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. HP Insight Control also supports Location and Power Discovery Services to automate many configuration, asset tracking, and power management tasks to speed implementation and prevent downtime. For more information, see <http://www.hp.com/go/insightcontrol>.

HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, see: <http://www.hp.com/services/insight>.

HP iLO Essentials

HP iLO Essentials license ideal for small and medium business customers. The specially created HP iLO Essentials (a subset of iLO Advanced functionality) saves SMB customers time and money, by ease of remote server set up through the interactive virtual media, lowering operational costs with remote access via the Integrated Remote Console, and faster time to resolution with email-based proactive notifications. With this newly designed HP iLO Essentials license SMB customers now have the option of a server management package solely design and priced just right for their IT environments. HP iLO Essentials is available on all HP ProLiant Gen8 e-series making this an ideal solution for small business owners. For more information, see: <http://www.hp.com/go/iLO/essentials>

HP iLO Advanced

HP Integrated Lights-Out Advanced License a product option, providing smart remote server management without compromise. iLO Advanced unlocks the full set of remote administration functionality for all HP ProLiant servers by activating the full Virtual Keyboard Video and Mouse remote console, multi-user collaboration, console record and replay, GUI-based and scripted virtual media and virtual folders, and enhanced security and power management functionality. For more information, see: <http://www.hp.com/go/iLOADvanced>

HP Matrix Operating Environment

The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business.

The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS).

NOTE: For more information, visit: <http://www.hp.com/go/matrixoe>

Optional Features

Storage Software

Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HP storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities.

Storage software that gets the job done:

- **Data Protection and Recovery Software**
Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**
HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
- **Storage Resource Management Software (SRM)**
HP's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.
- **Data Replication Software**
HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
- **Storage Device Management Software**
Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- **HP StoreVirtual VSA**
With HP StoreVirtual VSA you can use the power of virtualization to turn a set of heterogeneous and disconnected physical disk drives in your servers and storage devices into a single pool of logical storage capacity.

NOTE: For more information available Storage Software including QuickSpecs, please see: www.hp.com/go/storage/software.

HP Insight Online

HP Insight Online is a new addition to the HP Support Center for one stop, secure access to product and HP support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime. www.hp.com/go/insightonline

HP Proactive Insight experience

Prevent problems with innovative, automated monitoring tools and proactive services. The HP Proactive Insight experience consist of using Insight Online, Insight Remote Support, and Proactive Care Support Service as one integrated solution. The Proactive Insight experience provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: www.hp.com/go/proactiveinsightexperience

Optional 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 MSAXxxx, VA7xxx, EVA, 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>

HP Simple Configurator

SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. <http://www.hp.com/products/configurator>

Service and Support

Service and Support

HP Technology Services for Industry Standard Servers and BladeSystem

Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

Protect your business beyond warranty with HP Care Pack Services

HP Care Pack services offer complete care and support expertise with committed response choices designed to meet your IT and business needs.

HP Foundation Care services offer scalable reactive support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for your IT and business needs. HP Proactive Care delivers high levels of system availability through proactive service management and advanced technical response.

Optimized Care

Supports maintaining servers at optimum performance availability

3-Year HP 24x7 4 hour response, Proactive Care Service*

This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HP's vast global resources.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf>

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

Standard Care

Supports maintaining high level of server availability

3-Year HP Next Business Day, Proactive Care Service*

This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HP's vast global resources.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf>

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

Foundation Care

Delivers minimum recommended support service level

3-Year HP Next Business Day with Collaborative Support

<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

HP ProLiant Server Hardware Installation



Service and Support

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

Insight Online/Insight Remote Support

HP Insight Remote Support provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. This comes at no additional cost with your HP solution*. Learn more about Insight Remote Support <http://www.hp.com/go/insightremotesupport> and Insight Online

<http://www.hp.com/go/insightonline>

* Insight Remote Support is a prerequisite for Proactive Care.

HP Support Center

Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more <http://www.hp.com/go/hpsc>

HP's Support Center Mobile App** allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime. HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

** HP Support Center Mobile App is subject to local availability

Parts and Materials

HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.

For more information

To learn more on services for HP ProLiant servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: <http://www.hp.com/services/proliant>

Pre-configured Models

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

NOTE: Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.

NOTE: HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.

NOTE: If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit.

NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.

Entry Models

HP ProLiant ML350e Gen8 v2 E5-2403v2 1P 2GB-U B120i 460W PS Entry Server 740898-xx1	Processor	(1) Intel® Xeon® E5-2403 v2 (1.8GHz/4-core/80W/10MB) Processor
	Cache Memory	10MB (1 x 10MB) Level 3
	Memory	2GB (1 x 2GB) Unbuffered DIMMs
	Network Controller	HP Ethernet 1Gb 2-port 361i Adapter
	Storage Controller	HP Dynamic Smart Array B120i/ZM FBWC SATA Controller (RAID 0,1, 5, 10)
	Hard Drive	None ships standard
	Internal Storage	4 LFF Non-Hot Plug SATA HDD Bays only
	Optical Drive	None ships standard
	Power Supply	(1) 460 Watt Power Supply (non-hot plug, non-redundant)
	Fans	2 Non-Hot Plug, Non Redundant Fans
	Accessories	USB Keyboard and Mouse (None ship standard)
	Management	HP iLO Management Engine (standard) Optional: HP iLO Essentials or HP Insight Control
	Form Factor	Tower (5U)
	Warranty	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response

NOTE: For Germany (041) and France (051) SKU, please purchase Europe (421) SKU.

Pre-configured Models

Base Models

HP ProLiant ML350e Gen8 v2 E5-2407v2 1P 4GB-U 460W PS Base Server 748953-xx1	Processor	(1) Intel® Xeon® E5-2407 v2 (2.4GHz/4-core/80W/10MB) Processor
	Cache Memory	10MB (1 x 10MB) Level 3
	Memory	4GB (1 x 4GB) Unbuffered DIMMs
	Network Controller	HP Ethernet 1Gb 2-port 361i Adapter
	Storage Controller	HP Dynamic Smart Array B120i/512MB FBWC SATA Controller (RAID 0,1, 5, 10)
	Hard Drive	None ships standard
	Internal Storage	4 LFF Hot Plug SATA HDD Bays only
	Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive
	Power Supply	(1) 460 Watt Power Supply (non-hot plug, non-redundant)
	Fans	2 Non-Hot Plug, Non Redundant Fans
	Accessories	USB Keyboard and Mouse ship standard NOTE: All European models (-031 and -421) exclude the keyboard and mouse.
	Management	HP iLO Management Engine (standard) Optional: HP iLO Essentials or HP Insight Control
	Form Factor	Tower (5U)
	Warranty	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response
	NOTE: For Germany (041) and France (051) SKU, please purchase Europe (421) SKU	

HP ProLiant ML350e Gen8 v2 E5-2407 1P 4GB-U B120i 460W PS Base Server 740899-xx1	Processor	(1) Intel® Xeon® E5-2407 (2.2GHz/4-core/80W/10MB) Processor
	Cache Memory	10MB (1 x 10MB) Level 3
	Memory	4GB (1 x 4GB) Unbuffered DIMMs
	Network Controller	HP Ethernet 1Gb 2-port 361i Adapter
	Storage Controller	HP Dynamic Smart Array B120i/512MB FBWC SATA Controller (RAID 0,1, 5, 10)
	Hard Drive	None ships standard
	Internal Storage	4 LFF Hot Plug SATA HDD Bays only
	Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive
	Power Supply	(1) 460 Watt Power Supply (non-hot plug, non-redundant)
	Fans	2 Non-Hot Plug, Non Redundant Fans
	Accessories	USB Keyboard and Mouse ship standard NOTE: All European models (-031, -041, -051, and -421) exclude the keyboard and mouse.
	Management	HP iLO Management Engine (standard) Optional: HP iLO Essentials or HP Insight Control
	Form Factor	Tower (5U)
	Warranty	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response

Pre-configured Models

Country Code Key	Tower Code Key
xx=00	US
xx=01	Australia
xx=03	UK
xx=04	Germany
xx=05	France
xx=29	Japan
xx=37	APD
xx=42	Europe
xx=AA	PRC

NOTE: All European models (-031, -041, -051, and -421) exclude the keyboard and mouse.

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

NOTE: Factory Integrated Models must start with a CTO Server.

NOTE: FIO indicates that this option is only available as a factory installable option.

NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

Step 1: Base Configuration (choose one of the following configurable models)

HP Models	ML350e Gen8 v2 Tower Models	
	HP ProLiant ML350e Gen8 v2 Non-hot Plug 4 LFF Configure-to-order Server	740895-B21
	Includes:	
	HP Ethernet 1Gb 2-port 361i Adapter	
	HP Dynamic Smart Array B120i/ZM SATA Controller (RAID 0/1/10)	
	Four (4) Non-Hot-Plug (LFF) SATA Drive Bays	
	Eight (8) USB ports	
	Six (6) PCIe slots	
	Two (2) Non-hot plug, non-redundant fans	
	HP iLO Management Engine (standard)	
	Tower (5U) form factor	
	HP ProLiant ML350e Gen8 v2 Hot Plug 4 LFF Configure-to-order Server	740896-B21
	Includes:	
	HP Ethernet 1Gb 2-port 361i Adapter	
	HP Dynamic Smart Array B120i/ZM SATA Controller (RAID 0/1/10)	
	Four (4) Hot-Plug (LFF) SATA Drive Bays	
	Eight (8) USB ports	
	Six (6) PCIe slots	
	Two (2) Non-hot plug, non-redundant fans	
	HP iLO Management Engine (standard)	
	Tower (5U) form factor	
	HP ProLiant ML350e Gen8 v2 Hot Plug 8 SFF Configure-to-order Server	740897-B21
	Includes:	
	HP Ethernet 1Gb 2-port 361i Adapter	
	HP Dynamic Smart Array B120i/ZM SATA Controller (RAID 0/1/10)	
	Eight (8) Hot-Plug (SFF) SATA Drive Bays	
	NOTE: A SAS controller is required to support 8 SFF drives.	
	Eight (8) USB ports	
	Six (6) PCIe slots	
	Two (2) Non-hot plug, non-redundant fans	
	HP iLO Management Engine (standard)	
	Tower (5U) form factor	

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

HP Processors	E5-2400 v2 Series Processors
	Ten-Core Processors
	NOTE: All support up to 1600MHz memory speeds.



Configuration Information - Factory Integrated Models

HP ML350e Gen8 v2 Intel® Xeon® E5-2470v2 (2.4GHz/10-core/25MB/95W) FIO Processor Kit 701849-L21

Eight-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2450v2 (2.5GHz/8-core/20MB/95W) FIO Processor Kit 701847-L21

HP ML350e Gen8 v2 Intel® Xeon® E5-2440v2 (1.9GHz/8-core/20MB/95W) FIO Processor Kit 701845-L21

Six-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2430v2 (2.5GHz/6-core/15MB/80W) FIO Processor Kit 701843-L21

HP ML350e Gen8 v2 Intel® Xeon® E5-2420v2 (2.2GHz/6-core/15MB/80W) FIO Processor Kit 701841-L21

Quad-Core Processors

NOTE: All support up to 1333MHz DDR3 memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2407v2 (2.4GHz/4-core/10MB/80W) FIO Processor Kit 701839-L21

HP ML350e Gen8 v2 Intel® Xeon® E5-2403v2 (1.8GHz/4-core/10MB/80W) FIO Processor Kit 701837-L21

HP Memory

NOTE: To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html (Worldwide)

NOTE: Redundant PSU Kit (PN: 738661-B21) is required for RDIMMs, whether 1 or 2 CPUs are populated.

Registered DIMMs (RDIMMs)

NOTE: The following memory is supported by the E5-2400 v2 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit 713981-B21

HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit 713983-B21

HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit 713985-B21

Registered DIMMs (RDIMMs)

NOTE: The following memory is supported by the E5-2400 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647893-B21

HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit 647895-B21

HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647897-B21

HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit 647899-B21

HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit 690802-B21



Configuration Information - Factory Integrated Models

HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647901-B21

HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit 672631-B21

Unbuffered with ECC DIMMs (UDIMMs)

NOTE: The following memory is supported by the E5-2400 v2 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit 713975-B21

HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit 713977-B21

HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit 713979-B21

Unbuffered with ECC DIMMs (UDIMMs)

NOTE: The following memory is supported by the E5-2400 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit 669320-B21

HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit 647905-B21

HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit 669322-B21

HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit 647907-B21

HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit 669324-B21

HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit 647909-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see:

<http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>

HP Power Supplies

NOTE: Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.

NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at:

www.hp.com/go/hppoweradvisor.

Primary Power Supplies

HP 460W Factory Integrated Power Supply Kit 667559-B21

NOTE: This power supply is non-redundant and is factory integrated only.

HP Common Slot Platinum Plus Power Supply Kits

NOTE: The following Power Supplies offer 94% Efficiency with support for Intelligent Power Discovery.

HP 460W Common Slot Platinum Plus Hot Plug Power Supply Kit 656362-B21

HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit 656363-B21



Configuration Information - Factory Integrated Models

HP Common Slot Gold Power Supplies

NOTE: The following Power Supplies offer up to 92% efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit	503296-B21
HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21

Enablement Kit

HP ML350e v2 Redundant Power Supply	738661-B21
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NOTE: ML350e v2 Redundant Power Supply Kit (PN: 738661-B21) is required for any common slot power supply.

NOTE: Redundant PSU Kit (PN: 738661-B21) is required for any 2P configuration.

NOTE: Redundant PSU Kit (PN: 738661-B21) is required for RDIMMs, whether 1 or 2 CPUs are populated.

NOTE: Power Specification and Technical Content for supported power supplies can be found at:

http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

HP Storage Controllers	HP Smart Array P430/2GB FBWC 12Gb 1-port Int SAS Controller	698529-B21
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Optional Upgrades

HP ML350e Gen8 v2 Smart Array Cable Kit	725895-B21
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Step 3: Choose Additional Factory Integratable Options

HP Insight Software	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A
	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO Electronic License	C6N36ABE
NOTE: The Electronic software license is available in EMEA only.		
HP Storage Controller	Optional Upgrades	
	HP 4GB Flash Backed Write Cache FIO Kit for P-series Smart Array Controllers	698537-B21

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below.

Core Options

NOTE: Some options may not be integrated at the factory. Contact your local sales representative for additional information.

HP Processors

E5-2400 v2 Series Processors

NOTE: Redundant PSU Kit (PN: 738661-B21) is required for any 2P configuration.

Ten-Core Processors

NOTE: All support up to 1600MHz memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2470v2 (2.4GHz/10-core/25MB/95W) Processor Kit	701849-B21
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Eight-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2450v2 (2.5GHz/8-core/20MB/95W) Processor Kit	701847-B21
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HP ML350e Gen8 v2 Intel® Xeon® E5-2440v2 (1.9GHz/8-core/20MB/95W) Processor Kit	701845-B21
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Six-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2430v2 (2.5GHz/6-core/15MB/80W) Processor Kit	701843-B21
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HP ML350e Gen8 v2 Intel® Xeon® E5-2420v2 (2.2GHz/6-core/15MB/80W) Processor Kit	701841-B21
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Quad-Core Processors

NOTE: All support up to 1333MHz DDR3 memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2407v2 (2.4GHz/4-core/10MB/80W) Processor Kit	701839-B21
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HP ML350e Gen8 v2 Intel® Xeon® E5-2403v2 (1.8GHz/4-core/10MB/80W) Processor Kit	701837-B21
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E5-2400 Series Processors

Eight-Core Processors

NOTE: All support up to 1600MHz memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2470 (2.3GHz/8-core/20MB/95W) Processor Kit	741277-B21
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HP ML350e Gen8 v2 Intel® Xeon® E5-2450 (2.1GHz/8-core/20MB/95W) Processor Kit	741275-B21
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HP ML350e Gen8 v2 Intel® Xeon® E5-2450L (1.8GHz/8-core/20MB/70W) Processor Kit	741253-B21
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Six-Core Processors

NOTE: All support up to 1333MHz DDR3 memory speeds.

HP ML350e Gen8 v2 Intel® Xeon® E5-2440 (2.4GHz/6-core/15MB/95W) Processor Kit	741259-B21
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HP ML350e Gen8 v2 Intel® Xeon® E5-2430 (2.2GHz/6-core/15MB/95W) Processor Kit	741257-B21
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HP ML350e Gen8 v2 Intel® Xeon® E5-2430L (2.0GHz/6-core/15MB/60W) Processor Kit	741251-B21
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HP ML350e Gen8 v2 Intel® Xeon® E5-2420 (1.9GHz/6-core/15MB/95W) Processor Kit	741255-B21
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Quad-Core Processors

NOTE: All support up to 1066MHz DDR3 memory speeds.



Core Options

HP ML350e Gen8 v2 Intel® Xeon® E5-2407 (2.2GHz/4-core/10MB/80W) Processor Kit	740887-B21
HP ML350e Gen8 v2 Intel® Xeon® E5-2403 (1.8GHz/4-core/10MB/80W) Processor Kit	740885-B21

HP Memory

NOTE: To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html
(Worldwide)

NOTE: Redundant PSU Kit (PN: 738661-B21) is required for RDIMMs, whether 1 or 2 CPUs are populated.

Registered DIMMs (RDIMMs)

NOTE: The following memory is supported by the E5-2400 v2 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713983-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21

NOTE: The following memory is supported by the E5-2400 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21

Unbuffered with ECC DIMMs (UDIMMs)

NOTE: The following memory is supported by the E5-2400 v2 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713975-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21

NOTE: The following memory is supported by the E5-2400 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
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Core Options

HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>

HP Optical Drives

HP Half-Height SATA DVD ROM JackBlack Optical Drive	624189-B21
HP Half-Height SATA DVD RW JackBlack Optical Drive	624192-B21

HP Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

12G SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives

HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759212-B21
HP 450GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759210-B21
HP 300GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759208-B21

6G SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	697574-B21
HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21



Core Options

HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21
HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
6G SAS Hot Plug SmartDrive SFF (2.5-inch) Midline Drives	
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21
12G SAS Hot Plug SmartDrive LFF (3.5-inch) Converter Enterprise Drives	
HP 600GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	765424-B21
HP 450GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	737394-B21
HP 300GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	737261-B21
6G SAS Hot Plug SmartDrive LFF (3.5-inch) Enterprise Drives	
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652620-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652615-B21
6G SAS Hot Plug SmartDrive LFF (3.5-inch) Midline Drives	
HP 6TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	761477-B21
HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	695510-B21
HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21
HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652753-B21
NOTE: Please see the QuickSpecs for Technical Specifications and additional information:	
http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html	
(Worldwide)	
6G SATA Hot Plug with SmartDrive SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21
6G SATA Hot Plug with SmartDrive LFF (3.5-inch) Midline (MDL) Drives	
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	753874-B21
HP 4TB 6G SATA 7.2k rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	693687-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	628061-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658079-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	657750-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658071-B21
6G SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659339-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659337-B21



Core Options

HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659341-B21
NOTE: SATA hard drives have a 1-year warranty. Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)	
12G SAS High Endurance Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives	
HP 800GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741159-B21
NOTE: This drive supports Gen8 servers only.	
HP 400GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741155-B21
NOTE: This drive supports Gen8 servers only.	
HP 200GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741151-B21
NOTE: This drive supports Gen8 servers only.	
12G SAS Mainstream Endurance Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	741146-B21
NOTE: This drive supports Gen8 servers only.	
HP 400GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	741142-B21
NOTE: This drive supports Gen8 servers only.	
HP 200GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	741138-B21
NOTE: This drive supports Gen8 servers only.	
6G SATA ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691868-B21
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21
6G SATA ME Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691860-B21
HP 400GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691856-B21
HP 200GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691854-B21
HP 100GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691852-B21

Core Options

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_div.html
(Worldwide)

Hard Drive Kits

NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

NOTE: Mixing of SFF and LFF drive cages is not allowed.

NOTE: A second SFF Hot Plug Drive Cage requires a separate Smart Array controller. A second LFF Hot Plug Drive cage can be supported with a P222, or both LFF drive cages can be supported with a single P430.

HP ML350e Gen8 v2 4 Large Form Factor (LFF) Hot Plug Hard Drive Cage Kit	741741-B21
HP ML350e Gen8 v2 8 Small Form Factor (SFF) Hot Plug Hard Drive Cage Kit	741744-B21
HP LFF Gen8 Hard Drive Blank Kit	666986-B21
HP SFF Gen8 Hard Drive Blank Kit	666987-B21

HP Networking

Gigabit Ethernet adapters

HP NC112T PCI Express Gigabit Server Adapter	503746-B21
HP NC365T 4-port Ethernet Server Adapter	593722-B21
HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-B21
HP Ethernet 1Gb 2-port 361T Adapter	652497-B21

10 Gigabit Ethernet Adapters

NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately. See [cables/options](#) below.

HP NC552SFP 10Gb 2-port Ethernet Server Adapter	614203-B21
HP NC523SFP 10Gb 2-port Server Adapter	593717-B21
HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs

Optional Upgrades

HP PCI Baffle Kit	738655-B21
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NOTE: The PCI Baffle Kit is required whenever a PCI option card (NIC, Smart Array Controller, etc.) is installed in a PCIe slot. Note, only 1 PCI Baffle Kit per system is required if multiple PCI cards are installed.

Core Options

HP Power Supplies

NOTE: Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.

NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at:
www.hp.com/go/hppoweradvisor.

HP Common Slot Platinum Plus Power Supply Kits

NOTE: The following Power Supplies offer 94% Efficiency with support for Intelligent Power Discovery.

HP 460W Common Slot Platinum Plus Hot Plug Power Supply Kit	656362-B21
HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit	656363-B21

HP Common Slot Gold Power Supplies

NOTE: The following Power Supplies offer up to 92% efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit	503296-B21
HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21

Enablement Kit

HP ML350e v2 Redundant Power Supply	738661-B21
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NOTE: Redundant Enablement Kit (PN: 738661-B21) is required for any common slot power supply.

NOTE: Redundant PSU Kit (PN: 738661-B21) is required for any 2P configuration

NOTE: Redundant PSU Kit (PN: 738661-B21) is required for RDIMMs, whether 1 or 2 CPUs are populated.

NOTE: Power Specification and Technical Content for supported power supplies can be found at:

http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

HP Computation and Graphics Accelerators

NVIDIA Quadro K2000 PCIe Graphics Adapter	753959-B21
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Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Insight Software	
HP Insight Control	
HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	C6N27A
HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	C6N28ABE
NOTE: The Electronic software license is available in EMEA only.	
HP Insight Control Server Provisioning Media Kit	BD883A
HP Insight Management Media Kit	C6N31A
NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.	
NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	
NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates .	
NOTE: For additional license options please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
HP Integrated Lights-Out (iLO)	
HP Integrated Lights-Out (iLO) Advanced for ProLiant	
HP iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U59ABE
NOTE: The Electronic software license is available in EMEA only.	
HP iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU	E6U64ABE
NOTE: The Electronic software license is available in EMEA only.	
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License	TA850AAE
HP iLO Advanced Electronic License with 3yr 24x7 Tech Support and Updates	BD506AAE
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21
HP iLO Essentials	
HP Integrated Lights-Out Essentials including 3yr 24x7 Technical Support and Updates E-LTU	E6U61ABE
NOTE: The Electronic software license is available in EMEA only.	
HP Integrated Lights-Out Essentials including 1yr 24x7 Technical Support and Updates E-LTU	E6U62ABE
NOTE: The Electronic software license is available in EMEA only.	
HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A
NOTE: For additional license options please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/14276_div/14276_div.html	
NOTE: For more information, visit: http://www.hp.com/go/ilo .	

Additional Options

HP PCIe Workload Accelerator Options

Mainstream Endurance (ME) PCIe Workload Accelerators

HP 1.4TB HH/HL Mainstream Endurance (ME) PCIe Workload Accelerator	729307-B21
HP 700GB HH/HL Mainstream Endurance (ME) PCIe Workload Accelerator	729305-B21

High Endurance (HE) PCIe Workload Accelerators

HP 700GB HH/HL High Endurance (HE) PCIe Workload Accelerator	708090-B21
HP 350GB HH/HL High Endurance (HE) PCIe Workload Accelerator	708088-B21

Light Endurance (LE) PCIe Workload Accelerators

HP 5.2TB FH/HL Light Endurance (LE) PCIe Workload Accelerator	775672-B21
HP 2.6TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775670-B21
HP 1.3TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775668-B21
HP 1.0TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775666-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/14528_div/14528_div.html
(Worldwide)

HP Storage Controllers SAS Controllers

HP Smart Array P222 Controller

HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller	631667-B21
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HP Smart Array P430 Controller

HP Smart Array P430/2GB FBWC 12Gb 1-port Int SAS Controller	698529-B21
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HP Smart Array P431 Controller

HP Smart Array P431/2GB FBWC 12Gb 2-ports Ext SAS Controller	698531-B21
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Optional Upgrades

HP 512MB B-series 36 inch Dynamic Smart Array Flash Backed Write Cache for ML/DL	631922-B21
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NOTE: This cache option provides RAID 5 for the integrated Dynamic Smart Array B120i.

HP Tower to Rack Conversion Tray Universal Kit	417705-B21
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HP ML350e Gen8 v2 Smart Array Cable Kit	725895-B21
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NOTE: This Cable kit is required when ordering a Smart Array P430 Controller.

HP PCI Baffle Kit	738655-B21
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NOTE: The PCI Baffle Kit is required whenever a PCI option card (NIC, Smart Array Controller, etc.) is installed in a PCIe slot. Note, only 1 PCI Baffle Kit per system is required if multiple PCI cards are installed.

HP SmartCache No Media 24x7 Technical Support 1 Svr License	D7S26A
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HP SmartCache No Media 24x7 Technical Support Flexible License	D7S27A
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HP SmartCache No Media 24x7 Technical Support Electronic License	D7S27AAE
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NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/14227_div/14227_div.html
(Smart Array P222 Controller)

http://h18000.www1.hp.com/products/quickspecs/14624_div/14624_div.html
(Smart Array P430 Controller)

http://h18000.www1.hp.com/products/quickspecs/14625_div/14625_div.html
(Smart Array P431 Controller)



Additional Options

http://h18000.www1.hp.com/products/quickspecs/14744_div/14744_div.html
(Smart Array P830 Controller)

HP Host Bus Adapters

HP H220 Host Bus Adapter	650933-B21
HP H221 PCIe 3.0 SAS Host Bus Adapter	729552-B21
HP H222 Host Bus Adapter	650926-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18004.www1.hp.com/products/quickspecs/14336_div/14336_div.html
(HBA 221)

http://h18004.www1.hp.com/products/quickspecs/14222_div/14222_div.html
(HBA 221)

http://h18004.www1.hp.com/products/quickspecs/14337_div/14337_div.html
(HBA 222)

SCSI HBA

HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21
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NOTE: Please see the following QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html
(SC11Xe HBA)

HP Secure Encryption

HP Secure Encryption No Media E-LTU per Drive	D8S85AAE
HP Secure Encryption No Media Flexible License per Drive	D8S84A

NOTE: HP Secure Encryption is supported on the HP Smart Array P731m and the P230i as an option. HP Secure Encryption licensing is based on the number of physical drives requiring encryption.

NOTE: For more information about HP Secure Encryption, go to www.hp.com/go/hpsecureencryption.

HP Tape Backup

NOTE: For the complete range of tape drives, autoloaders, libraries and media see: <http://www.hp.com/go/tape>. For hardware and software compatibility of HP tape backup products see: <http://www.hp.com/storage/SPOCK> and www.hp.com/go/ebs.

NOTE: All internal tape drives listed are only supported with the non-hot plug, non-redundant ATX power supply. The internal drives not are supported in any hot-plug, redundant power supply configuration.

HP StoreEver DAT 160 USB Internal Tape Drive	Q1580B
HP StoreEver DAT 160 SCSI Internal Tape Drive	Q1573B
HP StoreEver LTO-3 Ultrium 920 SAS Internal Tape Drive	EH847B
HP StoreEver LTO-4 Ultrium 1760 SAS Internal WW Tape Drive	EH919B
HP StoreEver LTO-4 Ultrium 1760 SCSI Internal Tape Drive	EH921B
HP StoreEver LTO-5 Ultrium 3000 SAS Internal Tape Drive	EH957B
HP StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive	EH958B
HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	C0L99A
HP StoreEver LTO-6 Ultrium 6650 SAS Internal Tape Drive	EH963A
HP StoreEver LTO-6 Ultrium 6650 SAS External Tape Drive	EH964A
HP StoreEver LTO-6 Ultrium 6250 Internal Tape Drive	EH969A

Additional Options

HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader	C0H19A

HP Tape Storage Systems

HP StoreEver MSL6480

HP StoreEver MSL6480 Scalable Base Module	QU625A
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NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/14604_div/14604_div.html
(Worldwide)

HP Disk Storage Systems

Disk Enclosures

HP D3600 Enclosure	QW968A
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NOTE: See the D3000 Disk Enclosure QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:

http://h18000.www1.hp.com/products/quickspecs/14866_div/14866_div.html
(Worldwide)

HP D3700 Enclosure	QW967A
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NOTE: See the D3000 Disk Enclosure QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:

http://h18000.www1.hp.com/products/quickspecs/14866_div/14866_div.html
(Worldwide)

HP D2600 Disk Enclosure	AJ940A
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NOTE: See the D2000 Disk Enclosure QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:

http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html
(Worldwide)

HP D2700 Disk Enclosure	AJ941A
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NOTE: See the D2000 Disk Enclosure QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:

http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html
(Worldwide)

HP D6000 Dual I/O Module Disk Enclosure	QQ695A
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NOTE: See the D6000 Disk Enclosure QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:

http://h18000.www1.hp.com/products/quickspecs/14419_div/14419_div.html
(Worldwide)

Additional Options

HP Storage Options	QLogic Fibre Channel HBAs	
	HP StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter	QW971A
	HP StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	QW972A
	Converged Network Adapter	
	HP CN1100E Dual Port Converged Network Adapter	BK835A
	HP CN1000Q Dual Port Converged Network Adapter	BS668A
	HP StoreFabric CN1100R Dual Port Converged Network Adapter	QW990A
HP Direct Flow Uninterruptible Power Systems	HP DirectFlow UPS Management Card	AF493A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/xxxxx_div/xxxxx_div.html (Worldwide)	
HP Uninterruptible Power Systems	HP Tower UPS	
	HP T1500 G3 UPS Models	
	HP T1500 G3 1400VA INTL Tower Uninterruptible Power System	AF451A
	HP T1500 G3 1400VA NA Tower Uninterruptible Power System	AF450A
	HP T1500J JP Uninterruptible Power System	AF458A
	HP T1000 G3 UPS Models	
	HP T1000 G3 1000VA INTL Tower Uninterruptible Power System	AF449A
	HP T1000 G3 1000VA NA Tower Uninterruptible Power System	AF448A
	HP T1000J JP Uninterruptible Power System	AF457A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13160_div/13160_div.html (Worldwide)	
	HP Rack-mountable UPS	
	HP R1500 G3 Uninterruptible Power Supply (UPS)	
	HP R1.5kVA G3 1U INTL Uninterruptible Power System	AF471A
	HP R1.5kVA G3 1U JP/TW Uninterruptible Power System	AF470A
	HP R1.5kVA G3 1U NA Uninterruptible Power System	AF469A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14059_div/14059_div.html (Worldwide)	
	HP R/T3000 G2 Uninterruptible Power System (UPS)	
	HP R/T3000 G2 2U Detachable Cord High Voltage INTL Uninterruptible Power System	AF468A
	HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
	HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System	AF467A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14058_div/14058_div.html (Worldwide)	
	R5000 Uninterruptible Power System (UPS)	
	HP R5KVA 3U IEC309-32A High Voltage INTL Uninterruptible Power System	AF461A
	HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A



Additional Options

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/14109_div/14109_div.html

(Worldwide)

R7000 Uninterruptible Power System (UPS)

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System

AF462A

HP R7KVA 4U IEC-32A High Voltage INTL Uninterruptible Power System

AF463A

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/14110_div/14110_div.html

(Worldwide)

NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/servers/rackups.

NOTE: For additional information on sizing your server, please reference:

<http://www.upssizer.com>.

NOTE: Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.

HP Basic Power Distribution Units (bPDU)

HP Basic Power Distribution Unit: 1U/0U Version

HP 1.9kVA 120 Volt L5-20 Input (12xNEMA 5-20R) NA/JP Basic PDU

H5M54A

HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Basic PDU

H5M56A

HP Basic Power Distribution Unit: Half Height Version

HP 2.8kVA 120 Volt L5-30 Input (18xNEMA 5-20R) NA/JP Basic PDU

H5M55A

HP 3.6kVA 200-240 Volt Detachable C20 Input (18xC13) WW Basic PDU

H5M57A

HP 4.9kVA 208 Volt L6-30 Input (20xC13) NA/JP Basic PDU

H5M58A

HP 7.3kVA 230 Volt IEC309 32A Input (20xC13) INTL Basic PDU

H5M68A

HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13) NA/JP Basic PDU

H5M61A

HP Basic Power Distribution Unit: Mid Height Version

HP 4.9kVA 208 Volt L6-30 Input (24xC13/6xC19) NA/JP Basic PDU

H5M59A

HP 7.3kVA 230 Volt IEC309 32A Input (24xC13/6xC19) INTL Basic PDU

H5M70A

HP 8.3kVA 208 Volt CS8265C Input (30xC13/6xC19) NA/JP Basic PDU

H5M60A

HP 11kVA 230 Volt IEC309 63A Input (30xC13/6xC19) INTL Basic PDU

H5M71A

HP Hardwired 200-240 Volt Input (30xC13/6xC19) WW Basic PDU

H5M75A

HP 5.7kVA 208 Volt L21-20 3-Phase Input (24xC13/3xNEMA 5-20R) NA/JP Basic PDU

H5M63A

HP 8.6kVA 208 Volt L21-30 3-Phase Input (24xC13/3xC19/3xNEMA 5-20R) NA/JP Basic PDU

H5M64A

HP 8.6kVA 208 Volt L15-30 3-Phase Input (24xC13/6xC19) NA/JP Basic PDU

H5M62A

HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/6xC19) INTL Basic PDU

H5M72A

HP Basic Power Distribution Unit: Full Height Version

HP 11kVA 400 Volt IEC309 16A 3-Phase Input (36xC13/6xC19) INTL Basic PDU

H5M73A

HP 11kVA 400 Volt IEC309 30A 3-Phase Input (36xC13/6xC19) NA Basic PDU

H5M67A

HP Basic Power Distribution Unit: 480/277 Volt Version

HP 13.2kVA 480 Volt IEC309 30A 3-Phase Input (15 Outlet) NA Basic PDU

H3X07A

HP 19.9kVA 480 Volt IEC309 30A 3-Phase Input (30 Outlet) NA Basic PDU

H3X08A



Additional Options

HP 800VA - 277V Input / 230V Output NA Rack Mount Transformer

H3X09A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/14557_div/14557_div.html
(Worldwide)

NOTE: Additional HP Power Distribution Units are available. For a complete list of all HP PDUs and additional information please visit www.hp.com/go/rackandpower.

HP Remote Monitored Power Distribution Units (mPDU)

HP Remote Monitored Power Distribution Unit: 1U Version

HP 2.8kVA 120 Volt L5-30 Input (12xNEMA 5-20R)NA/JP Monitored PDU

D9N43A

HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Monitored PDU

D9N46A

HP 4.9kVA 208 Volt L6-30 Input (12xC13) NA/JP Monitored PDU

D9N44A

HP Remote Monitored Power Distribution Unit: Half Height Version

HP 3.6kVA 200-240 Volt Detachable C20 Input (16xC13) WW Monitored PDU

D9N45A

HP 4.9kVA 208 Volt L6-30 Input (12xC13) NA/JP Monitored PDU

G9Z05A

HP 7.3kVA 230 Volt IEC309 32A Input (12xC13) INTL Monitored PDU

G9Z06A

HP Remote Monitored Power Distribution Unit: Mid Height Version

HP 4.9kVA 208 Volt L6-30 Input (20xC13/4xC19) NA/JP Monitored PDU

D9N47A

HP 7.3kVA 230 Volt IEC309 32A Input (20xC13/4xC19) INTL Monitored PDU

D9N48A

HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13/3xC19) NA/JP Monitored PDU

D9N51A

HP 5.7kVA 208 Volt L21-20 3-Phase Input (18xC13/3xNEMA 5-20R) NA/JP Monitored PDU

D9N52A

HP 8.6kVA 208 Volt L21-30 3-Phase Input (20xC13/3xC19/3xNEMA 5-20R) NA/JP Monitored PDU

D9N53A

HP 11kVA 400 Volt IEC309 16A 3-Phase Input (18xC13/3xC19) INTL Monitored PDU

D9N55A

HP Remote Monitored Power Distribution Unit: Full Height Version

HP 8.3kVA 208 Volt CS8265C Input (30xC13/3xC19) NA Monitored PDU

D9N49A

HP 7.3kVA 230 Volt IEC309 32A Input (32xC13/4xC19) INTL Monitored PDU

D9N50A

HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU

D9N57A

HP 14.4kVA 208 Volt CS8365C 3-Phase Input (12xC13/12xC19)NA Monitored PDU

D9N58A

HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (30xC13/3xC19) NA Monitored PDU

D9N61A

HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (12xC13/12xC19) NA Monitored PDU

D9N62A

HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (24xC13/3xC19) NA/JP Monitored PDU

D9N54A

HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (12xC13/12xC19) NA/JP Monitored PDU

D9N59A

HP 17.3kVA 208 Volt IEC309 60A 3-Phase Watertight Input (12xC13/12xC19) NA/JP Monitored PDU

G9Z07A

HP 19.9kVA 480 Volt 3-Phase (30 Outlet) NA Monitored PDU

D9N63A



Additional Options

HP 22kVA 400 Volt IEC309 32A 3-Phase Input (12xC13/12xC19) INTL Monitored PDU	D9N60A
HP 22kVA 400 Volt IEC309 32A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU	D9N56A
HP 22kVA 400 Volt IEC309 32A 3-Phase Watertight Input (12xC13/12xC19) INTL Monitored PDU	G9Z08A
HP Environmental Sensor for Remote Monitored PDUs	
HP Environmental Sensor for Remote Monitored PDUs	E2D53A
HP Remote Monitored Power Distribution Unit: 1U Version	
HP 2.8kVA 120 Volt L5-30 Input (12xNEMA 5-20R)NA/JP Monitored PDU	D9N43A
HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Monitored PDU	D9N46A
NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14669_div/14669_div.html (Worldwide)	

HP Intelligent Power Distribution Units (iPDU)

iPDU Core Units

HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
HP 8.3kVA 40A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF521A
HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
HP 14.4kVA 40A Three Phase NA/JP Intelligent Modular Power Distribution Unit	AF533A
HP 17.3kVA 48A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF523A
HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit	AF525A
HP 11kVA 16A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF526A
HP 22kVA 32A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF527A
HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF535A
HP 17.3kVA 24A 415V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF537A
HP 22kVA 32A 400V Three Phase 12 Outlet Core INTL Intelligent Power Distribution Unit	AF538A

iPDU Kits with Standard Extension Bars

HP 4.9kVA 24A Single Phase NA/JP Intelligent Modular Power Distribution Kit	AF531A
HP 8.6kVA 24A Three Phase NA/JP Intelligent Modular Power Distribution Kit	AF532A
HP 7.3kVA 32A Single Phase INTL Intelligent Modular Power Distribution Kit	AF534A

iPDU Extension Bars

HP 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
HP 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13650_div/13650_div.html
(Worldwide)



Additional Options

HP Rack Series

HP Intelligent Series Rack

HP 636 1075mm Pallet Intelligent Series Rack	BW895A
HP 636 1075mm Shock Intelligent Series Rack	BW896A
HP 642 1075mm Pallet Intelligent Series Rack	BW903A
HP 642 1075mm Shock Intelligent Series Rack	BW904A
HP 642 1200mm Pallet Intelligent Series Rack	BW907A
HP 642 1200mm Shock Intelligent Series Rack	BW908A
HP 647 1075mm Pallet Intelligent Series Rack	BW911A
HP 647 1075mm Shock Intelligent Series Rack	BW912A
HP 647 1200mm Pallet Intelligent Series Rack	BW913A
HP 647 1200mm Shock Intelligent Series Rack	BW914A

NOTE: Please see the QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:

http://h18000.www1.hp.com/products/quickspecs/14223_div/14223_div.html
(Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: <http://www.hp.com/go/rackandpower>.

HP Rack Options

HP USB Keyboard and Mouse

HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-B21
HP USB BFR with PVC Free UK Keyboard/Mouse Kit	631344-B21
HP USB BFR with PVC Free FR Keyboard/Mouse Kit	631346-B21
HP USB BFR with PVC Free ES Keyboard/Mouse Kit	631348-B21
HP USB BFR with PVC Free DE Keyboard/Mouse Kit	631358-B21
HP USB BFR with PVC Free JP Keyboard/Mouse Kit	631360-B21
HP USB BFR with PVC Free IT Keyboard/Mouse Kit	631362-B21
HP USB BFR with PVC Free CN Keyboard/Mouse Kit	631364-B21
HP USB BFR with PVC Free AE Keyboard/Mouse Kit	638212-B21
HP USB BFR with PVC Free RU Keyboard/Mouse Kit	638214-B21
HP USB BFR with PVC Free IN Keyboard/Mouse Kit	672097-D63
HP USB BFR with PVC Free AP-Intl Keyboard/Mouse Kit	672097-373
HP USB BFR with PVC Free Intl Keyboard/Mouse Kit	672097-B33
HP USB BFR with PVC Free PT Keyboard/Mouse Kit	672097-133
HP USB BFR with PVC Free TR Keyboard/Mouse Kit	672097-143
HP USB BFR with PVC Free CZ Keyboard/Mouse Kit	672097-223
HP USB BFR with PVC Free FI Keyboard/Mouse Kit	672097-353
HP USB BFR with PVC Free SE Keyboard/Mouse Kit	672097-103
HP USB BFR with PVC Free CH Keyboard/Mouse Kit	672097-113
HP USB BFR with PVC Free KR Keyboard/Mouse Kit	672097-KD3

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/13792_div/13792_div.html
(Worldwide)



Additional Options

HP Server Console Switches

HP Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/11834_div/11834_div.html
(Worldwide)

Rack Kits

HP Tower to Rack Conversion Tray Universal Kit	417705-B21
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HP USB and SD Options HP Flash Media Kits for USB Drives

NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.

HP 8GB USB Enterprise Mainstream Flash Media Drive Key Kit	737953-B21
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HP Enterprise Mainstream Flash Media Kits for Memory Cards

HP 8GB SD Enterprise Mainstream Flash Media Kit	726113-B21
HP 32GB SD Enterprise Mainstream Flash Media Kit	700136-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/13971_div/13971_div.html

HP Care Pack Services Proactive Care

NOTE: Collaborative Support plus Proactive services delivered by the onshore, local language Advanced Solution Center (ASC), end-to-end case ownership from a Technical Solution Specialists and Technical Account Manager who remotely delivers firmware/software revision management, proactive scans and incident trend reports. Recommended for customers running a virtualized infrastructure and/or customers who desire an enhanced call support experience.

HP 3 year 4 hour 24x7 ProLiant ML350e Proactive Care Service	U6C93E
HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant ML350e Proactive Care Service	U6C94E
HP 3 year 6 hour Call to Repair 24x7 ProLiant ML350e Proactive Care Service	U6C99E
HP 3 year 6 hour Call to Repair 24x7 w/Defective Media Retention ProLiant ML350e Proactive Care SVC	U6D00E
HP 3 year ISS ProactiveCare Personalized Support	U6W98E

Foundation Care

HP 3 year 4 hour 24x7 ProLiant ML350e Collaborative Support	U6C91E
HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant ML350e Collaborative Support	U6C92E
HP 3 year 6 hour Call to Repair 24x7 ProLiant ML350e Collaborative Support	U6C97E
HP 3 year 6 hour CalltoRepair 24x7 w/Defective Media Retention ProLiant ML350e Collaborative Support	U6C98E



Additional Options

Installation Services

NOTE: Reduce the time required to get your system up and running and help minimize disruptions to your business.

HP Install ProLiant ML350e Service

U6D41E

HP Startup ProLiant ML350e Service

U6D43E

NOTE: For more information, customer/resellers can contact:

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

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

DDR3 memory population guidelines

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:

www.hp.com/go/ddr3memory-configurator

General Guidelines:

- White DIMM slots denote the first slot of a channel. For 1 DPC (DIMM per channel) populate white slots only.
- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- To maximize performance, balance the total memory capacity between all installed processors
 - Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel
 - Heaviest load (DIMM with most ranks) within a channel goes furthest from the processor
- Do not mix UDIMMs or RDIMMs
- DIMMs of different voltages (1.35V & 1.5V) may be mixed in any order
 - The system will power them at the higher voltage
- DIMMs of different speed grades may be mixed in any order
 - The system will select a common optimal speed
- Memory speed is a function of the processor QPI bus speed.

Population Guidelines:

- There are three (3) channels per processor; six (6) channels per server
- There are two (2) DIMM slots for each memory channel; twelve (12) total slots
- Memory channel 1 consists of the two (2) DIMMs that are furthest from the processor
- Memory channel 3 consists of the two (2) DIMMs that are closest to the processor

DIMM slot/capacity/populated speed table																			
DIMM Type ->	Registered DIMMS (RDIMMs)										Unbuffered with ECC DIMMS (UDIMMs)								
DIMM Rank ->	Single Rank (1R)				Dual Rank (2R)						Single Rank (1R)			Dual Rank (2R)					
DIMM Capacity ->	4GB	4GB	4GB	8GB	8GB	8GB	8GB	16GB	16GB	16GB	2GB	2GB	2GB	4GB	4GB	4GB	8GB	8GB	8GB
DIMM Native Speed (MHz) ->	1333	1600	1600	1600	1333	1600	1600	1333	1600	1600	1333	1600	1600	1333	1600	1600	1333	1600	1600
Voltage	LV	Std	LV	Std	LV	Std	LV	LV	Std	LV	LV	Std	LV	LV	Std	LV	LV	Std	LV
SLOTS THAT CAN BE POPULATED																			
12 slot servers	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
MAXIMUM CAPACITY (GB)*																			
12 slot servers	48	48	48	96	96	96	96	192	192	192	24	24	24	48	48	48	96	96	96
POPULATED DIMM SPEED (MHz)																			

Memory

1 DIMM Per Channel	1333	1600	1600	1600	1333	1600	1600	1333	1600	1600	1333	1600	1600	1333	1600	1600	1333	1600	1600
2 DIMM Per Channel	1333	1600	1600	1600	1333	1600	1600	1333	1600	1600	1333**	1600	1600	1333**	1600	1600	1333**	1600	1600

Please note:

Memory speed is a function of the processor QPI bus speed.

* Maximum capacity will vary based on individual server platform qualification schedule

** For HP SmartMemory, UDIMM is supported at 2DPC@DDR3-1333. Third party memory may only support up to 2DPC@DDR3-1066.

DIMM slot and configuration diagrams

Basic memory slot & population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.

12 DIMM SLOTS (6 per CPU node)					
Processor 1			Processor 2		
	slot #	population order	slot #	population order	
Chnl 1	6	A	1	A	Chnl 1
	5	D	2	D	
Chnl 2	4	B	3	B	Chnl 2
	3	E	4	E	
Chnl 3	2	C	5	C	Chnl 3
	1	F	6	F	

Standard memory configuration (1 CPU model) - Entry models

- 2GB, consisting of one (1) 2GB single-rank PC3L-10600E-9 UDIMM

Processor 1			Processor 2		
	slot #	population order	slot #	population order	
Chnl 1	6	A; 2GB UDIMM	1	A; empty	Chnl 1
	5	D; empty	2	D; empty	
Chnl 2	4	B; empty	3	B; empty	Chnl 2
	3	E; empty	4	E; empty	
Chnl 3	2	C; empty	5	C; empty	Chnl 3
	1	F; empty	6	F; empty	

Standard memory configuration (1 CPU model) - Base models

- 4GB, consisting of one (1) 4GB dual-rank PC3L-10600E-9 UDIMM

Memory

	Processor 1		Processor 2		
	slot #	population order	slot #	population order	
Chnl 1	6	A; 4GB UDIMM	1	A; empty	Chnl 1
	5	D; empty	2	D; empty	
Chnl 2	4	B; empty	3	B; empty	Chnl 2
	3	E; empty	4	E; empty	
Chnl 3	2	C; empty	5	C; empty	Chnl 3
	1	F; empty	6	F; empty	

Standard memory configuration (1 CPU model) - Performance models

- 8GB, consisting of two (2) 4GB dual-rank PC3L-10600E-9 UDIMMs

	Processor 1		Processor 2		
	slot #	population order	slot #	population order	
Chnl 1	6	A; 4GB UDIMM	1	A; empty	Chnl 1
	5	D; empty	2	D; empty	
Chnl 2	4	B; 4GB UDIMM	3	B; empty	Chnl 2
	3	E; empty	4	E; empty	
Chnl 3	2	C; empty	5	C; empty	Chnl 3
	1	F; empty	6	F; empty	

RDIMM maximum configuration (1 CPU model)

- 96GB, consisting of six (6) 16GB dual-rank PC3L-10600R-9 RDIMMs

	Processor 1		Processor 2		
	slot #	population order	slot #	population order	
Chnl 1	6	A; 16GB RDIMM	1	A; empty	Chnl 1
	5	D; 16GB RDIMM	2	D; empty	
Chnl 2	4	B; 16GB RDIMM	3	B; empty	Chnl 2
	3	E; 16GB RDIMM	4	E; empty	
Chnl 3	2	C; 16GB RDIMM	5	C; empty	Chnl 3
	1	F; 16GB RDIMM	6	F; empty	

UDIMM maximum configuration (1 CPU model)

- 48GB, consisting of six (6) 8GB dual-rank PC3L-10600E-9 UDIMMs

Memory

	Processor 1		Processor 2		
	slot #	population order	slot #	population order	
Chnl 1	6	A; 8GB RDIMM	1	A; empty	Chnl 1
	5	D; 8GB RDIMM	2	D; empty	
Chnl 2	4	B; 8GB RDIMM	3	B; empty	Chnl 2
	3	E; 8GB RDIMM	4	E; empty	
Chnl 3	2	C; 8GB RDIMM	5	C; empty	Chnl 3
	1	F; 8GB RDIMM	6	F; empty	

RDIMM maximum configuration (2 CPU model)

- 192GB, consisting of twenty (12) 16GB dual-rank PC3L-10600R-9 RDIMMs

	Processor 1		Processor 2		
	slot #	population order	slot #	population order	
Chnl 1	6	A; 16GB RDIMM	1	A; 16GB RDIMM	Chnl 1
	5	D; 16GB RDIMM	2	D; 16GB RDIMM	
Chnl 2	4	B; 16GB RDIMM	3	B; 16GB RDIMM	Chnl 2
	3	E; 16GB RDIMM	4	E; 16GB RDIMM	
Chnl 3	2	C; 16GB RDIMM	5	C; 16GB RDIMM	Chnl 3
	1	F; 16GB RDIMM	6	F; 16GB RDIMM	

UDIMM maximum configuration (2 CPU model)

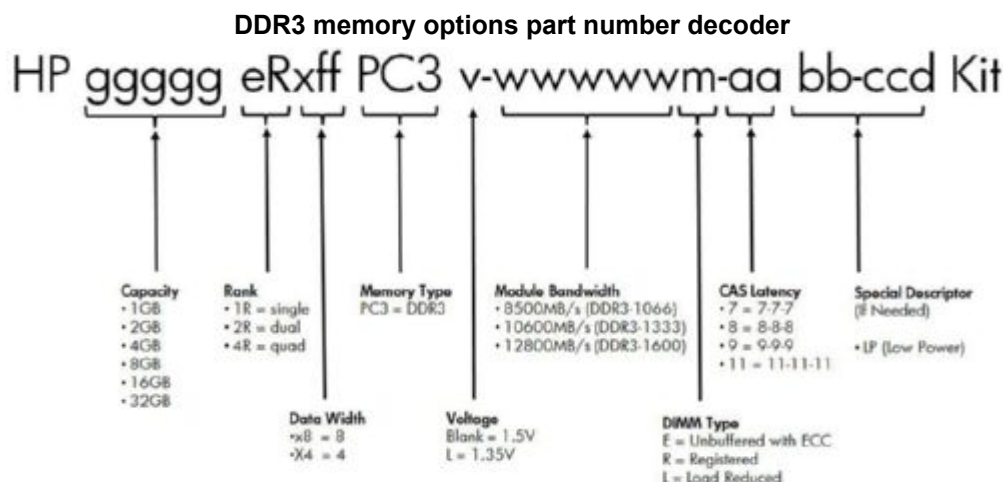
- 96GB, consisting of twelve (12) 8GB dual-rank PC3L-10600E-9 UDIMMs

	Processor 1		Processor 2		
	slot #	population order	slot #	population order	
Chnl 1	6	A; 8GB RDIMM	1	A; 8GB RDIMM	Chnl 1
	5	D; 8GB RDIMM	2	D; 8GB RDIMM	
Chnl 2	4	B; 8GB RDIMM	3	B; 8GB RDIMM	Chnl 2
	3	E; 8GB RDIMM	4	E; 8GB RDIMM	
Chnl 3	2	C; 8GB RDIMM	5	C; 8GB RDIMM	Chnl 3
	1	F; 8GB RDIMM	6	F; 8GB RDIMM	

NOTE: Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB

Memory



Following are memory options available from HP:

HP Memory

NOTE: To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html
(Worldwide)

NOTE: Redundant PSU Kit (PN: 738661-B21) is required for RDIMMs, whether 1 or 2 CPUs are populated.

Registered DIMMs (RDIMMs)

NOTE: The following memory is supported by the E5-2400 v2 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
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HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713983-B21
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HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21
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NOTE: The following memory is supported by the E5-2400 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
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HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
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HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
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HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
---	------------

HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
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HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
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HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21
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Unbuffered with ECC DIMMs (UDIMMs)

NOTE: The following memory is supported by the E5-2400 v2 series Processors.

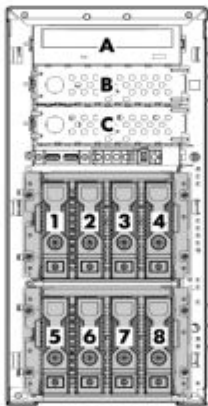
Memory

HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713975-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21
NOTE: The following memory is supported by the E5-2400 series Processors.	
HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

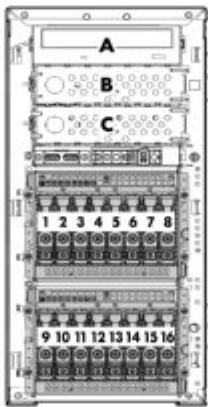
NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>

Storage



- A Optical Drive (standard with BTO, optional with CTO)
- B Optional Media Bay
- C Optional Media Bay
- 1-4 Standard LFF Drive Cage
- 5-8 Optional LFF Drive Cage (only available with hot-plug models)



- A Optical Drive
- B Optional Media Bay
- C Optional Media Bay
- 1-8 Standard SFF Drive Cage
- 9-16 Optional SFF Drive Cage

Technical Specifications

System Unit	Dimensions (H x W x D) (with feet/bezel)	16.93 x 7.87 x 24.8 in (43 x 20 x 63 cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	72.34 lb (27 kg)
		Minimum (one hard drive, power supply, and processor installed)	53.58lb (20 kg)
Input Requirements (per power supply)	Input Requirements (per power supply)	Rated Line Voltage	100 to 240 VAC
		Rated Input Current	7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	852 W
BTU Rating	BTU Rating	Maximum	460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC) 750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC) 1200W - 3530 BTU / hr (at 120 VAC), 4600 (at 240 VAC)
Power Supply Output (per power supply)	Power Supply Output (per power supply)	Rated Steady-State Power	460(750) W (at 100 VAC) 460(750) W (at 200 VAC)
		Maximum Peak Power	460(750) W (at 100 VAC) 460(750) W (at 200 VAC)
System Inlet Temperature	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Altitude	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Technical Specifications

Acoustic Noise

Non-operating

9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).

Idle

L WAd 4.1 B

L pAm 25 dB

Operating

L WAd 4.1 B

L pAm 26 dB

NOTE: Configurations tested for Entry models included Windows 2008 Enterprise 64-bit.

NOTE: Configurations tested for Base models included one (1) 1TB non-hot plug LFF SATA HDD and Windows 2008 Enterprise 64-bit.

NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Emissions Classification (EMC)

FCC Rating Class A

Normative Standards CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

HP Dynamic Smart Array B120i Controller

Dimensions

Embedded

Disk Drive Interface - Transfer rate

Up to 6Gb/s SATA (Serial ATA)

Connectors

6 internal SATA connectors

Server Interface

x4 PCIe 2.0

SATA Speed

6Gb/s SATA links

Cache Memory

Zero Memory RAID has no cache memory
optional 40-bit 512MB ECC protected Flash Backed Write Cache (FBWC)

Logical Drives Supported

Up to 8 logical volumes (6 physical drives)

Host Memory Addressing

64-bit, supporting greater than 4GB server memory space

Technical Specifications

RAID Support

RAID 0 (Striping), RAID 1 (Mirroring)

RAID 1+0 (Striping & Mirroring)

RAID 5 with optional 512MB FBWC

NOTE: 512 MB cache is required to enable RAID 5 support

NOTE: NO SAS supported.

HP Ethernet 1Gb 2-port 361i Adapter

Network Interface Compatibility

10Base-T/100Base-TX/1000Base-TX

IEEE 802.3 10Base-T

IEEE 802.3ab 1000Base-T

IEEE 802.3u 100Base-TX

IEEE 1588, IEEE 802.1AS

IEEE 802.3az - Energy Efficient Ethernet (EEE)

Data Transfer Method

PCI Express V2.0, 5.0 GT/s with x2 link (fixed)

Controller

Intel I350 Powerville

Network Transfer Rate

10Base-T (Half-Duplex) 10 Mb/s per port, 20 Mb/s Combined

10Base-T (Full-Duplex) 20 Mb/s per port, 40 Mb/s Combined

100Base-TX (Half-Duplex) 100 Mb/s per port, 200 Mb/s Combined

100Base-TX (Full-Duplex) 200 Mb/s per port, 400 Mb/s Combined

1000Base-TX (Half-Duplex) 1000Mb/s per port, 2000 Mb/s Combined

1000 Base-TX (Full-Duplex) 2000Mb/s per port, 4000 Mb/s Combined

Connector

RJ-45

Cable Support

10Base-T

Categories 3, 4 or 5 UTP; up to 328 ft (100 m)

10/100/1000Base-TX

Category 5E or better; up to 328 ft (100 m)

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Technical Specifications

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.