



HPE Moonshot System



HPE Moonshot

Performance, Economics, Innovation— Delivered

HPE Moonshot is an integrated server system with workload-optimized solutions for better business outcomes—delivered in a compact, power and energy efficient package.

The Next Evolution of your data center

HPE Moonshot System is unlike anything that exists today. It's a huge leap forward in infrastructure design that delivers breakthrough efficiency and scale by aligning just the right amount of compute, memory, and storage to get the work done. The idea is very simple—replace general purpose processors with more energy-efficient Systems-on-Chip (SoCs) containing integrated accelerators tailored for specific workloads.

The HPE Moonshot Chassis incorporates everything that is a common resource in a traditional server—power, cooling,

management, fabric, switches, and network uplinks are all shared across 45 hot-pluggable server cartridges in a dense form factor. This enables massive scale-out without a corresponding increase in complexity and management overhead.

Since its introduction in 2013, the HPE Moonshot platform has greatly evolved in terms of features and performance. Examples include high core count Xeon SoC System-on-Chip (SoC), next generation integrated graphics, embedded HPE iLO 4 capability on every new servers.

Delivering better business outcomes

Giving you the right compute for your workloads at the right economics so you can get the most out of your infrastructure. With HPE Moonshot, you can:

- **Optimize application performance**—Avoid paying for IT you are not fully utilizing by using the best solution for your workload

- **Realize breakthrough economics**—Make better use of your data center space and power while reducing complexity
- **Accelerate business innovation**—Respond quicker to business needs and stay on the leading edge of technology

Tailored solutions

HPE Moonshot allows you to deploy specialized workloads without the need for expensive, custom platforms.



Mobile Workspace solutions

HPE Moonshot for Application Delivery

Hewlett Packard Enterprise and Citrix® can help improve employee productivity by delivering a purpose-built solution that is specifically designed for the new and evolving ways people consume applications. With HPE Moonshot, you can quickly scale to deliver a broad range of applications to hundreds or thousands of users.

HPE Moonshot for Hosted Desktop Infrastructure

Improve total cost of ownership and lower power consumption while delivering a dedicated, personalized PC experience. Users get exclusive access to a CPU, graphics processor, memory, storage, and network channel on a purpose-built server cartridge. HPE Moonshot delivers the business graphics and multimedia performance essential for today's mobile workers.

[**Learn more**](#)

Big Data and Analytics solutions

HPE Moonshot for NoSQL Apache Cassandra

HPE Moonshot for NoSQL Apache Cassandra with DataStax Enterprise allows you to handle large amounts of data effortlessly and predictably. Big Data technologies like Cassandra thrive on numerous small servers working in parallel. HPE Moonshot provides an economical, energy-efficient alternative to rack-mount servers.

HPE Moonshot for Hadoop

Hewlett Packard Enterprise's ground-breaking Big Data Reference Architecture (BDRA) allows you to reap the benefits of an asymmetric Hadoop architecture, hosting all of your analytics applications on a consolidated data lake. Built on the HPE Moonshot platform and HPE's Apollo storage servers, this flexible and elastic architecture allows you to independently define and scale compute and storage elements in a single, Big Data platform.

[**Learn more**](#)

Media Processing solutions

HPE Moonshot for Video Transcoding

Hewlett Packard Enterprise is redefining the economics of compute infrastructure for video transcoding applications by delivering HD performance with a 27X increase in streams per rack compared to traditional servers. HPE Moonshot enables expanded offerings and new formats, preparing for the future without the need to expand your data center. [**Learn more**](#)

HPE ProLiant Server Cartridges for HPE Moonshot System

Moonshot server cartridge	ProLiant m700 (Quad Node)	ProLiant m710p
System-on-Chip (SoC)	(4X) AMD Opteron X2150 APU, 1.5 GHz	Intel® Xeon® E3-1284L v4 (2.9 GHz [3.8 GHz single-core Turbo]/4-core [8t]/69 W)
Cache memory	2 MB L2 cache	6 MB shared level 3 128 MB eDRAM (L4) shared with GPU
Accelerators	128 Radeon HD 8000 Cores (up to 500 MHz) per node	Integrated Intel® Iris Pro Graphics P6300
Memory protection	ECC	ECC
Memory		
Type	DDR3 PC3L-12800 SDRAM (1600 MHz)	DDR3 PC3L-12800 SDRAM (1600 MHz)
DIMM slots available	Four (4) SODIMM slots	Four (4) SODIMM slots
Maximum configuration	8 GB per node (4 x 8 GB)	32 GB (4 x 8 GB)
Network controller	Broadcom BCM5720 Dual 1GbE NIC	Mellanox Connect-X3 Dual 10GbE NIC
Storage controller	Integrated SATA Controller	Integrated SATA Controller
Internal storage per server	(4x) 2242 m.2 SSD: 32 GB, 64 GB, 120 GB	2280 m.2 SSD: 120 GB, 240 GB, 480 GB, 960 GB (NVME)

Moonshot server cartridge	ProLiant m710x	ProLiant m510
System-on-Chip (SoC)	Intel Xeon E3 v5 “Skylake-H” E3-1585L v5: 4 core, 3.0 GHz base/3.4 GHz.	Intel Xeon D “Broadwell-DE” D-1548: 8 core, 2.0 GHz base/2.3 GHz all-core turbo & D-15871: 16 core, 1.7 GHz base/2.1 GHz all-core turbo
Cache memory	128 MB shared L4 cache (eDRAM)	12 MB (for 8 core) or 24 MB (for 16 core shared Level 3)
Accelerators	Intel Iris Pro P580 “GT4e” GPU with 72 execution units iLO 4 Remote Console.	iLO 4 Remote Console. No integrated GPU
Memory protection	ECC	ECC
Memory		
Type	DDR4 ECC SoDIMMs (8 GB, 16 GB) (2133/2400 MHz)	(4) DDR4 ECC RDIMMs (8 GB, 16 GB, 32 GB) (2133/2400 MHz)
DIMM slots available	Four (4) SODIMM slots	Four (4) DDR4 RDIMM slots
Maximum configuration	64 GB (4x16 GB). Dual channel.	128 GB (4x32 GB). Dual channel
Network controller	Mellanox ConnectX-3 PRO Dual-port 10GbE NIC with RoCE	Mellanox ConnectX-3 PRO Dual-port 10GbE NIC with RoCE
Storage controller	Integrated SATA controller	Integrated SATA controller
Internal storage per server	(1)—SATA-3 m.2 (2242)—32 GB, 64 GB, or 120 GB (4)—x4 Gen3 NVMe m.2 (2280): up to 960 GB	(1)—x1 SATA-3 m.2 (2242)—64 GB, 120 GB (future: 240 GB) (2)—x4 Gen3 NVMe m.2 (2280 or 22110): 1 TB each.

For the latest listing of available software drivers—including how to obtain them from Hewlett Packard Enterprise—please visit OS Support at hpe.com/info/ossupport and our driver download page at hpe.com/info/moonshot.

HPE Moonshot Networking Modules

Depending on which server cartridges you choose, your HPE Moonshot 1500 Chassis will be outfitted with a designated switch module, paired with an uplink module to communicate to the external network. By disaggregating the uplinks from the internal switch, HPE Moonshot gives you greater flexibility for deploying your choice of external interconnects and future-proofing your investment.

The HPE Moonshot System can support up to two switch and uplink module pairs, which can be independently configured for redundancy or traffic isolation. Multiple modules can be stacked within or across multiple chassis, reducing the cost of top-of-rack (TOR) switches and providing failover in the event of a switch or uplink failure.

HPE Moonshot Switch Modules	Features	Cartridges supported
<u>Moonshot-45G Switch Module</u>	The 45G Switch Module is a low cost 45 port—1 Gb switch for the Moonshot 1500 chassis. All cartridges when using this switch will run at 1 Gb. This switch uses FastPATH firmware.	Only single node cartridges: m510, m710p, m710x
<u>Moonshot-45XGc Switch Module</u>	The 45XGc Switch Module is a performance 45 port—10 Gb switch for the Moonshot 1500 chassis. 10 Gb cartridges can run at 1 Gb or 10 Gb and 1 Gb cartridges will run at 1 Gb. This switch uses Comware 7 firmware.	Only single node cartridges: m510, m710p, m710x
<u>Moonshot-180XGc Switch Module</u>	m700 cartridges will run at 1 Gb; for 10 cartridges m510, m710p and m710x the networking bandwidth can be set to 10 Gb. This switch uses Comware 7 firmware.	All cartridges: m510, m700, m710p, m710x

HPE Moonshot Uplink Modules	Features	Switch supported
<u>Moonshot 6SFP Uplink Module</u>	Use up to two 4-port HPE Moonshot-4QSFP+ Uplink Modules with four 40GbE QSFP+ ports. Each uplink module delivers 160GbE of aggregate bandwidth to connect the HPE Moonshot System to an external network	Moonshot-45Gc Switch
<u>Moonshot 4QSFP+ Uplink Module</u>	The 45XGc Switch Module is a performance 45 port—10 Gb switch for the Moonshot 1500 chassis. 10 Gb cartridges can run at 1 Gb or 10 Gb and 1 Gb cartridges will run at 1 Gb. This switch uses Comware 7 firmware.	Moonshot-180XGc Switch
<u>Moonshot-16SFP+ Uplink Module</u>	Use up to two 16-port HPE Moonshot-16SFP+ Uplink Modules with sixteen 10GbE SFP+ ports. Each uplink module delivers 160GbE of aggregate bandwidth to connect the HPE Moonshot system to an external network	Moonshot-180XGc Switch

HPE Moonshot Storage

Each server cartridge contains its own dedicated storage, and depending on the server cartridge that best fits your needs, you can have up to 2 TB* of local storage to support your data and workloads.

However, you may have workloads that require server cartridges to access shared data sets greater than 2 TB in size. For such cases, we have two cutting-edge storage subsystems for network connection external to the Moonshot Chassis—HPE 3PAR StoreServ Storage and HPE Apollo 4500 System.

External storage	Features	Cartridges supported
HPE 3PAR StoreServ Storage**	Combines high scalability and performance with rich enterprise storage features and dramatically simplifies storage management	m300, m350, m510, m700, m710p, m710x
HPE Apollo 4500 System**	A simple, cost-effective industry standard storage system, offering up to 60 drives in a chassis with up to three server nodes	m510, m700, m710p, m710x

** Both storage subsystems can be connected to HPE Moonshot using 10GbE network connectivity.

* See cartridge QuickSpecs for specific details of capacity support

HPE Moonshot Management portfolio

HPE Moonshot System's server management portfolio simplifies the deployment and management experience for HPE Moonshot Systems. Capabilities include health and power monitoring, workload provisioning, smart updates and firmware maintenance to help you deploy and maintain Moonshot systems with ease.

The HPE Moonshot Management portfolio includes:

The HPE Moonshot 1500 Chassis Management Module

The HPE Moonshot 1500 Chassis Management Module is the gateway for aggregated chassis management. It has been designed as a single point of access to the chassis. The HPE Moonshot 1500 Chassis Management Module allows you to configure, update, and operate the HPE Moonshot System via a Command Line Interface (CLI), a Graphical User Interface (GUI), Intelligent Platform Management Interface (IPMI), or remote serial console access.

HPE Moonshot Remote Console Administrator

The HPE Moonshot Remote Console Administrator (mRCA) allows users to have remote access to keyboard, video and a mouse capabilities in a headless environment and provides a virtual media capability. This simplifies the process of performing an initial OS installation and debugging failure scenarios. [Learn more](#)

HPE Moonshot Provisioning Manager

The HPE Provisioning Manager is an intuitive, scalable, and easy-to-access tool to help IT administrators deploy and manage HPE Moonshot Systems. It utilizes a simple graphical user interface with an "at-a-glance" view of all the available nodes within one or more Moonshot systems. This enables the user to easily and efficiently deploy operating Systems to any available nodes. It is distributed as a virtual machine image (VMware® .ova file and Microsoft® Hyper-v .vhd file compatible).

[Learn more](#)

Smart Update Manager (SUM)

SUM, provides an automated way to update firmware and drivers with an integrated discovery engine that finds the installed hardware and current versions of firmware and software on target servers. [Learn more](#)

HPE Insight Cluster Management Utility (CMU)

An efficient, customizable, and robust hyperscale lifecycle management framework and suite of tools for managing operations and performance of HPE Moonshot. A simple graphical interface enables an "at-a-glance" view of the entire system across multiple metrics, provides scalable remote management and analysis, and allows rapid provisioning of software to all the nodes of the system. Please contact your local sales representative for more information.

[Learn more](#)

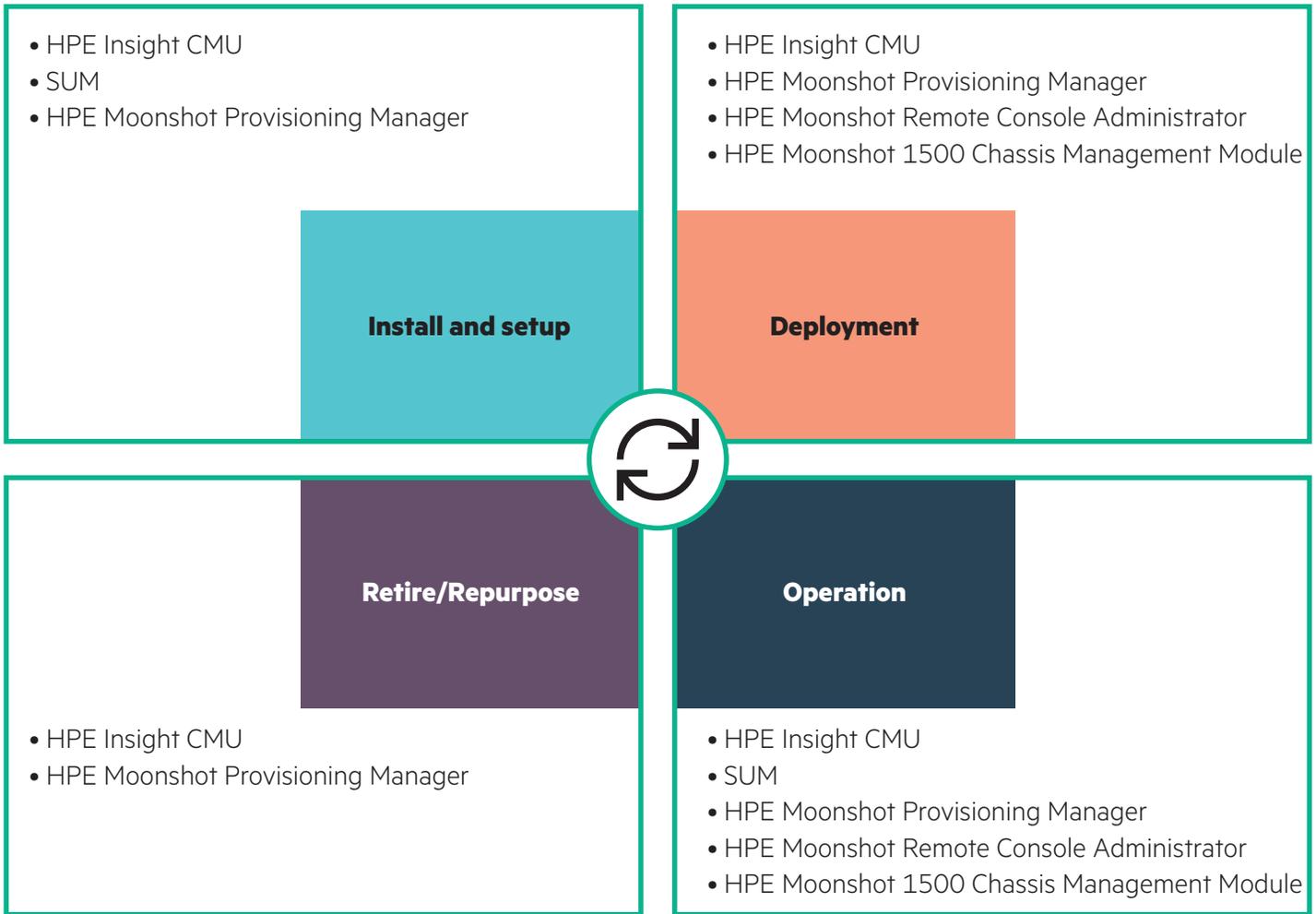


Figure 1: Understanding the HPE Moonshot Management portfolio

A variety of options to help you evolve

Your IT needs to move faster. Your services partner should contribute to that agility with a range of support services that not only address problems, but also prevent issues, help simplify IT operations, and position IT to

enable business value. From flexible capacity consumption with comprehensive support across your environment to responsive hardware and software support and proactive services or even per-incident assistance, we're here for you.

Find out more about HPE services at hpe.com/us/en/services

Learn more at
hpe.com/info/moonshot
hpe.com/info/edgeline



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