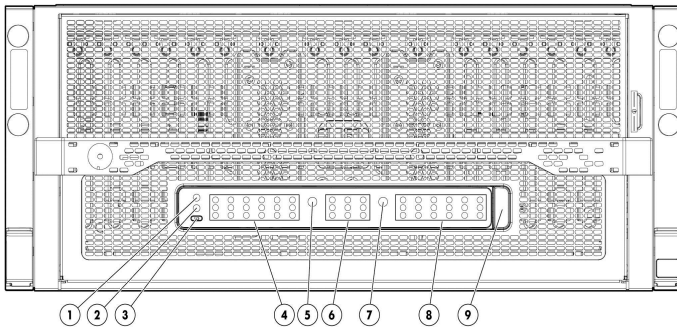


Overview

As a dedicated hosting company are you using large numbers of traditionally architected servers? Are you hitting the wall for power, cooling and space?

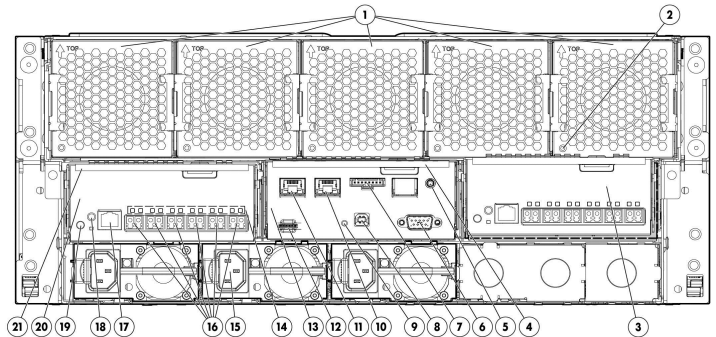
The HP Moonshot System uses an innovative new architecture that results from one simple design tenet: to align purpose-built modules with the right workload to provide optimal results for your dedicated hosting environment. Traditional servers rely on dedicated components, including management, networking, storage, power cords and cooling fans in a single chassis. In contrast, the Moonshot system share these chassis components and are capable of supporting 45 servers per 4.3U chassis.

This gives you the ability to generate greater revenue from a smaller footprint while driving down your operational costs. The HP ProLiant Moonshot Servers use low-energy processors and direct attached disk drives to provide an ideal solution for dedicated hosting.



Front View:

1. Chassis Power LED
2. System health LED
3. Chassis UID/LED/button
4. Front Panel Display LED, Moonshot server 1-18
5. Switch Module A Health LED
6. Front Panel Display LED, Moonshot server 19-27
7. Switch module B health LED
8. Front Panel Display LED, Moonshot server 28-45
9. Front Panel Display release



Back View:

- | | |
|--|---|
| 1. Fans | 12. SD card slot |
| 2. Fan LED | 13. HP Moonshot 1500 Chassis Management Module |
| 3. HP Moonshot-6SFP Uplink Module B | 14. Switch module uplink/downlink activity LEDs |
| 4. Chassis management module release lever | 15. Power supply connector |
| 5. HP Moonshot 1500 Chassis Management Module UID LED/button | 16. 10Gb SFP connector (x6) |
| 6. Serial port | 17. Serial connector |
| 7. Rack control modular connection | 18. Uplink module UID/LED button |
| 8. USB port | 19. Uplink module health LED |
| 9. HP Moonshot 1500 Chassis Management module LED | 20. HP Moonshot-6SFP Uplink Module A |
| 10. iLO2 connector | 21. Uplink module release lever |
| 11. iLO1 connector (primary) | |

Standard Features

Standard Features - Server

Processor Intel® Atom™ Processor S1260, 2.0 GHz

Cache Memory 1 MB

Chipset Intel™ Atom™ Processor S1200 Series for Servers

On System Management Processor via HP Moonshot 1500 Chassis Management module

Memory Protection Advanced ECC (multi-bit error protection)

Memory	Type	Unbuffered (UDIMM), ECC @ 1333 MHz
	DIMM Slots Available	1 SO-DIMM Slot
	Configuration	8GB (1x8GB)

Network Controller Network Controller Broadcom 5720 Dual-port 1Gb Ethernet Controller

Storage Controller Marvell 9125

Storage Device Hard Drive Each cartridge will ship with a SATA HDD or SATA SSD

Maximum Internal Storage (per Moonshot Server)	Quick Release SATA 2.5"	1TB	1 x 1TB SATA
		500 GB	1 x 500 GB SATA

Standard Features

Interfaces

Network RJ-45 for Management	Two RJ-45 are located on the HP Moonshot 1500 Chassis Management Module. One is for the HP Moonshot iLO Chassis Management and one is for future use
SFP+ connector	Six 10GbE SFP+ connectors per HP Moonshot-6SFP Uplink. NOTE: See the HP Moonshot-6SFP Uplink Module QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14734_na/14734_na.html
Health LED	47 front for server/switch health, one per server and switch when access panel is removed
Power	1 front and one per server and switch when access panel is removed
UID for node	1 front and 1 rear (on management module) and one per server and switch when access panel is removed
Drive health LED	One per server and switch when access panel is removed

Industry Standard Compliance

ACPI 2.0b Compliant
SMBIOS 2.6.1
PXE Support

Operating Systems and Virtualization Software Support for ProLiant Servers

Canonical Ubuntu
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
NOTE: Only 64-bit versions of these operating systems are supported.
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 including how to purchase from HP, please visit our OS Support Site at: <http://www.hp.com/go/ossupport> and our driver download page: <http://www.hp.com/go/servers/Moonshot/download>

Server Form Factor

HP ProLiant Moonshot Servers are constructed to allow for 45 servers to fit vertically and exclusively into the HP Moonshot 1500 chassis
HP Moonshot-45G Switch Modules - up to two switches install vertically and exclusively into the chassis. An HP Moonshot-6SFP Uplink Module is required per switch.
NOTE: See the [HP Moonshot-45G Switch Module QuickSpecs for Technical Specifications and additional information:](#)
http://h18000.www1.hp.com/products/quickspecs/14732_na/14732_na.html
NOTE: See the [HP Moonshot-6SFP Uplink Module QuickSpecs for Technical Specifications and additional information:](#)
http://h18000.www1.hp.com/products/quickspecs/14734_na/14734_na.html

Standard Features - HP Moonshot 1500 Chassis

Chassis Form Factor 4.3U

Standard Features

HP Interconnect modules **NOTE:** Up to two identical pairs of Switch and Uplink modules are supported in the Moonshot 1500 Chassis. Dual switch modules are required for network redundancy, regardless of cartridge configuration.

HP Moonshot-45G Switch Module

Switch with 45 1 GbE downlink ports.

Compatible with HP Moonshot-6SFP Uplink Module in the Moonshot 1500 Chassis.

For more information, please visit:

HP Moonshot-45G Switch Module

http://h18000.www1.hp.com/products/quickspecs/14732_na/14732_na.html

HP Moonshot-6SFP Uplink Module

Networking faceplate module with 6 10GbE SFP+ uplink ports.

Compatible with HP Moonshot-45G Switch Module in the Moonshot 1500 Chassis.

For more information, please visit:

HP Moonshot-6SFP Uplink Module

http://h18000.www1.hp.com/products/quickspecs/14734_na/14734_na.html

HP Moonshot 1500 Chassis Management Module

HP Moonshot 1500 Chassis Management module, complete with support for SL-APM.

The HP Moonshot 1500 Chassis Management module manages the health of the chassis and servers and includes a command-line interface accessible via SSH to configure the chassis and server settings and control server power and UID lights, use Virtual Serial Port to servers, and to flash firmware in the chassis. It also supports IPMI management.

On System Management

HP Moonshot iLO Chassis Management Firmware is the gateway for aggregated chassis management on HP Moonshot. Moonshot iLO CM firmware reduces cost and power by sharing four iLO modules across the nodes and other system components. As a single point of access to the chassis, Moonshot iLO CM firmware allows you to configure, update, and operate HP Moonshot via CLI, IPMI, and remote serial console access.

For more information, see the HP Moonshot iLO Chassis Management Firmware User Guide on the HP Project Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

System Fans

5 Dual-Rotor, Hot-Plug Fans, N+1

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_na/14209_na.html

Standard Features

Common Slot Power Supply

Each Moonshot Chassis comes with a minimum of two (2) HP Common slot power supplies. 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% and are available in only a 1200W configuration for this platform which is "right-sized" for this specific solution. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations. HP Power Advisor can be accessed at:

www.hp.com/go/hppoweradvisor.

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.

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

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. 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>

High Performance Clusters HP Insight Cluster Management Utility

HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective.

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

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>.

Service and Support

Services and Support

HP Technology Services for Moonshot

Capitalizing on the Moonshot 1500 System 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 Technology Services.

HP is pleased to include full software support for Ubuntu Linux as part of your Moonshot chassis purchase. For chassis supporting revenue-generating or production level workloads, consider purchasing a level of support that matches your requirements.

Protect your business beyond warranty with HP Care Pack Services

HP sells support in easy-to-buy, preconfigured packages with the combination of services, coverage and duration to fit your needs and budget. With Moonshot, we are introducing a new, simpler set of services. Simply choose the service level that best fits the criticality of your hardware.

HP Foundation Care

HP introduces new Foundation Care services offer scalable reactive support-packages for HP Moonshot and software. You can choose the type and level of service that is most suitable for your IT and business needs. The Moonshot 1500 Care Pack services cover the Moonshot 1500 Chassis and the Moonshot servers with one single Care Pack SKU. Entitlement of support requires the customer to provide the 1500 chassis serial number. All HP components structured to the Moonshot System are covered by Care Pack services inclusive of switches, power supplies, and fans. HP Foundation Care services include hardware support, basic software support and collaborative call handling for software questions related to industry leading operating systems and software. For a complete list of software products covered, refer to: www.hp.com/services/collaborativesupport.

Full software support, including call management and ownership thru to resolution is available for select third party software. As stated earlier, support for Ubuntu software is included in the purchase of your Moonshot chassis.

HP Datacenter Care

HP Datacenter Care offers you a flexible, tailored, relationship-based approach to support the most demanding data centers handling the demands of hyperscale computing. This is an environment level service, purchased once to support your Moonshot environment. Other equipment may be included in this agreement for holistic datacenter coverage. With HP Datacenter Care, you still have the choice of HP Foundation Care reactive support which you purchase with each chassis.

HP Datacenter Care is flexible enough to deliver exactly what you need in one relationship. All Datacenter Care support is tailored to your needs, based on our experience with hyperscale customers:

- Assigned account team, led by an account support manager (ASM) who knows your business and your IT environment and is responsible for the quality service delivery and experience.
- Enhanced call handling for the best call experience with rapid escalation and incident resolution through the HP Hyperscale Center of Excellence
- Proactive and reactive support, configured to deliver the level of support needed by the different data center components and meeting both service-level agreement (SLA) and cost targets

Then add on other services that are tailored to your specific needs, including:

HP Self-Service Spares Service answers the question: What do you do when you need parts? We can set it up so that you get spare parts onsite through our automated self-service spares. You simply go to the part

Service and Support

of your data center where the parts live, scan them out, scan in the broken one, and you're done. We maintain your inventory of good spares, so that what you need is ready to go when you need it. And we provide monthly service excellence reports illustrating onsite inventory performance.

To obtain further information or to order HP Datacenter Care Service as described above, contact a local HP sales representative. Please see the Additional Options section of this QuickSpecs for additional information.

HP Moonshot Installation & Startup Service

HP Installation and Startup Service for the Moonshot System provides for the installation of one system and its associated Moonshot servers and network switches, as well as operating system deployment and basic configuration of OS network parameters to establish network connectivity

In response to the needs of the majority of HP Moonshot System customers, this fixed-price/fixed deliverable service targets new hardware installation and software deployments for the 1500 infrastructure. For more advanced installation, configuration, and integration requirements, custom deployments are available through a customized Statement of Work. . Please see the Additional Options section of this QuickSpecs for additional information.

For more information on HP Services, contact any of our worldwide sales offices or visit one of the following websites:

HP support services: www.hp.com/services/alwayson

HP Care Pack services: www.hp.com/services/carepack

Recommended HP Care Pack Services for your HP product

Optimized Care

3-Year HP Foundation Care Call to Repair

This is HP's highest level of reactive support giving you our commitment to have the hardware operational within six hours of opening the call with us. This service level includes hardware coverage plus software diagnosis support with collaborative call management for a broad spectrum of third party software products including O/S and hypervisors.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA4-8877ENW.pdf>

Standard Care

3-Year HP Foundation Care 24x7

This service level provides consistent, reliable reactive support with the broadest coverage window which is recommended when maintenance must be performed outside business hours. Calls may be opened 24x7. Should an onsite visit be needed, our commitment is to respond onsite within four hours. Software call back commitment is two hours.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-8877ENW.pdf>

Basic Care

3- Year HP Foundation Care Next Business Day

This service level provides the most economical support coverage and is designed for non-revenue impacting systems. Calls may be opened 24x7. Should an onsite visit be needed, our commitment is to respond onsite the next business day. Software call back commitment is two hours, during regular business hours.

For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our website at: www.hp.com/go/carepack

Service and Support

Defective Media Retention (DMR) and Comprehensive Defective Material Retention

If your business deals with sensitive or legally protected data, you know that it's not a simple matter to return a defective hardware component, but keeping it conflicts with the terms and conditions of many standard warranty agreements. If you don't return the component, you'll be charged for the replacement part.

HP Foundation Care services are available with defective media retention of failed hard drives and comprehensive defective material retention of those other data-retentive components, such as memory, switches, processors and more. This may be purchased as an optional add-on to your HP Foundation Care service purchase. This service is critical for customers who:

- Need to control and secure their classified, proprietary and confidential data.
- Are subject to current data privacy regulations.
- Want a simpler, more cost-effective solution when choosing not to return a malfunctioning disk drive or other data retentive component.

For more information on our data privacy services, see: www.hp.com/services/dataprivacy.

HP Support Center

HP provides several tools that make it simpler to get help from HP:

HP Support Center is 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 personalize IT support anywhere, anytime.

HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

NOTE: 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 HP Moonshot System, please contact your HP sales representative.

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 an HP Moonshot 1500 Chassis. Each Moonshot Chassis will be ordered with minimum configurations as follows:

Forty Five (45) identically configured Moonshot servers per chassis.

NOTE: This means that each of the 45 servers in the chassis will contain an identically sized HDD, whether it be the 500 GB or the 1 TB SATA

Two (2) 1200W Common Slot Platinum Plus Power Supplies

NOTE: Additional power supply kits may be ordered to achieve N+1 or N+N redundancy.

One (1) HP Moonshot-45G Switch Module

And

One (1) HP Moonshot-6SFP Uplink Module

NOTE: A second Switch and Uplink Module Kit may be ordered to give a redundant network configuration or to enable two separate networks utilizing different Moonshot servers.

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.

Step 1: Base Configuration (Choose one HP Moonshot 1500 Chassis)

HP Moonshot 1500 Chassis	HP Moonshot 1500 Chassis NOTE: Must order a total of 45 identically configured Moonshot servers to complete the chassis.	700350-B21
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Step 1A: Configure Moonshot Servers (one of each unless otherwise noted)

HP Moonshot Server	HP ProLiant Moonshot Server NOTE: Must order a total of 45 identically configured Moonshot servers to complete the chassis. NOTE: Each Moonshot server comes preconfigured with a single 8 GB SO-DIMM pre-installed. This is the only memory configuration available on this server. NOTE: Each Moonshot cartridge is pre-configured with a single Intel® Atom™ Processor S1260 running at 2.0 GHz. This processor is dual-core, hyperthreaded, and contains 1 MB Cache. The S1260 is the only processor option available and represents a balance of performance and energy efficiency.	700352-B21
HP Hard drives	6G SATA Quick Release SFF (2.5-inch) Midline (MDL) Drives HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) Quick Release Midline 1yr Warranty Hard Drive HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) Quick Release Midline 1yr Warranty Hard Drive NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html	632080-B21 632078-B21
	6G SATA Value Endurance Quick Release SFF (2.5-inch) Enterprise Value Solid State Drives HP 240GB 6G SATA Value Endurance SFF 2.5-in Quick-release Enterprise Value 3yr Wty Solid State Drive	718180-B21
	3G SATA MLC Quick Release SFF (2.5-inch) Enterprise Mainstream Solid State Drives	

Configuration Information – Factory Integrated Models

HP 200GB 3G SATA MLC SFF (2.5-inch) Quick-release Enterprise Mainstream 3yr Wty Solid State Drive 636623-B21

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

http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html

NOTE: The non-hot plug hard drives use a quick release carrier.

Step 2: Choose Required Options (one of each unless otherwise noted)

Power Supplies

HP Common Slot Platinum Plus Power Supply Kits

NOTE: 94% efficiency with support for HP Power Discovery Services.

HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit 656364-B21

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

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

NOTE: Must select a Minimum of two power supplies per HP Moonshot 1500 chassis.

Networking

HP Moonshot 45G Switch Module Kit 704644-B21

HP Moonshot 6SFP Uplink Module Kit 704646-B21

NOTE: Must order one of each the Switch Kit and Uplink Kit per chassis.

NOTE: Two per chassis allow configurations with redundant or dual networks.

Step 3: Choose additional options

HP Power Cords

HP C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord AF556A

HP C13 - C14 WW 250V 10Amp Flint Gray 2.0m Jumper Cord AF573A

HP C13 - C14 WW 250V 10Amp 2.0m Jumper Cord A0K02A

HP C13 - C14 WW 250V 10A Gray 0.7m Jumper Cord A0K03A

HP C13 - C14 WW 250V 10A Gray 1.37m Jumper Cord A0K04A

HP C13 - C14 WW 250V 10A Gray 3.0m Jumper Cord A0K06A

HP C13 - Nema 6-15P US 250V 15A JP 3.6m Power Cord A0N33A

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
	HP Insight Control Server Provisioning Media Kit	BD883A
	HP Insight Management Media Kit	C6N31A
	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Electronic License	C6N36ABE
	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_na/12631_na.html	
High Performance Clusters	HP Insight Cluster Management Utility 1yr 24x7 Flexible License	D9Y33A
	HP Insight Cluster Management Utility 3yr 24x7 Flexible License	D9Y34A
	HP Insight Cluster Management Utility Media	BD477A
	NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_na/12612_na.html	
SFP Options	HP BLc Virtual Connect 1Gb SX Small Form Factor Pluggable Option Kit	453151-B21
	HP BLc Virtual Connect 1Gb RJ-45 Small Form Factor Pluggable Option Kit	453154-B21
SFP+ Options	HP BladeSystem c-Class 10Gb Short Range Small Form-Factor Pluggable Option	455883-B21

Additional Options

Direct Attach Cables	HP BladeSystem c-Class Small Form-Factor Pluggable .5m 10GbE Copper Cable	487649-B21
	HP BladeSystem c-Class Small Form-Factor Pluggable 1m 10GbE Copper Cable	487652-B21
	HP BladeSystem c-Class Small Form-Factor Pluggable 3m 10GbE Copper Cable	487655-B21
	HP BladeSystem c-Class Small Form-Factor Pluggable 7m 10GbE Copper Cable	487658-B21
	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
	HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B
	HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B
	HP X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C
	HP C-Series SFP+ to SFP+ Copper 3.0m Direct Attach Cable	AP784A
	HP C-Series SFP+ to SFP+ Copper 5.0m Direct Attach Cable	AP785A
	HP B-series SFP+ to SFP+ Active Copper 1.0m Direct Attach Cable	AP818A
	HP B-series SFP+ to SFP+ Active Copper 3.0m Direct Attach Cable	AP819A
	HP B-series SFP+ to SFP+ Active Copper 5.0m Direct Attach Cable	AP820A
	HP BladeSystem c-Class 10Gb Short Range Small Form-Factor Pluggable Option	455883-B21
	HP BLc Virtual Connect 1Gb SX Small Form Factor Pluggable Option Kit	453151-B21
HP BLc Virtual Connect 1Gb RJ-45 Small Form Factor Pluggable Option Kit	453154-B21	

HP Rail Kits (Chassis Specific)	HP 4.3U Server Rail Kit	681254-B21
	HP 0.66U Spacer Blank Kit	681260-B21

NOTE: For data center airflow management purposes, it is recommended that either the .66U Spacer Blank or the 13U FIO Rack Adapter Kit can be ordered.

NOTE: The HP 4.3U Rail Kit is required to be ordered for every chassis to properly install the chassis into a rack.

NOTE: The .66U Spacer Blank kit may be ordered and will give an even 5U (4.3U+0.66U) spacing in a rack. This would enable installing up to 8 chassis in a 42U rack. It is also possible to stack up to 9 chassis in a 42U rack using the 13U FIO Rack Adapter Kit. If the 13U kit is used, the .66U spacer would not be used and vice versa.

Rack Adapter	HP 13U FIO Rack Adapter Kit for 3X4.3U Chassis	681677-B21
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NOTE: Groups Moonshot 1500 Chassis units into a 13U space. Order one per three enclosures. The 0.66U spacer is not used when selecting this option.

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	
	HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	COL99A
	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
	HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A

Additional Options

HP Uninterruptible Power Systems **HP Rack-mountable UPS**

HP R1500 G3 Uninterruptible Power Supply (UPS)

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_na/14059_na.html

HP R/T3000 G2 Uninterruptible Power System (UPS)

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_na/14058_na.html

R5000 Uninterruptible Power System (UPS)

HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System

AF460A

NOTE: Please see the QuickSpecs for additional information:

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

R7000 Uninterruptible Power System (UPS)

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

AF462A

NOTE: Please see the QuickSpecs for additional information:

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

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 Power Distribution Units

HP Monitored Power Distribution Unit: Full Rack Version

HP 8.6kVA 24A Single Input Three Phase NA/JP Monitored Power Distribution Unit

AF504A

HP 8.3kVA 40A Single Input Single Phase NA/JP Monitored Power Distribution Unit

AF506A

HP Monitored Power Distribution Unit: Half Rack Version

HP 4.9kVA 24A Single Input Single Phase NA/JP Monitored Power Distribution Unit

AF914A

NOTE: Please see the following QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/12118_na/12118_na.html

Modular Power Distribution Units 1U/0U (Up to 32 outlets)

NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).

HP 2.8kVA 24A Low Voltage NA/JP Modular Power Distribution Unit

252663-D71

NOTE: This PDU has a detachable input power cord and allows for adaptability to country specific power requirements.

NOTE: Please see the following QuickSpecs for additional options including shorter jumper cables and country specific power cords:

http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.html

Additional Options

NOTE: For additional information on HP Power Distribution Units including accessories please go to: <http://www.hp.com/go/pdu>.

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 Intelligent Power Distribution Units (iPDU)	iPDU Core Units	
	HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
	HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
	iPDU Extension Bars	
	HP 5x13 Intelligent PDU Extension Bar G2 Kit	AF547A
	HP 5x13 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_na/13650_na.html	

HP Basic Power Distribution Units	HP 1.9kVA 120 Volt 12 Outlet NA/JP Basic Power Distribution Unit	H5M54A
	HP 2.8kVA 120 Volt 18 Outlet NA/JP Basic Power Distribution Unit	H5M55A
	HP 3.6kVA 200-240 Volt 12 Outlet WW Basic Power Distribution Unit	H5M56A
	HP 3.6kVA 200-240 Volt 20 Outlet WW Basic Power Distribution Unit	H5M57A
	HP 4.9kVA 208 Volt 20 Outlet NA/JP Basic Power Distribution Unit	H5M58A
	HP 4.9kVA 208 Volt 30 Outlet NA/JP Basic Power Distribution Unit	H5M59A
	HP 8.3kVA 208 Volt 36 Outlet NA/JP Basic Power Distribution Unit	H5M60A
	HP 8.6kVA 208 Volt Three Phase 18 Outlet NA/JP Basic Power Distribution Unit	H5M61A
	HP 8.6kVA 208 Volt Three Phase 30 Outlet NA/JP Basic Power Distribution Unit	H5M62A
	HP 5.7kVA 208 Volt Three Phase 27 Outlet NA/JP Dual Voltage Basic Power Distribution Unit	H5M63A
	HP 8.6kVA 208 Volt Three Phase 30 Outlet NA/JP Dual Voltage Basic Power Distribution Unit	H5M64A
	HP 11kVA 400 Volt Three Phase 42 Outlet NA Basic Power Distribution Unit	H5M67A
	HP Hardwired 200-240 Volt 36 Outlet WW Basic Power Distribution Unit	H5M75A
	HP 13.2kVA 480 Volt Three Phase 15 Outlet NA Basic Power Distribution Unit	H3X07A
	HP 19.9kVA 480 Volt Three Phase 30 Outlet NA Basic Power Distribution Unit	H3X08A
	HP 277 Volt options for H3X07A and H3X08A	
	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_na/14557_na.html 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 .		

Additional Options

HP Rack Series

HP Intelligent Series Rack

HP 636 1200mm Pallet Intelligent Series Rack	BW899A
HP 636 1200mm Shock Intelligent Series Rack	BW900A
HP 642 1200mm Pallet Intelligent Series Rack	BW907A
HP 642 1200mm Shock Intelligent Series Rack	BW908A
HP 647 1200mm Pallet Intelligent Series Rack	BW913A
HP 647 1200mm Shock Intelligent Series Rack	BW914A

NOTE: Rack chosen is required to have 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack.

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

http://h18000.www1.hp.com/products/quickspecs/14223_na/14223_na.html

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

HP Rack Options

HP TFT7600 G2 KVM Console and Monitor (TFT7600 G2)

HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor	AZ870A
HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor	AZ885A

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

http://h18000.www1.hp.com/products/quickspecs/13731_na/13731_na.html

HP Server Console Switches

HP Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A
HP TAA 0x2x16xKVM Server Console G2 Switch	AF626A

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

http://h18000.www1.hp.com/products/quickspecs/11834_na/11834_na.html

HP Server Console Switch G2 with Virtual Media & CAC

HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A

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

http://h18000.www1.hp.com/products/quickspecs/13475_na/13475_na.html

HP IP Console Switch G2 with Virtual Media & CAC

HP 1x4 USB/PS2 KVM Console Switch	AF611A
HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A

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

http://h18000.www1.hp.com/products/quickspecs/13474_na/13474_na.html

Technical Specifications

HP Moonshot 1500 Chassis

Dimensions (H x W x D)	7.47 x 17.45 x 35.34in (18.96 x 44.33 x 89.97cm) NOTE: Rack chosen is required to have 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack.)	
Weight (approximate)	Maximum	180 lbs. (all hard drives, power supplies, and processors installed)
Network Ports (per switch & uplink pair)	Forty-five (45) 10/100/1000 downlink ports Six (6) 10Gb SFP+ uplink ports NOTE: See the HP Moonshot-45G Switch Module QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14732_na/14732_na.html NOTE: See the HP Moonshot-6SFP Uplink Module QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14734_na/14734_na.html	
Input Requirements (per power supply)	Rated Line Voltage	90 to 140 VAC 180 to 264 VAC
	Rated Input Current	7.31A at 115VAC 3.6A at 230VAC
	Rated Input Frequency	47 to 63 Hz
	Rated Input Power	855W (at 100 VAC), 840.72W (at 200 VAC)
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	
Power Supply Output (per power supply)	Rated Steady-State Power	653.10W (at 100 VAC), 653.08W (at 200 VAC)
System Inlet Temperature	Operating	50° to 95° F (10° to 35° C) at sea level with an altitude derating of 1.8°F per every 1000 ft (1.0°C per every 304.8 m) above sea level to a maximum of 10,000 ft (3048 m), no direct sustained sunlight. Maximum rate of change is 18°F/hr (10°C/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 86°F (30°C).
	Non-operating	-22° to 140° F (-30° to 60° C) Maximum rate of change is 36°F/hr (20°C/hr).
Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.

Technical Specifications

	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	10,000 ft (3048 m). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
	Non-operating	30,000 ft (9144 m). Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
Acoustic Noise	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	7.1 Bels
	L pAm	54 dB
	Operating	
	L WAd	7.3 Bels
	L pAm	57 dB
Emissions Classification (EMC)	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; 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.

Broadcom 5720 Adapter	Network Interface	
	Compatibility	IEEE 1588, IEEE 802.1AS IEEE 802.3az
	Data Transfer Method	PCI Express v 2.1, 5.0 GT/s and 2.5 GT/s bus speeds and supports for x1, x2, x4 links widths (Lanes)
	Controller	
	Network Transfer Rate	10Mb(Half-Duplex) 10 Mb/s per port, 20 Mb/s Combined 10Mb (Full-Duplex) 20 Mb/s per port, 40 Mb/S Combined 100Mb (Half-Duplex) 100 Mb/s per port, 200 Mb/s Combined 100Mb(Full-Duplex) 200 Mb/s per port, 400 Mb/s Combined 1Gb(Half and Full-Duplex) 1000Mb/s per port, 2000 Mb/s Combined
	Connector	Internal
	Cable Support	N/A

Technical Specifications

Marvell 9125	Disk Drive and Enclosure Interface - Transfer rate	6Gb/s SATA (Serial ATA)
	Connectors	N/A
	Server Interface	X1 PCIe 2.0 provides 5GB/s maximum bandwidth
	Speed	6Gb/s SAS links provide 4.8GB/s maximum bandwidth
	Cache Memory	None
	Physical Drives Supported	Up to 1 physical drives
	Hot Plug Support	No
	RAID Support	None

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.
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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.

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