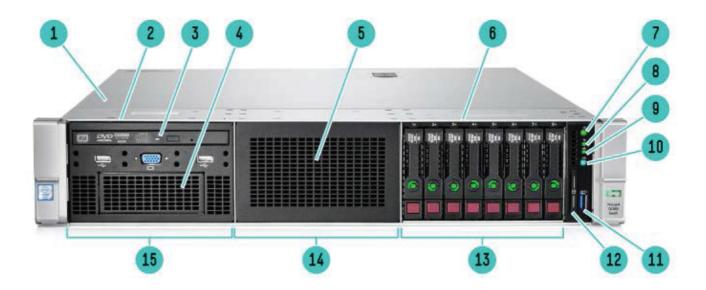# QuickSpecs

Overview

HPE ProLiant DL380 Generation9 (Gen9)

The HPE ProLiant DL380 Gen9 Server delivers the best performance and expandability in the Hewlett Packard Enterprise 2P rack portfolio. Reliability, serviceability and near continuous availability, backed by a comprehensive warranty, make it ideal for any environment. Deploy the data center standard.

Front View - 8SFF Chassis with Optional Universal Media Bay shown

1. Quick removal access panel

3. Optional Optical drive. Requires Universal Media bay

5. Drive Bay 2. Blank shown, 8SFF or 6NVMe optional
7. Power On/Standby button and system power LED button
9. NIC status
11. USB 3.0
13. Bay 3
15. Bay 1

2. Universal Media bay. 2 USB 2.0 and VGA standard (8SFF bay optional)

4. Optional 2 SFF HDD, blank shown. Requires Universal Media bay

6. 8 SFF Drive Cage Bay
8. Health LED
10. UID button
12. Serial label pull tag
14. Bay 2

**Hewlett Packard
Enterprise**

Standard Features

2

Processor
Up to two of the following depending on model

Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
E5-2699v3	2.3GHz	18	45MB	145W	9.6GT/s	2133
E5-2698v3	2.3GHz	16	40MB	135W	9.6GT/s	2133
E5-2697v3	2.6GHz	14	35MB	145W	9.6GT/s	2133
E5-2695v3	2.3GHz	14	35MB	120W	9.6GT/s	2133
E5-2690v3	2.6GHz	12	30MB	135W	9.6GT/s	2133
E5-2687Wv3	3.1GHz	10	25MB	160W	9.6GT/s	2133
E5-2683v3	2.0GHz	14	35MB	120W	9.6GT/s	2133
E5-2680v3	2.5GHz	12	30MB	120W	9.6GT/s	2133
E5-2670v3	2.3GHz	12	30MB	120W	9.6GT/s	2133
E5-2667v3	3.2GHz	8	20MB	135W	9.6GT/s	2133
E5-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
E5-2650v3	2.3GHz	10	25MB	105W	9.6GT/s	2133
E5-2650Lv3	1.8GHz	12	30MB	65W	9.6GT/s	2133
E5-2643v3	3.4GHz	6	20MB	135W	9.6GT/s	2133
E5-2640v3	2.6GHz	8	20MB	90W	8.0GT/s	1866
E5-2637v3	3.5GHz	4	15MB	135W	9.6GT/s	2133
E5-2630v3	2.4GHz	8	20MB	85W	8.0GT/s	1866
E5-2630Lv3	1.8GHz	8	20MB	55W	8.0GT/s	1866
E5-2623v3	3.0GHz	4	10MB	105W	8.0GT/s	1866
E5-2620v3	2.4GHz	6	15MB	85W	8.0GT/s	1866
E5-2609v3	1.9GHz	6	15MB	85W	6.4GT/s	1600
E5-2603v3	1.6GHz	6	15MB	85W	6.4GT/s	1600
E5-2699v4	2.2GHz	22	55MB	145W	9.6GT/s	2400
E5-2698v4	2.2GHz	20	50MB	135W	9.6GT/s	2400
E5-2697v4	2.3GHz	18	45MB	145W	9.6GT/s	2400
E5-2697Av4	2.6GHz	16	40MB	145W	9.6GT/s	2400
E5-2695v4	2.1GHz	18	45MB	120W	9.6GT/s	2400
E5-2690v4	2.6GHz	14	35MB	135W	9.6GT/s	2400
E5-2687Wv4	3.0GHz	12	30MB	160W	9.6GT/s	2400
E5-2683v4	2.1GHz	16	40MB	120W	9.6GT/s	2400
E5-2680v4	2.4GHz	14	35MB	120W	9.6GT/s	2400
E5-2667v4	3.2GHz	8	25MB	135W	9.6GT/s	2400
E5-2660v4	2.0GHz	14	35MB	105W	9.6GT/s	2400
E5-2650v4	2.2GHz	12	30MB	105W	9.6GT/s	2400
E5-2650Lv4	1.7GHz	14	35MB	65W	9.6GT/s	2400
E5-2643v4	3.4GHz	6	20MB	135W	9.6GT/s	2400
E5-2640v4	2.4GHz	10	25MB	90W	8.0GT/s	2133
E5-2637v4	3.5GHz	4	15MB	135W	9.6GT/s	2400
E5-2630v4	2.2GHz	10	25MB	85W	8.0GT/s	2133
E5-2630Lv4	1.8GHz	10	25MB	55W	8.0GT/s	2133
E5-2623v4	2.6GHz	4	10MB	85W	8.0GT/s	2133

Standard Features
3

E5-2620v4	2.1GHz	8	20MB	85W	8.0GT/s	2133
E5-2609v4	1.7GHz	8	20MB	85W	6.4GT/s	1866
E5-2603v4	1.7GHz	6	15MB	85W	6.4GT/s	1866
E5-2699Av4	2.4GHz	22	55MB	145W	9.6GT/s	2400

NOTE: All processors above 120W use a high efficiency Heatsink. Doublewide PCIe cards are only supported with this Heatsink. For processors with a standard Heatsink that require double wide PCIe cards, the Graphics Enablement kit option is also required (719082-B21).
NOTE: Mixing of E5-2600v3 and E5-2600v4 processors is not supported.
NOTE: Field upgrade from E5-2600v3 to E5-2600v4 is supported.
NOTE: All processors support Hyper-Threading except E5-2609 v4/v3 and E5-2603 v4/v3.

Chipset

Intel® C610 Series Chipset   ข้อ 5.8.2.2

Intel® E5-2600v3 Processor Family   ข้อ 5.8.2.1

Intel® E5-2600v4 Processor Family

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

On System Management Chipset

HPE iLO (Firmware HPE iLO4 2.0) 4GB NAND   ข้อ 5.8.2.4
NOTE: Read and learn more in the **iLO QuickSpecs**.

Memory
One of the following depending on model

Type:

HPE SmartMemory

DDR4 Registered (RDIMM), Load Reduced (LRDIMM) or Persistent Memory (NVDIMM)

DIMM Slots Available	24	(12 DIMM slots per processor, 4 channels per processor, 3 DIMMs per channel)
Maximum Capacity (LRDIMM)	3TB	(24 x 128GB LRDIMM @2400MHz)*
Maximum Capacity (RDIMM)	768GB	(24 x 32GB RDIMM @2400MHz) ข้อ 5.8.2.3
Maximum Capacity (NVDIMM)	128GB	(16 x 8GB NVDIMM)*

NVDIMM support only with the E5-2600v4 processors, and RDIMMs only

- Note mixing of 2133 and 2400MHz memory is not supported
- Note mixing of RDIMM and LRDIMM memory is not supported
- Note the 128GB LRDIMM may not be mixed with other DIMM capacities/types

ข้อ 5.8.2.3

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.

Online Spare   Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.

Expansion Slots

Primary Riser (Standard)	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes

QuickSpecs   **HPE ProLiant DL380 Generation9 (Gen9)**

Standard Features

ข้อ 5.8.2.5

1	PCIe 3.0	X8	X16	7	Full-height, half-length slot	Proc 1
2	PCIe 3.0	X8	X16	10	Full-height, half-length slot	Proc 1
3	PCIe 3.0	X8	X8	13	Half length/full height	Proc 1

NOTE: Bus Width Indicates the number of physical electrical lanes running to the connector.

NOTE: All slots support PCIe cards to 150W or more depending on card, but an additional Power Cord Option is required (PN 669777-B21). See Option Section below for offering.

NOTE: Double wide PCIe cards are only supported in risers with the Processors leveraging the High Performance Heatsink. For Processors requiring double wide GPU support please order the GPU enablement kit (719082-B21).

Slot 2 PCIe Riser (Optional 3-slot) 719073-B21

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
4	PCIe 3.0	X16	X16	16	Full-height, full-length slot	Proc 2
5	PCIe 3.0	X16	X16	20	Full-height, full-length slot	Proc 2
6	PCIe 3.0	X8	X8	23	Full-height, half-length slot	Proc 2

NOTE: Bus Width Indicates the number of physical electrical lanes running to the connector.

NOTE: When populating the second optional riser slot, the second processor must be installed.

NOTE: All slots support PCIe cards to 150W or more depending on card but an additional Power Cord Option is required (PN 669777-B21). See Option Section below for offering.

NOTE: Double wide PCIe cards are only supported in risers with the Processors leveraging the High Performance Heatsink. For Processors requiring double wide GPU support please order the GPU enablement kit (719082-B21).

Slot 1 PCIe Riser (Optional 2-slot) 719076-B21

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
2	PCIe 3.0	X16	X16	0x05	Full-height, full-length slot	Proc 1
3	PCIe 3.0	X8	X8	0x08	Full-height, half-length slot	Proc 1

NOTE: Bus Width Indicates the number of physical electrical lanes running to the connector.

NOTE: This will replace the standard primary riser and supports double wide cards.

NOTE: All slots support PCIe cards to 150W or more depending on card, but an additional Power Cord Option is required (PN 669777-B21). See Option Section below for offering.

NOTE: Double wide PCIe cards are only supported in risers with the Processors leveraging the High Performance Heatsink. For Processors requiring double wide GPU support please order the GPU enablement kit (719082-B21).

Storage Controller   Entry Models   HPE Dynamic Smart Array B140i Controller

Standard Features

One of the following depending on model	**NOTE:** The embedded B140i controller will operate in UEFI only mode. For legacy support an additional controller will be needed, and for CTO orders please also select the Legacy mode settings part, 758959-B22. **NOTE:** The B140i defaults to AHCI off the chipset. Smart array needs to be enables on the SATA only models if required. **NOTE:** The B140i will not operate in Legacy mode.	
	Base Models	HPE Dynamic Smart Array B140i Controller HPE Flexible Smart Array P440ar/2G FIO Controller HPE Flexible Smart Array P840/4G FIO Controller HPE Smart Array P840ar/2G Controller
	Performance Models	HPE Dynamic Smart Array B140i Controller HPE Flexible Smart Array P440ar/2GB

Internal Storage Devices
One of the following depending on model

Optical Drive	Ships standard in Performance Models Optional: DVD-ROM, DVD-RW ข้อ5.8.2.11
Hard Drives	None ship standard
Hard Drive Bays ข้อ 5.8.2.8	8 SFF with optional Universal Media Bay, 8 SFF bay or 6 NVME drive options 24 SFF plus optional 2 SFF drives rear 12 LFF plus optional 3 LFF drives rear **NOTE:** The 3 LFF rear drives will consume space for the secondary riser. **NOTE:** The 12 LFF chassis also supports 2 SFF rear which allows for the second riser. **NOTE:** The 6 NVMe drive option can only be leveraged in the SFF chassis and replaces Bay 2. 4 LFF drive bays total **NOTE:** The Universal Media Bay (724865-B21) not available with the LFF chassis or the 24SFF front end, and can only be populated in Bay1. **NOTE:** The 8SFF can be upgraded with a drive cage to 16 or 24 SFF with field upgrades. For optimal upgrade Bay2 should be populated second, with Bay 3 the last to be populated for a field upgrade to 24 SFF. **NOTE:** The 4LFF chassis cannot be upgraded to 12LFF in the field. **NOTE:** All Pre-configured Chassis come with an embedded 10-Port SATA controller. Optional HPE Flexible Smart Array and Smart SAS HBA Controllers can be added.

Maximum Internal Storage

	CAPACITY	CONFIGURATION
Hot Plug SFF SAS	52.0TB	24+2 x 2TB (with optional rear SFF drive cage)
Hot Plug SFF SATA	52.0TB	24+2 x 2TB (with optional SFF drive cage)
Hot Plug LFF SAS	150.0TB	12+3 x 10TB (with optional rear LFF drive cage)
Hot Plug LFF SATA	150.0TB	12+3 x 10TB (with optional rear LFF drive cage)
Hot Plug SFF SAS SSD	99.84TB	24+2 x 3.84TB (with optional rear SFF drive cage)
Hot Plug LFF SATA SSD	57.6B	12+3 x 3.84TB (with optional rear LFF drive cage)
Hot Plug SFF NVMe PCIe SSD	12TB NVMe + 36TB SFF	6x2TB NVMe plus 36TB with 18 SFF (Bay 1, bay 3 and optional rear drive support)

Standard Features

Power Supply   HPE 500W Flex Slot Platinum Hot Plug Power Supply

NOTE: Available in 94% efficiency.

HPE 800W Flex Slot Platinum Hot Plug Power Supply   ข้อ 5.8.2.12

NOTE: Available in 94% and 96% efficiency.
NOTE: Also available in -48VDC and 227VAC/380VDC power inputs.

HPE 1400W Flex Slot Platinum Plus Hot Plug Power Supply

NOTE: Available in 94% efficiency.

ข้อ 5.8.2.12

HPE Flexible Slot (Flex Slot) Power Supplies share a common electrical and physical design that allows for hot plug, tool-less installation into HPE ProLiant Gen9 Performance Servers. Flex Slot power supplies are certified for high-efficiency operation and offer multiple power output options, allowing users to "right-size" a power supply for specific server configurations. This flexibility helps to reduce power waste, lower overall energy costs, and avoid "trapped" power capacity in the data center.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the **ProLiant Power Cables** web page.

To review the power requirements for your selected system, please use the HPE Power Advisor Tool located at **http://www.hpe.com/info/hppoweradvisor**.

Power specifications and technical content for all HPE Server power supplies can be found at **http://www.hp.com/go/proliant/powersupply**.

System Fans	**Non-redundant**	**Redundant**
One of the following depending on model	2P model	6 fans

NOTE: 1P models typically ship with 4 standard fans. The second processor option kit contains 2 additional fans.
NOTE: The 12LFF and 24SFF chassis ship with 6 High Performance fans as standard.
NOTE: High Performance Fan Kit is available to meet ambient temperature environments.
NOTE: High Performance Fan Kit is required for Passive GPU support.
NOTE: The 8SFF Bay1 kit (719067-B21) will ship with 6 High efficiency fans.

Interfaces   Serial   Optional

Video   2 (1 front, optional via Universal Media Bay, 724865-B21), 1 back not active simultaneously

ข้อ 5.8.2.6 FlexibleLOM Network Ports   4 x 1Gb ports shipping standard with optional FlexibleLOM

HPE iLO Remote Management Network Port   1 Gb Dedicated   ข้อ 5.8.2.14

Micro SD Slot   1 Micro SD   ข้อ 5.8.2.13

NOTE: The Micro 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 3.0   Up to 5 total: 1 front, 2 rear, 2 internal (secure), 2 optional USB 2.0 front via Universal Media Bay   ข้อ 5.8.2.13

SID (Systems Insight Display) Optional

NOTE: Not shipping as standard. Available as a CTO option or as a field upgrade (768900-B21).

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server
	Canonical Ubuntu
	Red Hat Enterprise Linux (RHEL)
	SUSE Linux Enterprise Server (SLES)
	Oracle Solaris ข้อ5.8.2.16
	VMware
	Citrix XenServer
	ClearOS

NOTE: ClearOS allows you to build a fully functional server that is just right for you at no upfront cost. It is available via CTO preload, Intelligent Provisioning or via download. For more information on ClearOS, please visit **http://www.hpe.com/servers/clearos**.

NOTE: For more information on Hewlett Packard Enterprise 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://h20566.www2.hpe.com/hpsc/swd/public/readIndex?sp4ts.oid=7271242**.

Upgradeability

Upgradeable to 2 processors (36 Cores)

NOTE: Processor upgrade available from Intel® Xeon® Processors E5-2600v3. Please contact Hewlett Packard Enterprise Technology Sales (**http://www.hpe.com/support**), your local Hewlett Packard Enterprise Re-seller.

Up to 24 DIMM slots available for higher Memory capacity

FlexibleLOM connector for 1 Gigabit or 10 Gigabit networking options

HPE Flexible Smart Array or Smart HBA Controllers
Embedded 10-Port SATA, B140i as standard

Optional 3 slot riser (x16, x16, x8), or 2 slot primary riser (x16, x8)

NOTE: To take advantage of the additional 3 PCI slot upgrade, the second processor must be installed.

Redundant Power Supply

Optical Drive supported via Universal Media Bay

NOTE: The Universal Media bay provides front VGA and 2xUSB 2.0, plus ability to add 2SFF and Optical.

NOTE: Universal Media bay is only available with 8 or 8+8SFF chassis & can be populated in Bay1 only.

HPE Legacy Mode (FIO only, 758959-B22)

NOTE: UEFI is the default mode for CTO and BTO SKUs. Can change default to legacy via CTO.

Industry Standard Compliance

ACPI 2.0b Compliant

PCIe 3.0 Compliant

PXE Support

WOL Support

Microsoft® Logo certifications

USB 3.0 Support

USB 2.0 Support

NOTE: This support is on the optional Universal Media Bay.

Energy Star

ASHRAE A3/A4   ข้อ5.8.2.19.4

Standard Features

NOTE: The DL380 Gen9 is now one of the first HPE ProLiant Gen9 Servers with Extended Ambient Support up to 45 C for data center infrastructures designed for better energy efficiency such as but not limited to fresh air cooling.
For additional technical thermal details regarding ambient temperatures, humidity and features support please visit: **http://www.hpe.com/servers/ashrae**.

UEFI (Unified Extensible Firmware Interface Forum)

NOTE: UEFI is the default for the DL380 Gen9. Legacy model can be selected in the field or as a CTO option (758959-B22).

Graphics

Integrated Matrox G200eH2 video standard with 16MB of Video RAM
- 1280 x 1024 (32 bpp)
- 1920 x 1200 (16 bpp)

HPE iLO 4 On System Management Memory
- 16 MB Flash
- 256 MB DDR3 with ECC (112 MB after ECC and video)

HPE Server UEFI/Legacy 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. HPE ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for 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:

- Secure Boot

- Operating system specific functionality

- Support for > 2.2 TB (using GPT) boot drives

- USB 3.0 Stack

- 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

- Network Stack configurations

NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.
NOTE: UEFI FIO Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory for your HPE ProLiant Gen9 Server.

Form Factor
One of the following depending on model

2U Rack form factor

8 SFF & 24SFF Drive Bay Version:
3.44 x 17.54 x 26.75 in (8.73 x 44.55 x 67.94 cm)

4 LFF & 12LFF Drive Bay Version:

Pre-configured Models

	Entry Models			Base Models				
[SKU Number]	766342-B21	752686-B21	826681-B21	752688-B21	752687-B21	826682-B21	826683-B21	848774-B21
Model Name	HPE ProLiant DL380 Gen9 E5-2609v3 1P 8GB-R B140i 4LFF SATA 500W PS Entry Server	HPE ProLiant DL380 Gen9 E5-2609v3 1P 8GB-R B140i 8SFF SATA 500W PS Entry Server	HPE ProLiant DL380 Gen9 E5-2609v4 1P 8GB-R B140i 8SFF 500W PS Entry SATA Server	HPE ProLiant DL380 Gen9 E5-2620v3 2.4GHz 6-core 1P 16GB-R P840/4GB 12LFF 2x800W PS Base Server	HPE ProLiant DL380 Gen9 E5-2620v3 1P 16GB-R P440ar 8SFF 500W PS Base Server	HPE ProLiant DL380 Gen9 E5-2620v4 1P 16GB-R P440ar 8SFF 500W PS Base Server	HPE ProLiant DL380 Gen9 E5-2620v4 1P 16GB-R P440ar 12LFF 2x800W PS Base Server	HPE ProLiant DL380 Gen9 E5-2630v4 1P 16GB-R P440ar 8SFF 500W PS Base Server
Processor	Intel® Xeon® E5-2609v3		Intel® Xeon® E5-2609v4	Intel® Xeon® E5-2620v3		Intel® Xeon® E5-2620v4		Intel® Xeon® E5-2630v4
Number of Processors	One							
Memory	8GB (1x8GB Registered DIMMs, 2133 MHz) **NOTE:** With the E5-2609v3 this memory DIMM will only operate at 1600MHz.		8GB (1x8GB Registered DIMMs, 2400 MHz) **NOTE:** With the E5-2609v4 this memory DIMM will only operate at 1866MHz.	16GB (1x16GB Registered DIMMs, 2133 MHz) **NOTE:** With the E5-2620v3 this memory DIMM will only operate at 1866MHz.		16GB (1x16GB Registered DIMMs, 2400 MHz) **NOTE:** With the E5-2620v4 this memory DIMM will only operate at 2133MHz.		16GB (1x16GB Registered DIMMs, 2400 MHz) **NOTE:** With the E5-2630v4 this memory DIMM will only operate at 2133MHz.
Network Controller	HPE Embedded 1Gb Ethernet 4-port 331i Adapter, plus optional HPE FlexibleLOM or stand up card							
Storage Controller	HPE Dynamic Smart Array B140i, plus optional HPE Flexible Smart Array or Smart HBA controller **NOTE:** Default is AHCI off chipset, Smart Array needs to be enabled on SATA model.			HPE Flexible Smart Array P840/4G Controller	HPE Flexible Smart Array P440ar/2GB		HPE Flexible Smart Array P840ar/2G Controller	HPE Flexible Smart Array P440ar/2GB
Hard Drive	None ship standard			None ship standard; includes 10 LFF hard drive blanks	None ship standard			
Internal Storage	4 LFF HDD Bays	8 SFF HDD Bays (upgradable to 24)		12 LFF HDD Bays	8 SFF HDD Bays (upgradable to 24)		12 LFF HDD Bays	8 SFF HDD Bays (upgradable to 24)

Core Options

HP 9.5mm SATA DVD-RW JackBlack G9 Optical Drive	726537-B21

NOTE: The Universal Media Bay (724865-B21) is required for this option.

HP Mobile USB Non Leaded System DVD RW Drive	701498-B21

NOTE: This is only supported on USB 3.0 ports.

HPE Drives	**SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives**	
	HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	872481-B21
	HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e HDD	791034-B21
	HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872479-B21
	HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	781518-B21
	HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870759-B21
	HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870765-B21
	HPE 900GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	785069-B21
	HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870757-B21
	HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870763-B21
	HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872477-B21
	HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e HDD	748387-B21
	HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759212-B21
	HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	781516-B21
	HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759210-B21
	HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870753-B21
	HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872475-B21
	HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759208-B21
	HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	785067-B21
	SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HPE 2TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD	765466-B21
	HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD	765464-B21
	HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty HDD	832514-B21
	12G SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
	HPE 600GB SAS 12G Enterprise 15K LFF (3.5in) SC 3yr Wty HDD	765424-B21
	HPE 450GB SAS 12G Enterprise 15K LFF (3.5in) SCC 3yr Wty HDD	737394-B21
	HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) SCC 3yr Wty HDD	737261-B21
	12G SAS Hot Plug LFF (3.5-inch) SC Midline Hard Drives - 1yr Warranty	
	HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	857644-B21
	HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	861590-B21
	HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	819201-B21
	HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	846514-B21

Additional Options

HPE Disk Backup	**HPE RDX Removable Disk Backup System**	
	HPE RDX+ 3TB USB 3.0 External Disk Backup System	P9L72A
	HPE RDX 3TB USB 3.0 Internal Disk Backup System	P9L71A
	HP RDX 2TB USB3.0 External Disk Backup System	E7X53B
	HP RDX+ 1TB External Backup System	B7B69B
	HP RDX+ 500GB External Backup System	B7B66B
	HPE RDX+ External Docking System	C8S07B
	HPE D3700 Enclosure	QW967A
	HPE D3600 Enclosure	QW968A

NOTE: For the complete range of RDX drives and media see: **http://www.hp.com/go/rdx**. For hardware and software compatibility of Hewlett Packard Enterprise disk backup products see: **http://www.hp.com/storage/SPOCK**.

HPE Storage Options	**NOTE:** For the complete listing of Fibre Channel Host Bus Adapters for Windows 2000, Windows Server 2003 and Linux, please see: **http://h18006.www1.hp.com/storage/saninfrastructure/hba.html**.	
	Emulex Fibre Channel HBAs	
	HPE 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
ข้อ 5.8.2.7	HPE 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
	HPE StoreFabric 84E 4-port 8Gb Fibre Channel Host Bus Adapter	E7Y63A
	HPE StoreFabric SN1200E 16Gb Single Port Fibre Channel Host Bus Adapter	Q0L13A
	HPE StoreFabric SN1200E 16Gb Dual Port Fibre Channel Host Bus Adapter	Q0L14A
	HPE StoreFabric SN1600E 32Gb Single Port Fibre Channel Host Bus Adapter	Q0L11A
	HPE StoreFabric SN1600E 32Gb Dual Port Fibre Channel Host Bus Adapter	Q0L12A
	HPE StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter	C8R38A
	HPE StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	C8R39A
	HPE StoreFabric SN1100E 4-port 16Gb Fibre Channel Host Bus Adapter	P9D99A
	QLogic Fibre Channel HBAs	
	HPE 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
	HPE 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
	HPE StoreFabric 84Q 4-port 8Gb Fibre Channel Host Bus Adapter	P9D91A
	HPE StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter	QW971A
	HPE StoreFabric SN1100Q 16Gb Single Port Fibre Channel Host Bus Adapter	P9D93A
	HPE StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	QW972A
	HPE StoreFabric SN1100Q 16Gb Dual Port Fibre Channel Host Bus Adapter	P9D94A
	HPE StoreFabric SN1600Q 32Gb Single Port Fibre Channel Host Bus Adapter	P9M75A
	HPE StoreFabric SN1600Q 32Gb Dual Port Fibre Channel Host Bus Adapter	P9M76A
	Converged Network Adapter	
	HPE StoreFabric CN1100R Dual Port Converged Network Adapter	QW990A
	HPE StoreFabric CN1100R 10GBASE-T Dual Port Converged Network Adapter	N3U52A
	HPE StoreFabric CN1200E 10Gb Converged Network Adapter	E7Y06A
	HPE StoreFabric CN1200E 10GBASE-T Dual Port Converged Network Adapter	N3U51A

Technical Specifications

	Extended Ambient Operating Support	For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: **http://www.hpe.com/servers/ashrae**
		For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: **http://www.hpe.com/servers/ashrae**
		System performance may be reduced if operating in the extended ambient operating range or with a fan fault.
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
(non-condensing)	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 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).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/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	ข้อ 5.8.2.19.1
	LWAd	4.0 B Entry LFF
		4.1 B Entry
		4.2 B Base
		5.7 B Base LFF
		4.3 B Perf
	LpAm	23 dBA Entry LFF
		24 dBA Entry
		24 dBA Base

Technical Specifications

		39 dBA Base LFF
		25 dBA Perf
	Operating	
	LWAd	4.3 B Entry LFF
		4.6 B Entry
		4.8 B Base
		5.9 B Base LFF
		5.6 B Perf
	LpAm	25 dBA Entry LFF
		29 dBA Entry
		30 dBA Base
		31 dBA Base LFF
		39 dBA Perf

NOTE: The Listed sound levels apply to standard shipping configurations (Entry LFF, Entry, Base, Base LFF and Performance models) additional options may result in increased sound levels. The Base LFF model leverages our High Efficiency Fans, other models are shipping with standard fan options.

Emissions Classification (EMC)	FCC Rating ข้อ 5.8.2.19.2 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 ข้อ 5.8.2.19.3

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

HPE Dynamic Smart Array B140i Controller	**Number of PCI links**	Four
	PCI link rate	4Gb/s
	Storage protocol support	SATA
	SAS/SATA peak data transfer rate	6Gb/s
	Number of SAS/SATA links	10 links
	SAS/SATA connectivity	2x4 connectors; 2x1 connectors
	Expander support	No
	Drives supported (max)	Up to 10 Internal Drives
	RAID support	0, 1, 10, 5 SATA
	Software management	HPE SSA, SMH, SIM
	Warranty	Server warranty
	HPE Secure Encryption license	Not Supported
	HPE SmartCache License	Not Supported
	HPE Smart Storage	Supported

ข้อ 5.8.2.10

HPE Integrated Lights-Out Portfolio

"HPE's Integrated Lights-Out, iLO as HPE's server provisioning and management package is generally known, rocks…That really was easy!…Believe me, if you don't use iLO, well…it's your fault."

– John Obeto, Absolutely Windows

Your Server Management Engine

Traditional server management and provisioning can create unnecessary burdens for many organizations. Information technology (IT) administrators in today's business environments need a more streamlined process to manage servers throughout the IT lifecycle, including tools to help them diagnose problems and procedures for efficiently resolving errors. The key capabilities of HPE Integrated Lights-Out (iLO) are embedded in every ProLiant Gen9 and Gen10 server, the solution's scalable licensing offerings, and mobile app features that support IT staff—anywhere, anytime.

Out of the box, HPE iLO simplifies server setup, provides access to server health information, enables server management at scale, improves server power and thermal control, as well as basic remote administration.

With the HPE iLO management, you can automate your common tasks during each step of the server lifecycle, from initial deployment to ongoing management and service alerting. This translates to faster time to deployment, higher server, and application availability through ongoing health monitoring, and significantly quicker time to resolution when issues arise.

Figure 1. HPE iLO management—Core lifecycle management functions built in for instant availability

"With the ProLiant Gen10 beta we are anticipating HPE has made some unique and innovative enhancements. Automating and orchestrating server provisioning with iLO 5 will enable us to deploy and manage at scale. The Silicon Root of Trust and the Runtime Verification that check iLO and firmware for compromised code will be welcome."

– Lead Engineer, IT Architecture, Advanced Scientific Research and Manufacturing Company

[1] Based on external firm conducting cyber security penetration testing of a range of server products from a range of manufacturers, May 2017.

Key features and benefits

The HPE iLO management portfolio includes:

Server Security
Fueling the world's most secure industry standard servers[1] is HPE iLO 5. iLO 5 and Gen10 hardware upgrades allow HPE to deliver server security through innovations that protect your HPE servers from attacks, detect potential intrusions and allow users to recover their firmware securely.

Protect
Remove vulnerabilities that expose infrastructure firmware to malicious attacks with HPE exclusive Silicon Root of Trust. HPE Secure Start uniquely ensures that only HPE signed firmware will boot by validating through the HPE Silicon Root of Trust, so that you can be confident that your booted firmware is safe. With iLO 5 we have the ability to enforce use of cryptography and algorithms that confirm to Commercial National Security Algorithms (CNSA). iLO 5 also introduces support for 2 factor authentication via Personal Identity Verification (PIV) cards/Common Access Cards (CAC).

Detect
Runtime Firmware Verification ensures that your essential firmware is checked at regular intervals to identify any potential intrusions that may occur post-boot.

Recover
Avoid lasting damage to your business by quickly restoring essential firmware to the factory settings or the last known authenticated safe setting in the unlikely event of a breach.

Learn more at **hpe.com/info/security**.

Intelligent Systems Tuning
Through the HPE partnership with Intel®, Intelligent Systems Tuning (IST) is server tuning technology that enables you to match server resources to your workload for significant performance improvements, real savings and, and a more intelligent server environment.

Learn more at **hpe.com/info/ist**.

HPE Agentless Management
HPE Agentless Management runs on HPE iLO, independent of the OS and the main CPU. It offers robust basic server monitoring without the complexity of OS-based agents. The base hardware monitoring and alerting capabilities are built into the system (running on the HPE iLO processor). They start working the moment a power cord and an Ethernet cable are connected to the server.

HPE iLO Federation
HPE iLO Federation is a key enablement feature that provides scalable and efficient server management. Through the creation of security groups, you can rapidly deploy and discover numerous servers, making the management of multiple servers, as easy as one.

For more information on HPE iLO Federation, please read the **HPE iLO Federation User Guide**.

HPE Active Health System
The HPE Active Health System (AHS) is an essential component of the iLO management portfolio that provides continuous, proactive health monitoring of HPE servers. Now with the Active Health System Viewer (AHSV), customers with an active warranty or support agreement on Gen8, Gen9, or Gen10 servers have a web-based portal to easily read their AHS logs and speed problem resolution. Self-repair recommendations for a select set of errors help customers take repair actions without the need for HPE personnel intervention and return server environments to optimum performance quicker.

Learn more about AHS and AHSV at **hpe.com/servers/ahs**.

At the Server Management
Exclusively available on Gen10 servers, the new iLO service port is a USB port for integrated remote console and AHS downloads that gives users direct, front of the server access to iLO. This new feature also allows users to give iLO access without the need to connect and authenticate on your network, making it simpler to access the information needed quickly.

Discover 100s of servers in seconds and update 100s of server firmware in minutes with iLO Federation[2]

HPE continues to impress me with the new services being developed. First was the online SPP creation tool and now the AHS log viewer.

Being able to get information from the AHS files will be an invaluable troubleshooting tool and allow us to self-remedy many of the less complex issues.

Great Job HPE!

– Sam Kostmayer, IT Manager, Deloitte Services LP

HPE Remote Support

HPE remote support tools monitor your servers 24x7 and proactively alert you to potential problems. The tools work in conjunction with HPE iLO for much easier configuration and setup of remote support for HPE ProLiant Gen8, Gen9, and Gen10 servers. Tools such as HPE Insight Remote Support and HPE Insight Online direct connect offer automated event detection, support case creation, notification, and accurate diagnostics, so you can spend less time solving problems and focus more on IT value-add to your business. For more information visit: **hpe.com/info/insightremotesupport**.

HPE Intelligent Provisioning

Intelligent Provisioning is a server deployment and maintenance capability embedded across HPE ProLiant Gen8, Gen9, and Gen10 servers. With HPE Intelligent Provisioning, you can deploy servers faster to overcome the complexity of server maintenance and deployment.

New in Gen10, Intelligent Provisioning is now Always On. Intelligent Provisioning is accessible from the iLO browser user interface anytime without having to reboot your server.

Learn more at **hpe.com/servers/ intelligentprovisioning**.

Remote Access

Remote management capabilities allow users to effortlessly manage servers from the convenience of a laptop or mobile device. Configurable alerts also enable proactive task status and error messages via UI, email, SMS, and IFTT so users can stay on top of server health with ease and before errors result in downtime. ข้อ 5.8.2.15

Download mobile app for Android
ข้อ5.8.2.14
Download mobile app for IOS

Licensed product offerings

HPE iLO Advanced Premium Security Edition License

HPE iLO Advanced Premium Security Edition builds on the world's most secure Industry Standard servers[3] by providing premium security capabilities that protect your HPE servers from attacks, detect intrusions and allow you to securely recover essential firmware. Exclusively available on HPE ProLiant Gen10 servers, the iLO Advanced Premium Security Edition license delivers all the management capabilities of the iLO Advanced license with premium security features like Commercial National Security Algorithms (CNSA) mode, runtime firmware verification, automatic secure recovery and secure erase of NAND/User data.

Learn more at **hpe.com/servers/ilopremium**.

HPE iLO Advanced License

HPE iLO Advanced and HPE iLO Advanced for HPE BladeSystem offer smart remote functionality without compromise, for enterprise environments. The license includes the full-integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. With this license, your IT managers can perform system administration tasks without physically visiting their servers and management at scale with iLO Federation. For more information, visit: **hpe.com/servers/ iloadvanced**.