

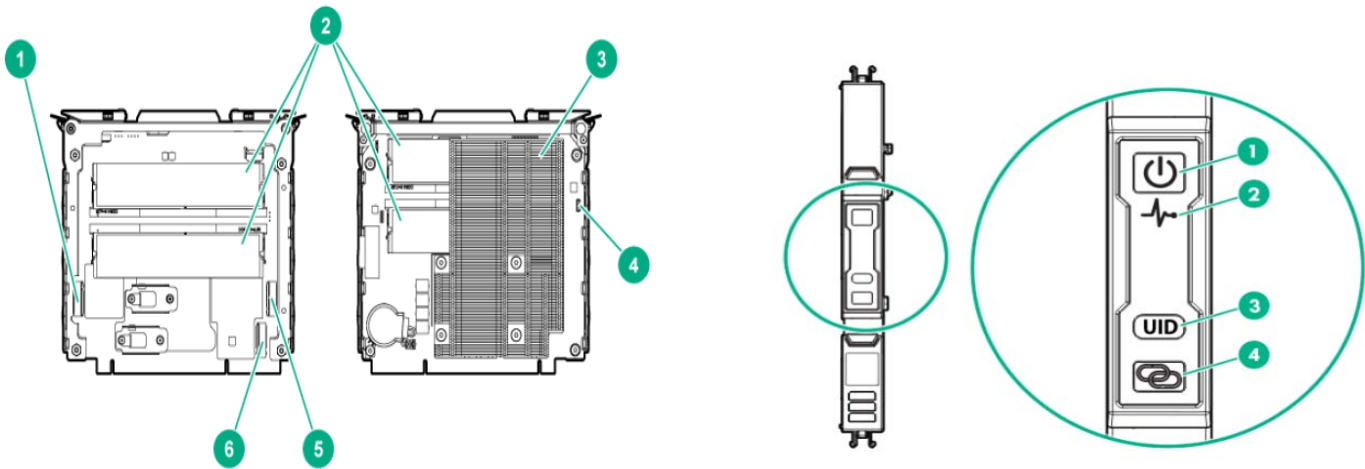
Overview

HPE ProLiant m510 Server Cartridge

HPE ProLiant m510 Server cartridge is a compute workhorse designed to enhance the performance of workloads such as analytics, machine learning and extreme user density application delivery when installed in HPE Moonshot or HPE Edgeline Systems. The ProLiant m510 Server cartridge has one Intel® Xeon® D-1548 (8-core) or D-1587 (16-core) CPU with up to 128GB of ECC protected memory, dual 10Gb Ethernet along with up to Two (2) 1TB NVMe M.2 flash storage modules, and up to (1) 240GB SATA M.2 for local OS booting. The server cartridge will be available in two versions (both with CPU fixed on board and not changeable): m510 (8 core SoC) and m510-16c (16 core SoC).

The HPE 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 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 shares these chassis components and is capable of supporting up to 45 server cartridges of 8-core SKU or up to 30 server cartridges for 16-core SKU per 4.3U chassis. This gives you the ability to generate greater revenue from a smaller footprint while driving down your operational costs.

HPE Edgeline is the industry’s first “Converged IoT System” - converging compute, storage, data capture, control and enterprise-class systems and device management --- built to thrive in hardened environments and handle shock, vibration and extreme temperatures. HPE Edgeline Systems allow deployment 1 to 4 HPE ProLiant m510 servers, along with associated storage and I/O options to locations both inside and outside the traditional datacenter (e.g. factories, branch office and retail outlet).



Server Cartridge Bottom and Top Side View

Item	Description
1.	2242 M.2 SSD Connector (SATA)
2.	Four (4) DDR4 RDIMM Memory Slots
3.	Intel® Xeon® D Processor and Heat Sink
4.	Micro USB Connector
5.	2280 or 22110 M.2 SSD Connector (NVMe)
6.	2280 or 22110 M.2 SSD Connector (NVMe)

Server Cartridge LEDs and Buttons

Item	Description
1.	Server Cartridge Power LED/Button
2.	Server Cartridge Health LED
3.	Server Cartridge UID LED/Button
4.	Server Cartridge Link LED/Button

Standard Features

Processor

Intel® Xeon® D Model	SoC Frequency	Turbo Frequency	Cores	L3 Cache	Power	DDR4 MHz
D-1548	2.0GHz	2.3-2.6GHz	8-core	12MB	45W	2400
D-1587	1.7GHz	2.1-2.3GHz	16-core	24MB	65W	2133

NOTE: For more information regarding Intel® Xeon® D, please see the following

URL: <http://www.intel.com/content/www/us/en/processors/xeon/xeon-processor-d-family.html>

Chipset

Intel

Intel® Xeon® D Chipset (integrated with SoC)

Intel® Xeon® D Processor Family

Graphics

No integrated graphics apart from iLO remote console (2D).

Expansion I/O slots for selected 3D graphics cards are available in the HPE Edgeline System. Refer to the chassis documentation for details.

On System Management Chipset

HPE iLO (Firmware HPE iLO4 2.4 or later) 4GB NAND

NOTE: 1GB USB user space configurable via UEFI and accessible via iLO is available only on HPE Edgeline System. Read and learn more in the iLO QuickSpecs:

<http://www8.hp.com/us/en/products/servers/ilo/>.

Memory

Type	HPE SmartMemory DDR4 ECC Registered (RDIMM)	
Supported DIMMs	DDR4-2400 8GB (1R x 8), 16GB (1R x 4), 32GB (2R x 4)	
DIMM Slots Available	4	(4 DIMM slots per processor, 2 channels per processor, 2 DIMMs per channel)
Maximum Capacity (RDIMM)	128GB	(4 x 32GB RDIMM)

NOTES:

- Rules under “Memory” section must be followed for Configuring and Mixing of DIMMs.
- Intel® Xeon® D-1587 (16 core) processors will run memory at the maximum of DDR-2133 only, even if 2400MHz capable DIMMs are populated.
- Load Reduced DIMMs (LRDIMMs) and Non-Volatile DIMMs (NVDIMMs) are not supported.

Memory Protection

Advanced ECC

Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.

Patrol/Demand scrubbing

Patrol and Demand scrubbing detect and correct memory errors by periodically inspecting the entire memory space or when the data is accessed during normal operation.

Expansion slots

Expansion I/O slot options are available in the HPE Edgeline System. Refer to the chassis documentation for details.

Standard Features

Network Controller Mellanox Connect-X3 Pro
Dual 10GbE NIC. Supports RDMA over Converged Ethernet (RoCE)

Storage Controller and Devices SATA and PCIe controllers are Integrated in the Intel® Xeon® D SoC

SSD Slot #	Technology	Bus Width	Connector Width	Form Factor	Supported Sizes
SATA #1	SATA-3	x1	x1	M.2 2242	64GB 120GB 240GB
NVMe #1	PCIe 3.0	x4	x4	M.2 2280 or 22110	256GB 512GB 1024GB
NVMe #2	PCIe 3.0	x4	x4	M.2 2280 or 22110	256GB 512GB 1024GB

NOTE: The HPE m510 server cartridge may be purchased with zero M.2 storage (i.e. network/diskless boot).

NOTE: SATA and NVMe M.2 SSDs can both be used as an OS boot drive

Maximum Internal Storage M.2 2242 SATA solid state device 240 GB 1 x 240 GB
M.2 2280 NVMe solid state devices 2 TB 2 x 1 TB

Power Supply Power supply options depend on the chassis used. Refer to the chassis documentation for details.

System Fans System fan options depend on the chassis used. Refer to the chassis documentation for details.

Interfaces Server Cartridge Link LED/button
Server Cartridge UID LED/button
Drive LED
Server Cartridge Health LED
Micro-USB 2.0 connector

NOTES:

- Micro-USB connector is for diagnostic usage only and may require removal of any adjacent cartridge.
- To connect a standard USB device to the server cartridge, connect a USB on-the-go adapter to the cartridge Micro-USB connector, and then connect the USB device to the adapter.

Operating Systems and Virtualization Software Support for ProLiant Servers Microsoft Windows Server 2012 / 2012 R2, 2016 (when available)
SUSE Linux Enterprise Server (SLES) 12
Canonical Ubuntu 14.04.3 LTS, 16.04 (planned)
RedHat Enterprise Linux 6.8, 7.2 (including KVM)
CentOS 6.8, 7.2
Citrix XenServer 7.0
VMware ESXi 6.0u2

NOTE: Only 64-bit versions of these operating systems are supported

NOTE: For more information on Hewlett Packard Enterprise'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 Hewlett Packard Enterprise, 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>

Standard Features

Industry Standard Compliance	PXE Support PCIe 3.0 Compliant iSCSI Boot (with supported operating systems) WOL Support Microsoft® Logo certifications USB 2.0 and 3.0 Support ACPI 2.0 Compliant
HPE Server UEFI ROM	Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with your server at boot time. The HPE ProLiant m510 Server defaults to UEFI and does not currently support Legacy BIOS Boot Mode. NOTE: The UEFI System Utilities function is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit http://www.hpe.com/servers/uefi
	UEFI enables numerous new capabilities specific to HPE ProLiant servers such as: <ul style="list-style-type: none"> • Secure Boot • Operating system specific functionality • Support for > 2.2 TB (using GPT) boot drives • USB 3.0 Stack (<i>only used in HPE Edgeline System</i>) • Embedded UEFI Shell • Mass Configuration Deployment Tool using RESTful API for iLO 4 • PXE boot support for IPv6 networks • Boot support for option cards that only support a UEFI option ROM (<i>only used in HPE Edgeline System</i>) • Network Stack configurations NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.
Form Factor	HPE ProLiant m510 Server Cartridge plugs into the HPE Moonshot 1500 and HPE Edgeline EL1000/EL4000 Systems.
Embedded Management	<div> <div data-bbox="293 1291 478 1386"> HPE Integrated Lights-Out (HPE iLO) </div> <div data-bbox="750 1291 1516 1386"> Monitor your servers for ongoing management, service alerting, reporting and remote management with HPE iLO. Learn more at http://www.hpe.com/info/ilo </div> </div> <div> <div data-bbox="293 1396 478 1459"></div> <div data-bbox="750 1396 1516 1459"> NOTE: HPE Integrated Lights-Out is only supported when the server is installed in a HPE Edgeline System </div> </div> <div> <div data-bbox="293 1470 359 1501">UEFI</div> <div data-bbox="750 1470 1516 1575"> Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at http://www.hpe.com/servers/uefi </div> </div> <div> <div data-bbox="293 1585 454 1617">RESTful API</div> <div data-bbox="750 1585 1516 1795"> RESTful API for iLO 4 is Redfish 1.0 conformance for simplified server management such as configuration and maintenance tasks based on modern industry standards. Learn more at http://www.hpe.com/info/restfulapi NOTE: Full REST API is available when the server is installed in a HPE Edgeline System </div> </div> <div> <div data-bbox="293 1806 574 1837">Intelligent Provisioning</div> <div data-bbox="750 1806 1516 1974"> Hassle free server and OS provisioning for 1 or few servers with Intelligent Provisioning. Learn more at http://www.hpe.com/servers/intelligentprovisioning. NOTE: Intelligent provisioning is only supported when the server is installed in a HPE Edgeline System </div> </div>

Standard Features

NOTE: HPE iLO only provides Remote Console and Virtual Media capabilities when the server is installed in a HPE Moonshot 1500 chassis.

NOTE: HPE iLO provides the full set of ProLiant features when the server is installed in a HPE Edgeline System. Advanced Pack licenses will be required for enhanced capabilities, including Remote Console and Virtual Media.

Server Utilities Moonshot Component Pack

The HPE Moonshot Component Pack is a comprehensive firmware solution tested on the HPE Moonshot System and delivered as a compressed file. The compressed file includes all the component files needed to update a Moonshot System. Users deploy the firmware updates contained in the Moonshot Component Pack via the iLO Chassis Manager CLI or HPE Moonshot-45G/180G Switch Module CLI. This can be accomplished using HPE Smart Update Manager, which is included with the files, or manually.

Access the Moonshot supporting software/driver download page

via: <https://www.hpe.com/us/en/servers/moonshot.html>

NOTE: The Moonshot Component Pack is only supported when the server is installed in a HPE Moonshot 1500 Chassis.

Edgeline Component Pack

The HPE Edgeline Component Pack, is the delivery mechanism for firmware updates on the HPE Edgeline System. Before using your system for the first time, verify that you have the latest drivers, firmware, and system software installed.

For more information, see the Edgeline Component Pack Update Guide on the Hewlett Packard Enterprise website: <http://www.hpe.com/info/edgeline-docs>

NOTE: The Edgeline Component Pack is only supported when the server is installed in a HPE Edgeline System.

Scripting Tool Kit and Windows PowerShell

Provision 1 to many servers using your own scripts to discover and deploy them with Scripting Tool Kit (STK) for Windows and Linux or Scripting Tools for Windows PowerShell. Learn more

at <http://www.hpe.com/servers/proliant/stk>

Or <http://www.hpe.com/servers/powershell>.

NOTE: This Feature will be available when the server is installed in a HPE Edgeline System.

RESTful Interface Tool

RESTful Interface tool is a scripting tool to provision using RESTful API for iLO4 to discover and deploy servers at scale. Learn more

at <http://www.hpe.com/info/resttool>

NOTE: This Feature will be available when the server is installed in a HPE Edgeline System.

HPE Insight Online

RESTful Interface tool is a scripting tool to provision using RESTful API for iLO4 to discover and deploy servers at scale. Learn more

Standard Features

HPE Insight Online

at <http://www.hpe.com/info/resttool>

NOTE: This Feature will be available when the server is installed in a HPE Edgeline System.

HPE Insight Online, available at no additional cost as part of your Hewlett Packard Enterprise warranty or contractual support agreement with Hewlett Packard Enterprise, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at <http://www.hpe.com/info/insightonline/explore>.

- Serial interface control
- Administrator's password
- Power-on password
- TPM2.0
- UEFI
- iLO 4 (Integrated Lights-Out 4) has 12 customizable user accounts and SSL encryption
- iLO 4 can be disabled via a Global Setting
- iLO Advanced supports directory services integration

NOTE: [1], [2] and [3] are delivered by iLO Chassis Manager in HPE Moonshot 1500 chassis and HPE m510's embedded iLO4 in the HPE Edgeline System.

NOTE: For [1], [2] and [3] require an HPE iLO Advanced License when the HPE m510 is installed in a HPE Edgeline System.

Security

HPE Trusted Platform Module 2.0 is embedded on the Server Cartridge, and can be enabled and disabled using the BIOS.

HPE Trusted Platform Module

NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008, 2012/2012 R2. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 2.0. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to:

<https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04939549>

NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.

NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

This product is covered by a global limited warranty and supported by Hewlett Packard Enterprise Services and a worldwide network of Hewlett Packard Enterprise 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 HPE Care Pack services or customized service agreements.

NOTE: Server Warranty includes 3-Year Parts, 3-Year Labor, 3-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) Optional CSR parts are designed for easy replacement but may involve added complexity. Customers may choose to have Hewlett Packard Enterprise replace Optional CSR parts at no charge. 2) No CSR parts are also designed for requiring a Hewlett Packard Enterprise authorized service provider replace the part. 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

HPE Insight Cluster Management Utility (CMU)

HPE Insight Cluster Management Utility (CMU) is a Hewlett Packard Enterprise-licensed and Hewlett Packard Enterprise-supported suite of tools that are used to manage large-scale systems. Insight CMU includes software for the centralized provisioning, management and monitoring of nodes. Insight CMU makes the administration of clusters more user friendly, efficient, and error free than if they were being managed by scripts, or on a node-by-node basis. For more information on Hewlett Packard Enterprise Insight Cluster Management Utility, please contact your sales representative or go to: <https://www.hpe.com/us/en/servers/server-management.html>

Factory Express Portfolio for Servers and Storage

HPE Factory Express offers configuration, customization, integration and deployment services for Hewlett Packard Enterprise 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 asset tagging, and custom packaging. Hewlett Packard Enterprise products supported through Factory Express include a wide array of servers and storage: HPE Moonshot, HPE Integrity, HPE ProLiant, HPE ProLiant Server Blades, and HPE BladeSystem, HPE 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://www8.hp.com/us/en/campaigns/factory-express/overview.html>.

Service and Support

Service and Support To see recommended HPE Care Pack Services for your HPE product (4 and 5 year Service offerings are also available)

See HPE Moonshot 1500 Chassis Quick Specs: <https://www.hpe.com/us/en/servers/moonshot.html>

See HPE Edgeline System Quick Specs: <http://www.hpe.com/info/edgeline-docs>

For more information To learn more on HPE Moonshot or HPE Edgeline Systems, please contact your Hewlett Packard Enterprise 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, Hewlett Packard Enterprise recommends the use of a Hewlett Packard Enterprise approved configurator. Contact your local sales representative for information on configurable product offerings and requirements

NOTES:

- If you want to configure the HPE Moonshot 1500 Chassis with server cartridges, proceed to the HPE Moonshot 1500 Chassis Quick Specs: <https://www.hpe.com/us/en/servers/moonshot.html>
- If you want to configure the HPE Edgeline EL1000/EL4000 System with server cartridges, proceed to the HPE Edgeline QuickSpecs: <http://www.hpe.com/info/edgeline-docs>
- If you want to configure a server cartridge only, proceed to Step 1

Step 1: Base Configuration (Choose upgrade kit)

HPE ProLiant Server Upgrade Kit	HPE Moonshot Server Multipack	814659-B21
	NOTE: Up to 15 cartridges of any kind fit in this multipack	
	NOTE: Mixed Cartridge configuration is supported	

Step 2: Pick ProLiant Server Cartridge

HPE ProLiant m510 Server Cartridge	HPE ProLiant m510 1P Xeon D-1548 CPU 128GB Configure-to-order Server Cartridge	814688-B21
	NOTE: Each ProLiant server cartridge is pre-configured with a single Intel® Xeon® D-1548 (x86-64) processor running at 2.0-2.6GHz. This processor is Eight-core and contains 12MB of shared L3 cache with Memory configurable up to 128GB.	
HPE ProLiant m510-16c Server Cartridge	HPE ProLiant m510 1P Xeon D-1587 CPU 128GB Configure-to-order Server Cartridge	858545-B21
	NOTE: Each ProLiant server cartridge is pre-configured with a single Intel® Xeon® D-1587 (x86-64) processor running at 1.7-2.3GHz. This processor is Sixteen-core and contains 24MB of shared L3 cache with Memory configurable up to 128GB.	

NOTES:

- The processor on each server is fixed and cannot be changed after ordering. DIMMs and SSDs are configurable.
- Mixing of different server cartridges within the same chassis is supported
- The m510-16c server SKU has special configuration requirements when installed in a HPE Moonshot 1500 chassis. Refer to Section “*m510 Server Cartridge Population Rules for HPE Moonshot 1500 Chassis*” for detailed population rules
- There are no special configuration requirements in a HPE Edgeline EL1000/4000 System.

Configuration Information – Factory Integrated Models

Step 3: Configure ProLiant Server Cartridge (Choose appropriate Option)

NOTE: Additional options are not configurable for server upgrade kits.

NOTE: Must order identical quantity on all configured ProLiant server cartridges.

NOTE: SKU numbers provided below can be used to order upgrades as well

HPE Memory	Select 1 to 4 of the following:	
	HPE 8GB 1Rx8 PC4-2400T-R Kit	854592-B21
	HPE 16GB 1Rx4 PC4-2400T-R Kit	854594-B21
	HPE 32GB 2Rx4 PC4-2400T-R Kit	854596-B21
HPE Solid State Drives	Select 0 to 1 of the following:	
	HPE Moonshot 64GB M.2 SATA 2242 Solid State Device	866840-B21
	HPE Moonshot 120GB M.2 SATA 2242 Solid State Device	866842-B21
	HPE Moonshot 240GB M.2 SATA 2242 Solid State Device	866844-B21
	Select 0 to 2 of the following:	
	HPE Moonshot 256GB M.2 NVMe 2280 Solid State Device	862159-B21
	HPE Moonshot 512GB M.2 NVMe 2280 Solid State Device	862161-B21
	HPE Moonshot 1024GB M.2 NVMe 2280 Solid State Device	862163-B21

NOTE: Mixing of 2280/22110 M.2 SSD types in a server is allowed

Step 4: To Select a different server cartridge see details:

HPE Moonshot 1500 Chassis:

<https://www.hpe.com/us/en/servers/moonshot.html>

HPE Edgeline EL1000/EL4000 System:

<http://www.hpe.com/info/edgeline-docs>

Additional Options

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

HPE Insight Software

HPE Insight Control

HPE Insight Control including 1yr 24x7 Technical Support and Updates 1-server LTU	C6N27A
HPE Insight Control including 1yr 24x7 TSU E-LTU	C6N28ABE
HPE Insight Management Media Kit	C6N31A
HPE Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO ELTU	C6N36ABE
HPE Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO LTU	C6N36A

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 24x7 HPE Software Technical Support and Update Service.

NOTE: Licenses ship without media. The HPE 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://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04123391>

High Performance Clusters

HPE Cluster Management Utility

HPE Insight Cluster Management Utility 1yr 24x7 Flexible LTU	QL803B
HPE Insight Cluster Management Utility 3yr 24x7 Flexible LTU	BD476A

NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer will also receive a support agreement.

HPE Insight Cluster Management Utility Media	BD477A
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NOTE: For additional license kits please see the QuickSpecs at: <https://www.hpe.com/us/en/servers/server-management.html>

Server Cartridge Population Rules for HPE Moonshot 1500 Chassis

NOTES:

- The following configuration rules must be followed when installing the HPE m510 in a Moonshot 1500 chassis, in order to maintain an optimum thermal environment
- There are no special rules when the HPE m510 server is installed in a Edgeline EL1000/EL4000 System

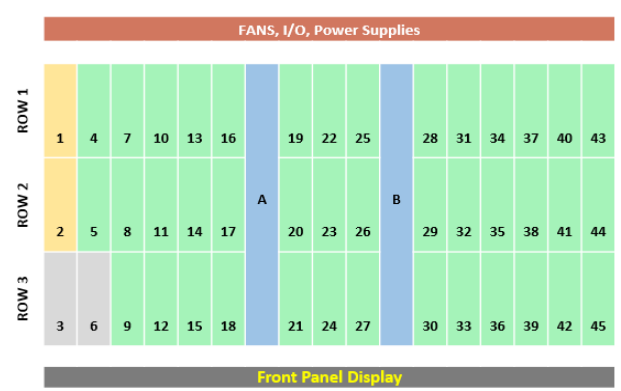
If your configuration has:

m510 (8 core SKU)
Green in diagrams

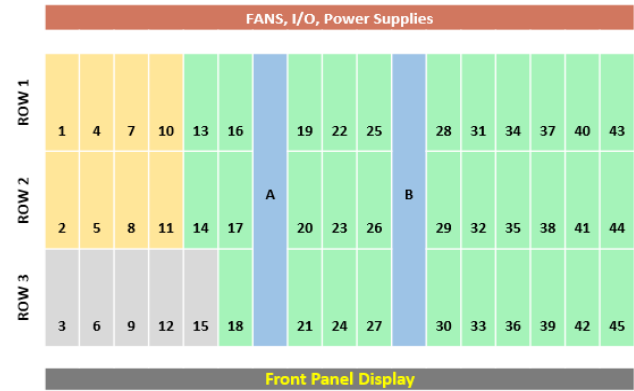
m510-16c (16 core SKU)
Yellow in diagrams

- No restriction in number of servers per chassis (i.e. 1 up to maximum of 45)
- Mixing with other ProLiant server cartridges is allowed, provided loading rules specified by other server cartridges (if any) are also fulfilled.
- Install m510-16c before any other servers. Start from slot 1 and move down the column to slot 2, then slot 4, 5 etc.
- Any column that has a m510-16c must leave two slots blank in Row 3 (one slot in its own column and another slot in the adjacent right column).
- Mixing with other ProLiant server cartridges is allowed, provided loading rules specified by other server cartridges (if any) are also fulfilled.

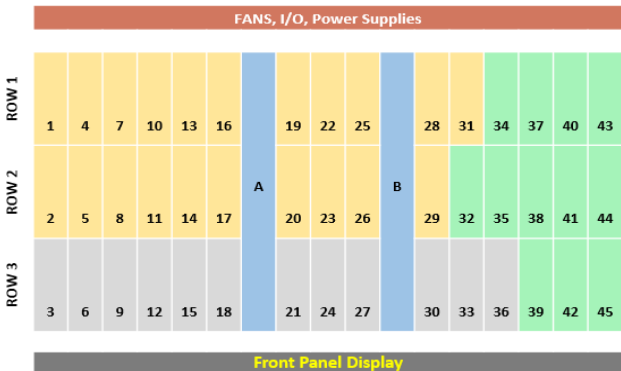
NOTE: Pictures 3.1-3.4 show some example scenarios. Yellow represents a m510-16c server, Green is any other server (including m510 8-core) and Grey is an Empty slot.



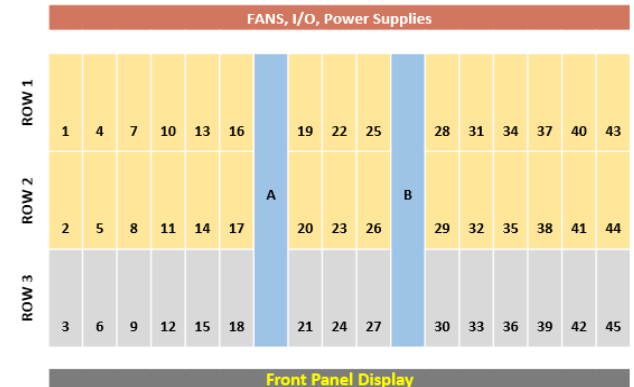
PIC 3.1



PIC 3.2



PIC 3.3



PIC 3.4

DIMM Population Order for	Total Memory	Slot #			
		DIMM 1 (GB)	DIMM 2 (GB)	DIMM 3 (GB)	DIMM 4 (GB)
		8			
	8 GB				
	16 GB	16			

Memory

HPE m510 Server

16 GB	8		8	
24 GB	16		8	
24 GB	8	8	8	
32 GB	32			
32 GB	16		16	
32 GB	16	8	8	
32 GB	8	8	8	8
40 GB	32		8	
40 GB	16	8	16	
40 GB	16	8		8
48 GB	32		16	
48 GB	32	8	8	
48 GB	16	16	16	
48 GB	16	8	16	8
56 GB	32	8	16	
56 GB	32	8	8	8
56 GB	16	16	16	8
64 GB	32		32	
64 GB	32	16	16	
64 GB	32	8	16	8
64 GB	16	16	16	16
72 GB	32	8	32	
72 GB	32	16	16	8
80 GB	32	16	32	
80 GB	32	8	32	8
80 GB	32	16	16	16
88 GB	32	16	32	8
96 GB	32	32	32	
96 GB	32	16	32	16
104 GB	32	32	32	8
112 GB	32	32	32	16
128 GB	32	32	32	32

NOTE: Highlighted rows show recommended HPE m510 server memory configurations that have been optimized by HPE.

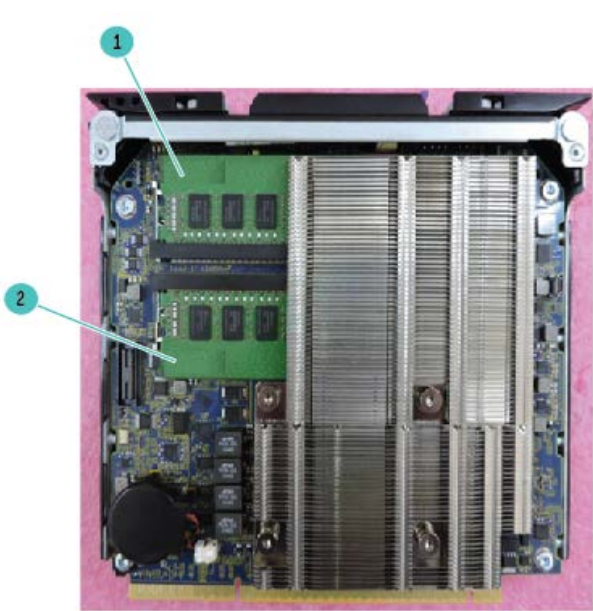
NOTE: DIMM slots are not color coded on this server. Refer to the picture below for the locations.

NOTE: Do not use Load Reduced DIMMs (LRDIMMs) and Non-Volatile DIMMs (NVDIMMs)

General Memory Population Rules and Guidelines:

- There are two (2) Memory channels per processor. This server only has 1 processor.
- There are two (2) DIMM slots for each memory channel; four (4) total slots per processor.
- A minimum of one DIMM is required per processor.
- DIMM 1 and DIMM 2 belong to CPU Channel 1. DIMM 3 and DIMM 4 belong to Channel 2. Recommended configurations are designed to optimize performance.
- When mixing DIMMs of different sizes, load the heaviest load (DIMM with most ranks) DIMM first.
- Load DIMMS in this sequence: DIMM 1 -> DIMM 3 -> DIMM 2 -> DIMM 4. See the diagram above.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- Use only HPE memory specified in this document. Although HPE memory from other ProLiant Gen9 servers may work, they may not have been qualified for the operating environments of this product.

Memory



Top Side

- 1. DIMM 1
- 2. DIMM2



Bottom Side

- 3. DIMM 3
- 4. DIMM 4

Memory

Intel Supported Memory Bandwidth for HPE ProLiant m510 Intel® Xeon® D-1548 Series Processor Family

Memory Bandwidth and Capacity			
[DIMM Type]	ECC Registered DIMMs (RDIMMs)		
HPE SKU P/N	854592-B21	854594-B21	854596-B21
DIMM Rank	Single Rank	Single Rank	Dual Rank
DIMM Capacity	8GB	16GB	32GB
Voltage	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V
DRAM Depth [bit]	1G	2G	2G
DRAM Width [bit]	x8	x4	x4
DRAM Density	8Gb	8Gb	8Gb
CAS Latency	17-17-17	17-17-17	17-17-17
DIMM Native Speed (MT/s)	2400	2400	2400
Slots that can be populated	4	4	4
Maximum Capacity (GB)	32	64	128
POPULATED DIMM SPEED (MT/s)			
1 DIMM Per Channel	2400	2400	2400
2 DIMM Per Channel	2400	2400	2400

Intel Supported Memory Bandwidth for HPE ProLiant m510-16C Intel® Xeon® D-1587 Series Processor Family

Memory Bandwidth and Capacity			
[DIMM Type]	ECC Registered DIMMs (RDIMMs)		
HPE SKU P/N	854592-B21	854594-B21	854596-B21
DIMM Rank	Single Rank	Single Rank	Dual Rank
DIMM Capacity	8GB	16GB	32GB
Voltage	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V
DRAM Depth [bit]	1G	2G	2G
DRAM Width [bit]	x8	x4	x4
DRAM Density	8Gb	8Gb	8Gb
CAS Latency	17-17-17	17-17-17	17-17-17
DIMM Native Speed (MT/s)	2400	2400	2400
Slots that can be populated	4	4	4
Maximum Capacity (GB)	32	64	128
POPULATED DIMM SPEED (MT/s)			
1 DIMM Per Channel	2133	2133	2133
2 DIMM Per Channel	2133	2133	2133

Memory Speed by Processor Model

Processor Model
D-1548
D-1587

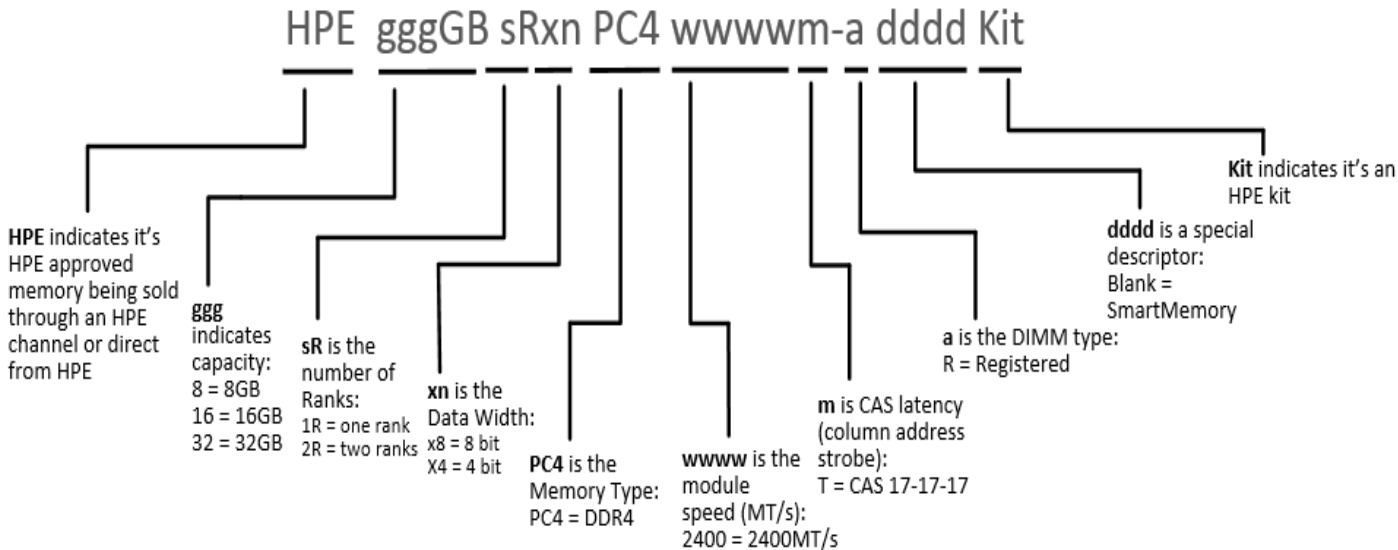
Supported Memory Speeds
2400 MT/s
2133 MT/s

Memory

DDR4 memory options part number decoder

NOTE: Capacity references are rounded to the common gigabyte (GB) values.

- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB



SSD Options on the Server Cartridge

- SSD Numbering
- SATA # 1
 - NVMe # 1
 - NVMe # 2

- Supported Module
- M.2 2242
 - M.2 2280 or 22110
 - M.2 2280 or 22110

- Connection Type
- SATA-3 x1
 - PCIe 3.0 x4
 - PCIe 3.0 x4

Technical Specifications

Server Cartridge	HPE Moonshot m510 Server Cartridge	
	Dimensions (H x W x D) 6.57 x 7.23 x 0.78in (16.71 x 18.37 x 1.98cm)	
	HPE m510 (8 core SKU)	
	Typical Power	62W
System Inlet Temperature	Max Power	88W
	HPE m510-16c (16 core SKU)	
	Typical Power	89W
	Max Power	127W
Altitude	Operating	HPE Moonshot 1500 Chassis: 50° to 95° F (10° to 35° C) HPE Edgeline 1000/4000 System: 32° to 131° F (0° to 55° 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 servers installed in the HPE Moonshot 1500 Chassis, and the type of Drives and I/O cards installed for Edgeline System. System performance may be reduced if operating with a fan fault or above 86°F (30°C).
	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	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	HPE Moonshot 1500 Chassis:	
	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
Emissions Classification (EMC)	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.

Technical Specifications

Environment-friendly Products and Approach	End-of-life Management and Recycling	<p>Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www8.hp.com/sg/en/HPE-financial-services/solutions/green-it.html. To recycle your product, please go to: http://www8.hp.com/sg/en/HPE-financial-services/solutions/green-it.html or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.</p> <p>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 Enterprise web site at: http://www8.hp.com/sg/en/HPE-financial-services/solutions/green-it.html. These instructions may be used by recyclers and other WEEE treatment facilities as well as HEWLETT PACKARD ENTERPRISE OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.</p>
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Technical Specifications

Other Infrastructure Components

NOTE: For information on supported Chassis, Switch and Uplink Modules, please see the following:

Chassis Types	HPE Moonshot 1500 Chassis Opt OS
	https://www.hpe.com/us/en/servers/moonshot.html
	HPE Edgeline 1000 System
	http://www8.hp.com/us/en/products/server-edgeline
Switch (Moonshot 1500 Only)	HPE Edgeline 4000 System
	http://www8.hp.com/us/en/products/server-edgeline
	FastPATH
	HPE Moonshot-45G Switch Module
	https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04111342
	COMWARE
	HPE Moonshot-45Gc Switch Module
	https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04773032
	HPE Moonshot-45XGc Switch Module
	https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04384058
Uplink Module (Moonshot 1500 Only)	HPE Moonshot-180XGc Switch Module
	https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04923651
	HPE Moonshot-6SFP+ Uplink Module
	https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04111340
	HPE Moonshot-16SFP+ Uplink Module
	https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04499458
	HPE Moonshot-4QSFP+ Uplink Module
	https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04111341

Summary of Changes

Date	Version History	Action	Description of Change
9-Sept-2016	From version 2 to 3	Updated	Update formatting and correct all the sections in the document
15-Jul-2016	From version 1 to 2	Edited	Updated m510 specific details
6-Jun-2016	Version 1	Created	Create QS for HPE ProLiant m510 Server Cartridge m510



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

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