Hewlett Packard Enterprise

HPE ProLiant rack and tower servers

The world's most secure industry standard servers[1]

A new compute experience simplifying Hybrid IT

Trusted servers built for today and tomorrow

We're living in an era of digital disruption, where the accessibility and adoption of Big Data, mobility, Internet of Things, and cloud-native technologies are enabling companies to transform their businesses in exciting new ways. At the heart of these technologies are applications and data, and this has placed IT at the center of business innovation.

IT needs to operate at the speed of today's business, to be an accelerator of new ideas, products and services. For IT to be successful in speeding time to value, a Hybrid IT infrastructure is needed in order to deliver the Right Mix of infrastructure and services to develop and deploy applications on a continuous basis and draw insights and make decisions from data.

For IT decision makers who must define their Right Mix of Hybrid IT across on-premises dedicated and cloud environments as well as hosted cloud, a new compute experience is required to obtain cloud economics and agility with the security of an on-premises data center. HPE ProLiant servers are designed to simplify Hybrid IT by providing the agility of a modernized infrastructure, the security to protect your digital assets and the economic control to pay for only what your use.

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

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A complete compute solution
Choose HPE Rack and Power Infrastructure options to complete your foundation for a modern and optimized IT environment. Hewlett Packard Enterprise delivers the right value where it matters, with:

- Racks in a variety of height, width, and depth options
- Power distribution units (PDUs) ranging from enterprise to basic
- Various sizes of uninterruptable power supplies (UPSs)
- Kernel-based virtual machine solutions and other rack accessories

Agility: A better way to deliver business results with a software-defined infrastructure that delivers intelligent automation and high performance reducing operational complexity for traditional applications while increasing velocity for the new breed of applications.

Security: A better way to protect your business and data with an infrastructure that has security designed in from the start.

Economic control: A better way to consume IT that allows you to pay for only what you use, scaling on demand without overprovisioning or incurring exponentially escalating costs.

Why choose HPE ProLiant rack and tower servers?

HPE is committed to innovation, quality, and an excellent customer experience. Our approach to excellence in our innovation and quality is instilled across the product lifecycle, from our customer-first approach to design, to our supplier selection, quality and management, to our world-class manufacturing and rigorous product testing, to our global support services and network of channel partners. More than 1 million customers over 25+ years have built their business on HPE ProLiant servers making HPE #1 in worldwide total server revenue with 21 years straight of leadership.

With HPE ProLiant rack and tower servers, you can deliver consistent and predictable agility, security, and economic control across your Hybrid IT infrastructure.

The rack and tower servers are available in these families:

- HPE ProLiant Easy Connect
- HPE ProLiant MicroServer
- HPE ProLiant ML
- HPE ProLiant DL

While all four families are designed to handle multiple workloads, each family is optimized for specific use cases.

HPE ProLiant Easy Connect

Reduce the need for expensive full-time IT staffing on-site without compromising quality. HPE ProLiant Easy Connect Managed Hybrid Servers are remotely managed services offered through Hewlett Packard Enterprise's best in class service provider partner network, delivered as a 1-year, 3-year, or 5-year subscription paid monthly or annually. Supported by dedicated engineering and operations teams, and embedded with rigorously tested network, security, and cloud integration, the solution provides secure and reliable access to Windows®, Linux®, and SaaS applications.

HPE ProLiant MicroServer

Compact, quiet and stylish, the HPE ProLiant MicroServer is ideal as a first solution for small businesses. With just right performance in a form factor that is easy to use and service, the MicroServer helps you drive down expenses while improving productivity and efficiency. And best of all, you don't need a server room to have a server.

The HPE ProLiant MicroServer Gen10 supports 4K streaming media with two-display port and come pre-loaded with ClearOS™, an easy-to-use operating system and applications just right for SOHO.

HPE ProLiant Easy Connect
Reduce TCO with a managed solution for retail sites and remote offices

HPE ProLiant MicroServer
Perfect for micro and small businesses

HPE ProLiant ML family
The ideal choice for remote or branch offices and growing businesses

HPE ProLiant DL family
Secure and versatile rack-optimized servers delivering performance, expansion, and manageability

The HPE ProLiant MicroServer provides the following benefits:

- Easy to set up and service
- Cool design and ability to place it anywhere

HPE ProLiant Gen10 and Gen9 tower servers

The ML family of servers delivers simple, efficient business value and is the ideal choice for remote or branch offices and growing businesses. Industry-leading compute innovations include simple management and storage tools, along with proven configurations that provide easy remote access and improved energy efficiencies to lower your total cost of ownership (TCO). Integrated with a simplified but comprehensive management suite and industry-leading support, the ProLiant tower portfolio delivers more business value and helps increase IT staff productivity and expedite service delivery. In addition, the complete, right-sized tower portfolio includes financing options, a service, and a channel network to significantly increase the speed of IT operations and enable IT to respond to business needs faster.

The HPE ProLiant tower portfolio delivers:

- Simplicity with easy-to-use tools, processes, and support to help server administrators keep hardware running
- Efficiency that office managers need to help improve employee productivity
- Affordability to increase business agility and help acquire and retain customers

HPE ProLiant Gen10 and Gen9 rack servers

The DL family of servers are the most flexible, reliable, and performance-optimized ProLiant rack servers—ever. HPE continues to provide industry-leading compute innovations, the new HPE ProLiant Gen10 rack portfolio, with flexible choices and versatile design, along with improved energy efficiencies, ultimately lowers your TCO. Integrated with a simplified, but comprehensive management suite and industry-leading support, the ProLiant Gen10 rack portfolio delivers a more reliable, fast, and secure infrastructure solution, helps increase IT staff productivity, and accelerates service delivery. In addition, the rack portfolio is performance-optimized for multi-application workloads to significantly increase the speed of IT operations and enable IT to respond to business needs of any size, faster.

The HPE ProLiant Gen10 rack portfolio delivers:

- Up to 71% performance increase and 27% increase in core with the new Intel Xeon Scalable processors[2]
- Up to 27X faster checkpoint operations enabling significantly faster business operations[3]
- 66% greater memory bandwidth increasing application performance for memory-intensive applications[4]
- 14% more processor cores for greater VM density and 33% greater memory capacity for better VM performance and price/performance using AMD EPYC processors[5]

The HPE ProLiant Gen9 rack portfolio delivers the right compute for the right workload at the right economics—every time. They are built to excel for any size business, for any size workload, in any environment with:

- 66X faster service delivery with simple automation, saving admin time, and reducing errors from manual steps[6]
- 4X faster workload performance to transform the business, growing revenue, margin, and share[7]

[2] Intel® measurements. Up to 71% performance increase of Intel® Xeon® Platinum vs. previous generation E5 v4 average performance based on key industry-standard benchmark calculations comparing 2-socket Intel Xeon Platinum 8180 to E5-2699 v4 family processors. Any difference in system hardware or software design or configuration may affect actual performance. May 2017.

[3] TPC-C Benchmark Throughput with Checkpoint (trans/sec). Calculated Time to Checkpoint and Restore a Docker Container running MySQL, compare Persistent memory vs. SSD, November 2016.

[4] Percentage compare Gen10 vs. Gen9: Gen10 = 12 Channels x 2666 data rate x 8 bytes = 256 GB/sec. Gen9 = 8 channels x 2400 x 8 bytes = 154 GB/sec. 256/154 = 1.66 or Gen10 is 66% greater bandwidth, July 2017.

[5] AMD EPYC™ 7601 Processor as compared to the Intel® Xeon® Platinum 8176 Processor, October 2017 HPE ProLiant DL385 Gen10 Server as compared to the Dell EMC PowerEdge R740xd.

[6] Anonymous customer results. The time to build and deploy infrastructure for 12 call centers was reduced from 66 days to one. IDC white paper sponsored by HP (now Hewlett Packard Enterprise), "Achieving Organizational Transformation with HP Converged Infrastructure Solutions for SDDC," January 2014, IDC #246385.

[7] HPE SmartCache Performance done with equivalent controller in a controlled environment. HPE Smart Storage engineers, Houston, Texas, as of 18 May 2014 posted on internal SmartCache wiki page.

Get more depth with the technical white paper:
Technologies in HPE ProLiant Gen10 2-socket servers

- Moore insights: Hybrid IT Infrastructure helps businesses navigate through transformation
- Moore insights: HPE locks down server security
- Address false positive findings when IPMI is enabled in HPE ProLiant Servers
- Ponemon 2016 Cost of Cyber Crime Report

HPE Gen10 Technology portfolio

HPE ProLiant servers feature user-inspired innovations to make IT simpler,[8] including:

Agility

- Optimize performance with Intelligent System Tuning (IST) that includes Jitter Smoothing, Core Boosting, and Workload Matching
- The latest processor technologies including Intel Xeon Scalable processors and AMD EYPC 7000 Series processors
- Enhance server performance with HPE SmartMemory at 2666 MT/s speed and Fast Fault Tolerance
- The World's fastest Persistent Memory at multi-terabyte scale
- Easily select, deploy, manage, and maintain HPE server infrastructure over the server lifecycle with HPE OneView, HPE iLO 5, and iLO Amplifier Pack

Security

- Protect from attacks with the HPE exclusive, Silicon Root of Trust
- Detect compromised code or malware with Run-time Firmware Verification
- AMD Secure Processor technology enables Secure Memory Encryption (SME) and Secure Encrypted Virtualization (SVE) for added security
- Recover firmware to last good known state or factory settings with Secure Recovery
- Enhanced security enabled with iLO 5 Advanced Premium Security Edition
- Security hardware options including Trusted Platform Module (TPM), Chassis Intrusion Detection Kit, and Secure NICs

Economic control

- Flexible payment models that are not only aligned with business outcomes but can scale based on unpredictable customer demand

Transition guide

The Gen10 family offers the right compute to meet all your diverse workload needs. As such, we're tailoring compute to offer more flexibility and choice, such as offerings from both Intel and AMD, HPE FlexibleLOM, HPE Smart Array, HPE SmartMemory, NVMe, Persistent Memory, and many more options.

[8] For a full list of supported options and details, see the server QuickSpecs at **hpe.com/info/qs**.

HPE ProLiant sizer tools:
HPE server TCO calculator

For additional information on reference architectures including complete configurations, sizing, BOM, and deployment details, refer to **hpe.com/info/ra**.

Over the past several generations of the rack and tower portfolio we have adjusted the product offerings to best address the needs of our customers. The following table shows the transition previous generations of servers to Gen10:

Gen8 models	Gen9 models	Gen10 models
HP ProLiant MicroServer Gen8	N/A	HPE ProLiant MicroServer Gen10
HP ProLiant ML10 v2	HPE ProLiant ML10 Gen9	
HP ProLiant ML310e Gen8 v2	HPE ProLiant ML30 Gen9	
HP ProLiant ML310e Gen8 v2	HPE ProLiant ML110 Gen9	HPE ProLiant ML110 Gen10
HP ProLiant ML350e Gen8	HPE ProLiant ML150 Gen9	
HP ProLiant ML350p Gen8	HPE ProLiant ML350 Gen9	HPE ProLiant ML350 Gen10
HP ProLiant DL320e Gen8 v2	HPE ProLiant DL20 Gen9	
N/A	HPE ProLiant DL60 Gen9	HPE ProLiant DL360 Gen10
N/A	HPE ProLiant DL80 Gen9	HPE ProLiant DL380 Gen10
N/A	HPE ProLiant DL120 Gen9	HPE ProLiant DL360 Gen10
HP ProLiant DL360e Gen8	HPE ProLiant DL160 Gen9	HPE ProLiant DL360 Gen10
HP ProLiant DL380e Gen8	HPE ProLiant DL180 Gen9	HPE ProLiant DL380 Gen10
HP ProLiant DL360p Gen8	HPE ProLiant DL360 Gen9	HPE ProLiant DL360 Gen10
HP ProLiant DL380p Gen8	HPE ProLiant DL380 Gen9	HPE ProLiant DL380 Gen10
HP ProLiant DL385p Gen8		HPE ProLiant DL385 Gen10
HP ProLiant DL560 Gen8	HPE ProLiant DL560 Gen9	HPE ProLiant DL560 Gen10
HP ProLiant DL580 Gen8	HPE ProLiant DL580 Gen9	HPE ProLiant DL580 Gen10

Choose your rack or tower server

HPE ProLiant rack and tower servers are available in a variety of platforms to support different compute needs and workloads. The following charts will help you compare the offerings within the HPE ProLiant rack and tower families. These charts are organized according to server needs.

- HPE ProLiant 10 series—Small Scale Servers—Easy to buy and deploy
- HPE ProLiant 100 series—Right Sized Servers—Balance of performance, efficiency, capacity, and manageability
- HPE ProLiant 300 series—Versatile Performance Servers—Industry-leading design with flexible choices for multi-workload compute and storage
- HPE ProLiant 500 series—Scale-up Servers—Scalable performance for business-critical workloads

Small Scale Servers

Is this your first server? Consider these HPE ProLiant Essential servers.

MicroServer Gen8

MicroServer Gen10

Easy Connect EC200a

ML10 Gen9

ML30 Gen9

	An ideal first server business-ready solution out of the box	The compact server to make your own	Managed Hybrid IT in a showcase form factor design	Secure, collaborate, and provision	The ideal first server for growing businesses
Number of processors	1	1	1	1	1
Processors supported	Intel Xeon E3-1220L v2 Intel Pentium® Intel Celeron®	AMD Opteron™ X3421 AMD Opteron X3216	Intel Xeon D-1518	Intel Xeon E3-1200 v5 series Intel Pentium G4000 series	Intel Xeon E3-1200 v5/v6 series Intel® Core™ i3-6000 series Intel Pentium G4000 series
Cores per processor	2	2/4	4	2/4	2/4
Maximum processor frequency/cache	2.5 GHz/3 MB	3.4 GHz/2 MB	2.2 GHz/6 MB	3.3 GHz/8 MB	3.6 GHz/8 MB
I/O expansion slots	1 PCIe 3.0/2.0 (processor dependent), 1 x 16, 1 LP	2 PCIe 3.0, 1 x 8, 1 x 4	N/A	4 PCIe 3.0, 1 x 16, 1 x 8, 2 x 4, 4 FH/HL	4 PCIe 3.0, 1 x 16, 1 x 8, 2 x 4, 3 FH/FL, 1 FH/HL
Maximum memory/# slots/speed	16 GB/2/1600 MT/s	32 GB/2/2400 MT/s	64 GB/2/2400 MT/s	64 GB/4/2133 MT/s	64 GB/4/2133 MT/s
Storage controller	B120i, optional Smart Array P222 via PCIe*	Embedded Marvell SATA controller (HW RAID 0, 1, 10 Support)	Embedded SATA controller (SW RAID 0/1 Support)	Intel RST SATA RAID, optional Smart HBA for external backup via PCIe	B140i, optional Smart Array and Smart HBA via PCIe*
Maximum storage drive bays	4 LFF SATA, non-hot plug	4 LFF SATA, non-hot plug Optional (1) Slim SATA ODD or (1) Slim SFF SATA SSD	2 LFF SATA	6 LFF HDD	8 SFF or 4 LFF HDD/SSD
Maximum internal storage	16 TB	16 TB	8 TB	24 TB	48 TB
Networking ports (embedded)/FlexibleLOM	2 x 1GbE/NA	2 x 1GbE/NA	2 x 1GbE/iLO 4	1 x 1GbE/NA	2 x 1GbE/NA
VGA/serial/USB/SD ports	1/0/7/1	1/0/7/0 plus 2 display ports	1/0/4/0	1/0/7/0	1/1/10/1
GPU support	None	Optional AMD Radeon Pro WX 2100	None	Optional	Optional NVIDIA® Quadro K2200
Form factor/chassis depth	Ultra Micro Tower/9.65"	Ultra Micro Tower/10"	Tower/10"	Micro ATX Tower (4U)/15.79"	Micro ATX Tower (4U)/18.71"
Power and cooling	150W non-hot plug, non-redundant PS (AMS, APJ, and PRC models); 200W non-hot plug, non-redundant PS (EMEA models)	200W ATX non-hot plug, non-redundant PS	120W non-hot plug, non-redundant PS (Base models); 120W FIO non-hot plug, non-redundant PS (Premium models)	Up to 85% efficiency 300W multi-output PS	350W ATX PS; 460W redundant PS
Industry compliance	N/A	N/A	Contact an HPE technical sales rep for compliance info	FCC Class B	N/A
System ROM	Legacy BIOS	UEFI	N/A	UEFI	UEFI Legacy BIOS
Management	HPE iLO 4, Intelligent Provisioning, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Advanced	N/A	N/A	Intel AMT 11.0	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, Smart Update Manager Optional: HPE iLO Essentials, HPE iLO Advanced
Serviceability—easy install rails	N/A	N/A	N/A	N/A	N/A
Warranty—(years) (parts/labor/on-site)	1/0/0	1/1/1	3/3/3	1/1/1	3/1/1

* For a full list of supported options and details, see the server QuickSpecs at **hpe.com/info/qs**.

	 **DL20 Gen9**	 **DL60 Gen9**	 **DL80 Gen9**
	Compact, versatile, and efficient	Affordable compute and scalability packaged in a dense design	Affordable storage and scalability for cost-conscious service providers and SMBs
Number of processors	1	1 or 2	1 or 2
Processors supported	Intel Xeon E3-1200 v5/v6 series Intel Core i3 Intel Pentium	Intel Xeon E5-2600 v3/v4 series	Intel Xeon E5-2600 v3/v4 series
Cores per processor	2/4	4/6/8/10/12/14	4/6/8/10/12/14
Maximum processor frequency/cache	3.9 GHz/8 MB	3 GHz/30 MB	3 GHz/30 MB
I/O expansion slots	Up to 2 PCIe 3.0, 2 x 8, 2 FH/HL	Up to 3 PCIe 3.0, 1 x 16, 2 x 8, 1 FH/HL, 2 LP	Up to 6 PCIe 3.0, 3 x 16, 3 x 8, 2 FH/HL, 4 LP
Maximum memory/# slots/speed	64 GB/4/2133 MT/s	256 GB/8/2400 MT/s	256 GB/8/2400 MT/s
Storage controller	B140i, optional Smart Array P440 with FBWC, or H240 Smart HBA via PCIe*	B140i, optional Smart Array and Smart HBA via PCIe*	B140i, optional Smart Array and Smart HBA via PCIe*
Maximum storage drive bays	4 SFF or 2 LFF HDD/SSD	4 LFF max. HDD/SSD, M.2 enabled	12 LFF max. HDD/SSD, M.2 enabled
Maximum internal storage	20 TB	40 TB	120 TB
Networking ports (embedded)/FlexibleLOM	2 x 1GbE/FlexibleLOM slot on riser (optional)	2 x 1GbE/FlexibleLOM slot on riser (optional)	2 x 1GbE/FlexibleLOM slot on riser (optional)
VGA/serial/USB/SD ports	1/0/5/1	1/0/4/1	1/0/4/1
GPU support	Optional	N/A	Single-wide (1)
Form factor/chassis depth	Rack (1U)/15.05" (ear to rear)	Rack (1U)/23.9" (LFF)	Rack (2U)/23.9" (LFF)
Power and cooling	Standard 290W (80 PLUS Silver certified) power supply; HPE 900W AC 240VDC Redundant Power Supply Kit (80 PLUS Gold certified) (optional for SFF chassis only)	Up to 92% efficient (Gold), 550W multi-output, 900W RPS	Up to 92% efficient (Gold), 550W multi-output, 900W RPS
Industry compliance	ASHRAE A3, ENERGY STAR® (only on RPS configuration models)	ASHRAE A3	ASHRAE A3
System ROM	UEFI Legacy BIOS	UEFI Legacy BIOS	UEFI Legacy BIOS
Management	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE Systems Insight Manager (SIM), Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Scale-Out, HPE iLO Advanced, HPE OneView Advanced	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Scale-Out, HPE iLO Advanced, HPE OneView Advanced	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Scale-Out, HPE iLO Advanced, HPE OneView Advanced
Serviceability—easy install rails	N/A	Standard	Standard
Warranty—(years) (parts/labor/on-site)	1/1/1	1/1/1	1/1/1

* For a full list of supported options and details, see the server QuickSpecs at **hpe.com/info/qs**.

Right-Sized Servers

Are your IT needs growing? Consider these HPE ProLiant 100 series servers.

ML110 Gen9

ML110 Gen10

ML150 Gen9

	A performance 1P server for more demanding applications	1P tower with enterprise-class reliability and performance	Essential mix of performance, efficiency, and expandability
Number of processors	1	1	1 or 2
Processors supported	Intel Xeon E5-2600 v3/v4 series Intel Xeon E5-1600 v3/v4 series	Intel Xeon Scalable processor 5100, 4100, and 3100 series	Intel Xeon E5-2600 v3/v4 series
Cores per processor	4/6/8/10	4/6/8/14	6/8/10/12/14/16/18
Maximum processor frequency/cache	3.5 GHz/35 MB	3.6 GHz/19.25 MB	2.6 GHz/35 MB
I/O expansion slots	Up to 5 PCIe 3.0, 1 x16, 2 x 8, 2 x 4, 4 FH/HL, 1 FH/¾L	Up to 5 PCIe 3.0, 2 x 16, 3 x 8, 1 FH/FL, 3 FH/HL, 1 FH/¾L	Up to 6 PCIe 3.0, 2 x 16, 4 x 8, 3 FH/FL, 3 FH/HL
Maximum memory/# slots/speed	256 GB/8/2400 MT/s	192 GB/6/2666 MT/s	512 GB/16/2400 MT/s
Storage controller	B140i, optional Smart Array and Smart HBA via PCIe*	S100i, optional HPE Smart Array Essential and Performance RAID Controllers	B140i, optional Smart Array and Smart HBA via PCIe*
Maximum storage drive bays	8 LFF, 16 SFF, or 4 NHP LFF HDD/SSD	8 LFF, 16 SFF, or 8 NHP/HP LFF HDD/SSD	10 LFF or 16 SFF HDD/SSD
Maximum internal storage	80 TB	80 TB	80 TB
Networking ports (embedded)/FlexibleLOM	2 x 1GbE/NA	2 x 1GbE/NA	2 x 1GbE/NA
VGA/serial/USB/SD ports	1/0/8/1	1/1(optional)/8/1	1/0/8/1
GPU support	Optional (1)	Optional (2)	NVIDIA Quadro K2200 Graphics Accelerator AMD FirePro W7100 Accelerator Kit (optional)
Form factor/chassis depth	Tower (4.5U)/< 19"	Tower (4.5U)/< 19"	Tower (5U)/24"
Power and cooling	Up to 92% efficiency (Gold), 350W/550W single, 750W RPS	Up to 94% efficiency. 800W RPS, ATX 350W/550W PSU Optional Redundant Fan Kit	Up to 89% efficiency. (Silver) 550W multi-output, 92% efficiency (Gold) 900W RPS
Industry compliance	ASHRAE A3	ASHRAE A3, ENERGY STAR	ASHRAE A3
System ROM	UEFI Legacy BIOS	UEFI Legacy BIOS	UEFI Legacy BIOS
Management	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Advanced	HPE iLO 5, HPE OneView Standard, Intelligent Provisioning, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Advanced	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Advanced
Serviceability—easy install rails	N/A	N/A	N/A
Warranty—(years) (parts/labor/on-site)	3/1/1	3/3/3	3/1/1

* For a full list of supported options and details, see the server QuickSpecs at **hpe.com/info/qs**.



	DL120 Gen9	DL160 Gen9	DL180 Gen9
	Enterprise-class 1S dense server for performance-driven and virtualized workloads	Right-sized performance and storage for space and budget-constrained environments	The new standard for growing data center needs
Number of processors	1	1 or 2	1 or 2
Processors supported	Intel Xeon E5-2600 v3/v4 series Intel Xeon E5-1600 v3/v4 series	Intel Xeon E5-2600 v3/v4 series	Intel Xeon E5-2600 v3/v4 series
Cores per processor	4/6/8/10/12/14/16/18/20/22	4/6/8/10/12/14/16/18	4/6/8/10/12/14/16/18
Maximum processor frequency/cache	3.5 GHz/45 MB	3.0 GHz/45 MB	3.0 GHz/45 MB
I/O expansion slots	Up to 3 PCIe 3.0, 2 x 8, 1 x 16, 1 FH & FL, 2 FH & HL	Up to 3 PCIe 3.0, 1 x 8, 2 x 16, 1 FH & HL, 2 LP	Up to 6 PCIe 3.0, 5 x 8, 1 x 16, 1 FH & FL, 5 FH/HL
Maximum memory/# slots/speed	256 GB/8/2400 MT/s	1 TB/16/2400 MT/s; optional NVDIMM (third-party)	1 TB/16/2400 MT/s
Storage controller	B140i, optional Smart Array and Smart HBA via PCIe*	B140i, optional Smart Array and Smart HBA via PCIe*	B140i, optional Smart Array and Smart HBA via PCIe*
Maximum storage drive bays	4 LFF or 8 SFF HDD/SSD, M.2 enabled	4 LFF or 8 SFF HDD/SSD, M.2 enabled	12 LFF or 16 SFF HDD/SSD, M.2 enabled
Maximum internal storage	40 TB	40 TB	120 TB
Networking ports (embedded)/FlexibleLOM	2 x 1GbE/Optional FlexibleLOM slot on riser	2 x 1GbE/Optional FlexibleLOM slot on riser	2 x 1GbE/Optional FlexibleLOM slot on riser
VGA/serial/USB/SD ports	1/0/4/1	1/0/4/1	1/0/4/1
GPU support	Single-wide (1)	N/A	Single-wide and active (1)
Form factor/chassis depth	Rack (1U)/23.9" (SFF), 23.9" (LFF)	Rack (1U)/23.9" (SFF), 23.9" (LFF)	Rack (2U)/23.9" (SFF), 23.9" (LFF)
Power and cooling	92% efficient (Gold). 550W multi-output, 900W RPS	Up to 92% efficient (80 PLUS gold certified) 550W multi-output, 900W RPS; hot swap fans with optional redundancy	Up to 92% efficient (80 PLUS gold certified), 550W multi-output, 900W non-RPS; hot swap fans with optional redundancy
Industry compliance	ASHRAE A3**	ASHRAE A3 and A4,** 1 ENERGY STAR	ASHRAE A3 and A4,** 1 ENERGY STAR
System ROM	UEFI Legacy BIOS	UEFI Legacy BIOS	UEFI Legacy BIOS
Management	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Scale-Out, HPE iLO Advanced, HPE OneView Advanced	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Scale-Out HPE iLO Advanced, HPE OneView Advanced	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Essentials, HPE iLO Scale-Out, HPE iLO Advanced, HPE OneView Advanced
Serviceability—easy install rails	Standard	Standard	Standard
Warranty—(years) (parts/labor/on-site)	3/1/1	3/1/1	3/1/1

* For a full list of supported options and details, see the server QuickSpecs at **hpe.com/info/qs**.

** See **hpe.com/servers/ashrae** for details.

Versatile Performance Servers

Are you continuing to need traditional IT for diverse workloads? Consider these HPE ProLiant 300 series servers.

	ML350 Gen9	ML350 Gen10	DL360 Gen9	DL360 Gen10
	Premium 2P performance with unmatched capacity and reliability	ProLiant's most powerful and versatile 2P tower	Dense performance for multi-workload compute in the data center	The dense compute standard for multi-workload environments
Number of processors	1 or 2	1 or 2	1 or 2	1 or 2
Processors supported	Intel Xeon E5-2600 v3/v4 series	Intel Xeon Scalable processor 8100, 6100, 5100, 4100, 3100 series	Intel Xeon E5-2600 v3/v4 series	Intel Xeon Scalable processor 8100, 6100, 5100, 4100, 3100 series
Cores per processor	4/6/8/10/12/14/16/18/20/22	4/6/8/10/12/14/16/18/20/22/24/26/28	4/6/8/10/12/14/16/18/20/22	4/6/8/10/12/14/16/18/20/22/24/26/28
Maximum processor frequency/cache	3.5 GHz/55 MB	3.6 GHz/38.5 MB	3.5 GHz/55 MB	3.6 GHz/38.5 MB
I/O expansion slots	Up to 1 PCIe 2.0, 8 PCIe 3.0, 4 x 16, 5 x 8, 8 FH & FL, 1 FH/HL	Up to 8 PCIe 3.0, 4 x 16, 4 x 8, 8 FH/FL	Up to 3 PCIe 3.0, 1 x 16, 1 x 8, 1 FH/¾L, 1 FH/HL length	Up to 3 PCIe 3.0, 1 x 16, 1 x 8, 1 FH/¾L, 1 FH/HL length
Maximum memory/ #slots/speed	3 TB/24/2400 MT/s	1.5 TB/24/2666 MT/s	3 TB/24/2400 MT/s	3 TB/24/2666 MT/s
Maximum Persistent Memory	N/A	N/A	Up to (16) 8 GB NVDIMMs option (128 GB max)	Up to (12) 16 GB NVDIMMs option (192 GB max)
Storage controller	B140i, optional Flexible Smart Array or HPE Smart Host Bus Adapter Controllers**	S100i, optional HPE Smart Array Essential and Performance RAID Controllers**	B140i**	S100i, optional HPE Smart Array Essential and Performance RAID Controllers Mode Controllers**
Maximum storage drive bays	24 LFF or 48 SFF HDD/SSD Optional: Up to 6 NVMe PCI SSD	24 SFF or 12 LFF HDD/SSD or 8 NVMe or 12 LFF NHP, M.2 SATA/PCIe enabled	4 LFF or 8 + 2 SFF HDD/SSD, M.2 enabled Optional: Up to 2 or 6 NVMe PCIe SSD	10 NVMe + 1 SFF or 8 + 2 + 1 SFF or 4 LFF + 1 SFF SAS/SATA HDD/SSD M.2 SATA/PCIe enabled, optional Dual uFF M.2 Enablement Kits
Maximum internal storage	240 TB	184.32 TB	40 TB	168+ TB
Networking ports (embedded)/option	4 x 1GbE/N/A/standup card	4 x 1GbE/standup card	4 x 1GbE/Optional FlexibleLOM/ standup card	4 x 1GbE/Optional FlexibleLOM/ standup cards

** For a full list of supported options and details, see the server QuickSpecs at **hpe.com/info/qs**.

	ML350 Gen9	ML350 Gen10	DL360 Gen9	DL360 Gen10
VGA/serial/USB/SD ports	1/1/8/1	1/1/6/1	2/1/5/2	Display port (front) VGA (rear)/1 1 optional serial (rear)/5 USB 3.0 (1 front, 2 internal, 1 rear); 1 USB 2.0 Optional (front)/1 SD port (internal)
GPU support	Single-/double-wide and active up to 10.5" (4)	Single-/double-wide active/passive up to 10.5" (4)	Single-wide and active up to 9.5" (2)	Single-wide and active to 9.5" (2), up to 150W each
Form factor/chassis depth	Tower or Rack (5U)/28.5" (SFF), 28.5" (LFF)	Tower (4U)/25.5" or Rack (5U)/25.5"	Rack (1U)/27.5" (SFF), 29.5" (LFF)	Rack (1U)/27.81" (SFF), 29.5" (LFF)
Power and cooling	Up to 4 Flex Slot, redundancy optional, 500W, 800W, or 1400W; 96% efficient (Titanium) with Flexible Slot FF	Up to 2 Flex Slot, redundancy optional, 500W, 800W, or 1600W, up to 96% efficient or up to 1 500W non-RPS/ NHP 92% efficient standard power supply	Up to 2 Flex Slot, redundancy optional, 500W, 800W, or 1400W; up to 96% efficient (Titanium) with HPE Flexible Slot Power Supplies with optional HPE Battery Backup Hot plug fans with full N+1 redundancy, optional high performance fans	Up to 2 Flex Slot, redundancy optional, 500W, 800W or 1600W; up to 96% efficient (Titanium); hot plug fans with full N+1 redundancy; optional high-performance fans
Industry compliance	ASHRAE A3 and A4, ENERGY STAR	ASHRAE A3 and A4, lower idle power, ENERGY STAR	ASHRAE A3 and A4, ENERGY STAR	ASHRAE A3 and A4,* ENERGY STAR
System ROM	UEFI Legacy BIOS	UEFI Legacy BIOS	UEFI Legacy BIOS	UEFI Legacy BIOS
Management	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced, HPE OneView Advanced	HPE iLO 5, HPE OneView Standard, Intelligent Provisioning, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced, HPE iLO Advanced Premium Security Edition, HPE OneView Advanced	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced	HPE iLO 5, HPE OneView Standard, Intelligent Provisioning, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced; HPE iLO Advanced Premium Security Edition; HPE OneView Advanced
Serviceability—easy install rails	N/A	N/A	Standard	Standard
Warranty—(years) (parts/labor/on-site)	3/3/3	3/3/3	3/3/3	3/3/3

	 DL380 Gen9	 DL380 Gen10	 DL385p Gen8	 DL385 Gen10
	The no-compromise data center standard for multi-workload compute	The industry-leading server for multi-workload compute	Performance and flexibility that means business	A new formula for server virtualization
Number of processors	1 or 2	1 or 2	1 or 2	1 or 2
Processors supported	Intel Xeon E5-2600 v3/v4 series	Intel Xeon Scalable processor 8100, 6100, 5100, 4100, and 3100 series	AMD Opteron 6300 Series	AMD EPYC 7000 Series
Cores per processor	4/6/8/10/12/14/16/18/20/22	4/6/8/10/12/14/16/18/20/22/24/26/28	4/8/12/16	8/16/24/32
Maximum processor frequency/cache	3.5 GHz/55 MB	3.9 GHz/38.5 MB	3.5 GHz/16 MB	3.2 GHz/64 MB
I/O expansion slots	Up to 6 PCIe 3.0, 2 x 16, 4 x 8, 2 FH/FL, 4 FH/HL	Up to 8 PCIe 3.0	Up to 6 PCIe 2.0, 1 x 16, 4 x 8, 1 x 4, 2 FH/FL, 4 FH/HL	Up to 8 PCIe 3.0
Maximum memory/# slots/speed	3 TB/24/2400 MT/s	3 TB/24/2666 MT/s	768 GB/24/1600 MT/s	4 TB/32/2666MT/s*
Maximum Persistent Memory	Up to (16) 8 GB NVDIMMs option (128 GB max)	Up to (24) 16 GB NVDIMMs option (384 GB max) Up to 1 TB Scalable Persistent Memory	N/A	N/A
Storage controller	B140i, optional Flexible Smart Array or Smart SAS HBA controllers**	S100i, optional HPE Smart Array Essential and Performance RAID Controllers**	P420i, optional**	S100i for M.2 support, optional HPE Smart Array Essential and Performance RAID Controllers**
Maximum storage drive bays	12 + 3 LFF or 24 + 2 SFF HDD/SSD, M.2 enabled Optional: Up to 6 NVMe PCIe SSD	24 + 6 SFF SAS/SATA HDD/SSD or 12 + 4 + 3 LFF + 2 SFF SAS/SATA HDD/SSD or 20 NVMe PCI SSD, M.2 enabled, optional dual uFF enablement kits	12 LFF or 25 SFF HDD/SSD	24 + 6 SFF SAS/SATA HDD/SSD or 12 + 4 + 3 LFF + 2 SFF SAS/SATA HDD/SSD or 24 NVMe PCI and 2 M.2 connectors embedded on mother board SSD, optional dual uFF enablement kits
Maximum internal storage	150 TB	459+ TB	120 TB	456 TB
Networking ports (embedded)/option	4 x 1GbE/Optional FlexibleLOM/ standup card	4 x 1GbE/Optional FlexibleLOM/standup cards	N/A/FlexibleLOM	4 x 1GbE/Optional FlexibleLOM/standup cards
VGA/serial/USB/SD ports	1 + 1/1/5/1	Display (UMB) VGA (optional)/1/5 (2 optional)/1	2/1/8/1	Display (UMB) VGA (optional)/1/5 (2 optional)/1
GPU support	Single-wide (3)/double-wide (2) and active/passive up to 10.5 cards	Single-wide (5)/double-wide (3) and active/passive up to 10.5 cards	N/A	Single-wide (5)/double-wide (3) and active/passive up to 10.5 cards*
Form factor/chassis depth	Rack (2U)/26.75" (SFF), 28.75" (LFF)	Rack (1U)/26.75" (SFF), 28.75" (LFF)	Rack (2U)	Rack (1U)/26.75" (SFF), 28.75" (LFF)
Power and cooling	Up to 2 Flex Slot, redundancy optional, 500W, 800W, or 1400W; 96% efficient (Titanium); hot plug fans with full N+1 redundancy, optional high-performance fans	Up to 2 Flex Slot, redundancy optional, 500W, 800W, or 1600W; up to 96% efficient (Titanium); hot plug fans with full N+1 redundancy; optional high-performance fans	Up to 2 Common Slot power supplies, redundancy optional, 460W, 750W, or 1200W	Up to 2 Flex Slot, redundancy optional, 500W, 800W, or 1600W; up to 96% efficient (Titanium); hot plug fans with full N+1 redundancy; optional high-performance fans
Industry compliance	ASHRAE A3 and A4, ENERGY STAR	ASHRAE A3 and A4, ENERGY STAR	N/A	ASHRAE A3 and A4, ENERGY STAR
System ROM	UEFI Legacy BIOS	UEFI Legacy BIOS	Legacy BIOS	UEFI Legacy BIOS
Management	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced, HPE OneView Advanced	HPE iLO 5, HPE OneView Standard, Intelligent Provisioning, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced; HPE iLO Advanced Premium Security Edition; HPE OneView Advanced	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, HPE iLO Amplifier Pack Optional: HPE iLO Advanced, HPE OneView Advanced	HPE iLO 5, HPE OneView Standard, Intelligent Provisioning, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced; HPE iLO Advanced Premium Security Edition; HPE OneView Advanced
Serviceability—easy install rails	Standard	Standard	N/A	Standard
Warranty—(years) (parts/labor/on-site)	3/3/3	3/3/3	3/3/3	3/3/3

* Available 1H2018

** For a full list of supported options and details, see the server QuickSpecs at **hpe.com/info/qs**.

Scale-up Servers

Do you need to scale up? Consider these HPE ProLiant 500 series servers.

	 **DL560 Gen9**	 **DL560 Gen10**	 **DL580 Gen9**	 **DL580 Gen10**
	High-density 4-socket server for multi-workload compute	The high-density scale-up server for business-critical workloads	The 4-socket enterprise standard for resource and data-intensive workloads	The resilient, highly expandable scale-up server for business critical workloads
Number of processors	1, 2, or 4	1, 2, or 4	2, 3, or 4	1, 2, 3 or 4
Processors supported	Intel Xeon E5-4600 v3/v4 series	Intel Xeon Scalable processor 8100, 6100, and 5100 series	Intel Xeon E7-4800 v3/v4 series Intel Xeon E7-8800 v3/v4 series	Intel Xeon Scalable processor 8100, 6100, and 5100 series
Cores per processor	6/10/12/14/16/18/20/22	4/6/8/10/12/14/16/18/20/22/24/26/28	4/8/10/12/14/16/18/20/22/24	4/6/8/10/12/14/16/18/20/22/24/26/28
Maximum processor frequency/cache	2.6 GHz/55 MB	3.6 GHz/38.5 MB	3.2 GHz/60 MB	3.6 GHz/38.5 MB
I/O expansion slots	Up to 7 PCIe 3.0, 1 x16, 6 x8, 6 FH/HL, 1 LP	Up to 8 PCIe 3.0	Up to 9 PCIe 3.0, 5 x16, 4 x8, 9 FH/FL	Up to 16 PCIe 3.0
Maximum memory/# slots/speed	6 TB*/48/2400 MT/s	6 TB/48/2666 MT/s	12 TB/96/1866 MT/s	6 TB/48/2666 MT/s
Maximum Persistent Memory	N/A	Up to (24) 16 GB NVDIMMs option (384 GB max)	N/A	Up to (24) 16 GB NVDIMMs option (384 GB max)
Storage controller (embedded)	Embedded SATA, optional, Flexible Smart Array or Smart Array or Smart HBA via PCIe**	S100i, optional HPE Smart Array Essential and Performance RAID Controllers**	P830i**	S100i, optional HPE Smart Array Essential and Performance RAID Controllers **
Maximum storage drive bays	24 SFF HDD/SSD, M.2 enabled Optional: Up to 6 NVMe PCIe SSD	24 SFF SAS/SATA HDD/SSD with Optional 12 NVMe SSD, M.2 enabled Optional: Dual uFF enablement kits	10 SFF HDD/SSD Optional: Up to 5 NVMe PCIe SSD	48 SFF SAS/SATA HDD/SSD Optional: 20 NVMe SSD
Maximum internal storage	96 TB	184 TB	40 TB	368 TB
Networking ports (embedded)/options	FlexibleLOM/standup card	Optional FlexibleLOM/standup cards	N/A/FlexibleLOM	Optional FlexibleLOM/standup cards
VGA/serial/USB/SD ports	2/1/9/1	2/1/9/1	2/1/8/1	2/1/9/2

** For a full list of supported options and details, see the server QuickSpecs at **hpe.com/info/qs**.

	DL560 Gen9	DL560 Gen10	DL580 Gen9	DL580 Gen10
GPU support	HL/FH (2)	HL/FH (2)	Double-wide (4)	FL/FH Double-wide (4)
Form factor/chassis depth	Rack (2U)/29" (SFF)	Rack (2U)/29.75" (SFF)	Rack (4U)/29"	Rack (4U)/29.75"
Power and cooling	Up to 2 Common Slot, redundancy optional, 1200W or 1500W	Up to 4 Flex Slot, redundancy optional, 800W or 1600W; Hot plug fans with full N+1 redundancy	Up to 4 Common Slot, redundancy optional, 1200W or 1500W, 94% efficient (Platinum Plus)	Up to 4 Flex Slot, 94% efficient 800W or 1600W; hot plug fans with N+1 redundancy
Industry compliance	ASHRAE A3 and A4, ENERGY STAR	ASHRAE A3 & A4, ENERGY STAR	ASHRAE A3 and A4	ASHRAE A3 and A4, ENERGY STAR
System ROM	UEFI Legacy BIOS	UEFI Legacy BIOS	UEFI Legacy BIOS	UEFI Legacy BIOS
Management	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced, HPE OneView Advanced	HPE iLO 5, HPE OneView Standard, Intelligent Provisioning, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced, HPE iLO Advanced Premium Security Edition; HPE OneView Advanced	HPE iLO 4, HPE OneView Standard, Intelligent Provisioning, HPE SIM, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced, HPE OneView Advanced	HPE iLO 5, HPE OneView Standard, Intelligent Provisioning, Smart Update Manager, RESTful Interface Tool, HPE iLO Amplifier Pack Optional: HPE iLO Advanced, HPE iLO Advanced Premium Security Edition HPE OneView Advanced
Serviceability—easy install rails	Standard	Standard	Standard with CMA	Standard with CMA
Warranty—(years) (parts/labor/on-site)	3/3/3	3/3/3	3/3/3	3/3/3

Which operating systems/virtual environments are supported?

HPE ProLiant rack and tower servers support the following operating systems and virtual environments:

- Microsoft®
- Red Hat®
- SUSE
- Oracle
- Canonical
- ClearOS (supported on 10, 100, and 300 series servers)

You can purchase your entire operating environment from Hewlett Packard Enterprise; we resell and provide full service and support for Microsoft Windows operating systems; Red Hat Enterprise Linux subscriptions; SUSE Linux subscriptions; and Microsoft Hyper-V, VMware®, and Red Hat Enterprise Virtualization subscriptions.

ClearOS is a simple, secure, and affordable operating system with an application marketplace of over 100 applications that allows customers to lean on their trusted IT partner to build customized solutions. ClearOS is available via CTO, Intelligent Provisioning, or via download. To learn more on what you can do, please visit **hpe.com/servers/clearos**.

For the latest operating system support information and to learn more, see: **hpe.com/info/ossupport**.

Get enhanced functionality and added benefits with HPE Server Options

Inside each HPE server are essential performance building blocks—think core DNA—such as DDR memory, storage, and network adapters. We call these building blocks HPE Server Options—designed to deliver the highest performance for any workload, deliver that performance with persistent reliability, and at economics that don't slow down your business. Thus, ProLiant Gen10 servers configured with HPE Server Options are the ideal solution for any application workload and any IT environment, from the smallest SMB site to the largest enterprise data center.

HPE Server Options are integrated with many HPE system management tools for easy configuration, maintenance, and installation, lowering your operations costs when compared to non-HPE components.

HPE Server Options have gone through a rigorous testing process for flawless installation, maintenance, and upgrade. There's a wide range of options, from storage drives, memory, network adapters, and processors, to the Rack and Power Infrastructure and beyond.

HPE Memory

Choosing the right memory is the key to getting the highest application performance, system reliability and faster return on your IT investment. HPE's portfolio includes HPE Standard Memory—suitable for smaller capacity needs—and HPE SmartMemory, for memory-intensive workloads. Customers may select from different HPE memory types and DIMM capacities to optimize server efficiency, capacity, and performance.

All HPE memory modules are tested on ProLiant server platforms beyond industry standards to diagnose problems, deliver rapid resolutions, and avoid failures. Additional authentication assures you that your memory is optimized and performance tuned for your server. For more information, visit **hpe.com/info/memory**.

HPE Server Storage

As data storage and accessibility requirements grow, you need solutions that can help overcome performance bottlenecks. HPE Server Storage for ProLiant Gen10 servers offer the industry's broadest portfolio of storage products, which include hard disk drives (HDDs), solid-state drives (SSDs), and Smart Array Controllers.

HPE Smart Array Gen10: HPE's new line of enterprise-class RAID controllers for Gen10 servers help maximize performance, data availability, and storage capacity. They deliver up to 1.6 million IOPS—65% better performance[9]—while using up to 45% less power[10] than previous generation controllers. And new mixed mode offers customers the flexibility of using both HBA and RAID mode, simultaneously, on a single controller freeing up a PCIe slot for other uses. Choose from Smart Array S-Class software RAID, and Smart Array E-Class or P-Class controllers.

- Ideal for entry-level solutions that use SATA drives in basic RAID configurations, **HPE Smart Array S-Class (Software RAID)** delivers the efficiency needed to address evolving data storage needs. Features include RAID levels 0/1/5, support for 6G SATA, and access to the Unified Extensible Firmware Interface (UEFI) configuration tool.
- Cost-effective **HPE Smart Array E-Class Controllers** provide simple RAID storage and enablement for software-defined storage with enterprise-class reliability and security. Key features include RAID on Chip (ROC) and RAID levels 0/1/5/10. This controller operates in mixed mode, encrypts any drive connected to it with HPE Smart Array SR Secure Encryption, and provides simplicity with the UEFI configuration tool.

[9] Internal lab testing performed January 2017 comparing HPE Gen9 to Gen10 Smart Array Controllers with 4 KB random read test.

[10] Internal lab testing performed October 2016 comparing HPE Gen9 vs. Gen10 Smart Array Controllers.

- Maximize the performance of enterprise-class server storage with **HPE Smart Array P-Class Controllers**. These controllers are supported on HPE ProLiant rack and tower, BladeSystem, and Apollo servers, and Synergy Compute Modules. Key features include raid-on-chip (ROC), support for flash-backed write cache (FBWC), and advanced RAID levels 0/1/5/6/10/50/60 ADM. This controller operates in mixed mode, encrypts any drive connected to it with HPE Smart Array SR Secure Encryption, and provides simplicity with the UEFI configuration tool.

Gen9

HPE Smart Array Gen9 controllers are ideal for maximizing performance while supporting advanced RAID levels. Smart Array controllers offer encryption for data-at-rest on any drive connected to the controller. Smart Array controllers also offer flash-backed write cache to provide enterprise-class storage performance and reliability. HPE offers a complete portfolio of enterprise-class RAID controllers with fault tolerance for ProLiant servers and advanced functionality to simplify the user experience and maximize uptime.

HPE Smart HBA Gen9 controllers provide an enterprise level, cost-effective solution for RAID 0, 1, 5, and 10 and software-defined storage solutions. Smart HBA controllers offer encryption for data-at-rest on any drive connected to the controller. HPE has several models of Smart HBA and Smart Array controllers which allow for connecting to internal drives within the server or to external attached drives in a JBOD or MSA to meet the various needs for SAS storage connectivity to ProLiant servers.

HPE hard disk drives (HDDs) deliver proven performance for any workload with reliable data integrity and security at the lowest cost per gigabyte. Available for three types of workloads: enterprise (performance optimized), midline (capacity optimized), and entry. With two interfaces: SAS (12G) and SATA (6G); two form factors: SFF (2.5") and LFF (3.5").

- **Enterprise HDDs** (SAS 15K and 10K) deliver the highest levels of performance and reliability for your mission-critical and I/O-intensive applications.
- **Midline HDDs** (SAS/SATA 7.2K) deliver high capacity, performance, and reliability for your business-critical applications.
- **Entry HDDs** are built for non-critical needs for today's server applications and storage environments. These high-capacity drives provide the lowest $/GB.

Accelerate the performance of your data-intensive applications with HPE solid-state drives (SSDs) offering high performance and low latency for enterprise environments. HPE SSDs come in six form factors: SFF (2.5"), LFF (3.5"), M.2, M.2 Enablement Kits, Mezzanine and Add-in Cards. They are available in three broad categories based on target workloads: Read Intensive, Mixed Use, and Write Intensive.

The workloads indicate the number of drive writes per day (DWPD) that you can expect from the drive.[11]

- Read Intensive SSDs are typically the lowest price with endurance of <= 1 DWPD. Ideal for boot/swap, web servers, and read caching.
- Write Intensive SSDs typically have the highest write performance, with a typical endurance of >= 10 DWPD. Ideal for online transaction processing (OLTP), business intelligence, and Big Data analytics.
- Mixed Use SSDs are for workloads that need a balance of strong read and write performance, with Endurance typically > 1 and < 10 DWPD. Ideal for high I/O applications with workloads balanced between read and write.

[11] The workloads indicate the number of drive writes per day (DWPD) that you can expect from the drive. DWPD is the maximum number of 4K host writes to the entire drive capacity of the SSD per day over a five-year period.

Resources
HPE Server Options home page

HPE Rack and Power Infrastructure home page

All HPE server drives feature HPE Digitally Signed Firmware, which prevents unauthorized access to your data by providing the assurance that the drive firmware comes from a trusted source and has not been altered. Each drive is also backed by 3.35 million hours of the industry's most rigorous testing and qualification program.[12] For more information, visit **hpe.com/info/serverstorage**.

HPE Persistent Memory

HPE Persistent Memory has the right offerings that will transform IT infrastructures providing new levels of performance while delivering high levels of reliability and efficiency. HPE has the broadest persistent memory portfolio in the market consisting of high performing NVDIMMs and HPE Scalable Persistent Memory,[13] an integrated storage solution that runs at DRAM speeds. HPE Persistent Memory helps customers keep pace with today's business demands by delivering the performance of memory with the persistence of storage.

HPE Scalable Persistent Memory has three primary components, a layer of DRAM for application acceleration, a dedicated flash tier for persistency and a backup power source to facilitate moving data from DRAM to Flash. HPE Scalable Persistent Memory enables much larger in-memory compute with persistence, delivering up to 27X faster[14] checkpoint operations resulting in much faster business operations and up to 20X reduction[15] in database restart time preserving maximum uptime. HPE Scalable Persistent Memory can also benefit HTAP, software-defined storage caching tiers and more.

HPE 8 GB and 16 GB NVDIMMs are flash-backed DIMMs designed to eliminate smaller storage bottlenecks while delivering DRAM-level performance. This means customers can access, analyze, and act on data more quickly to gain competitive advantages. Significantly reduce software licensing by up to 50%,[16] using NVDIMMs with fewer server core pairs (reduced core pair licensing from database vendors) vs. using block storage devices. For more information, visit **hpe.com/info/persistentmemory**.

HPE Server Network Adapters

Cost-effective, dependable server networking products keep your IT running reliably and at peak performance. From switches to network adapters to transceivers and cables to the latest 50 Gb Ethernet technology, HPE Server Networking adapters are designed, developed, and tested to deliver state-of-the-art, secure performance.

These adapters help prevent, detect, and recover from cyber-attacks by protecting applications, data and server infrastructure through authentication of digitally signed firmware via a Root of Trust architecture. In addition, they offer Secure Boot, Device-level Firewall, and other advanced security features. For more information, visit **hpe.com/info/networking**.

HPE Rack and Power Infrastructure

Your data center is required to provide the foundational agility and compute power to support your business and enable your customers. But it can't be overlooked that your data center also has the same needs—infrastructure, agility, and compute power—to perform effectively. HPE Rack and Power Infrastructure provides configurable, state-of-the-art infrastructure solutions out of the box that can meet the needs of businesses of all sizes, now and in the future. HPE Rack and Power Infrastructure offerings deliver server rack, power, and cooling solutions that give you the maximum level of efficiency and integration for data centers of all sizes. For more information, visit **hpe.com/info/rackandpower**.

HPE Power Supplies

HPE Power Supplies offer high-efficiency operation and multiple input and output options, allowing users to right size a power supply for specific server/storage configurations and environments. This flexibility helps to minimize power waste, lower overall energy costs, and avoid trapped power capacity in the data center.

For complete information on the HPE Server Management portfolio, refer to the webpage at **hpe.com/info/servermanagement**.

[12] HPE Internal Lab Testing. 3.35M hour test quant is derived from a combination of drive qualification test plans, specifically HDDQ spec-supplier responsibility to perform, HDDQ spec-HPE responsibility to perform, Reliability Demonstration Test (RDT) spec, CSI integration test spec and Pilot test requirements. May 2017.

[13] HPE Scalable Persistent Memory supported only on the DL380 Gen10.

[14] TPC-C Benchmark Throughput with Checkpoint (trans/sec). Calculated Time to Checkpoint and Restore a Docker Container running MySQL, compare Persistent memory vs. SSD, November 2016.

[15] HPE internal lab testing. With at least a 20X faster restart (1000 GB Hekaton Database vs. restarting 200 GB database) with HPE Scalable Persistent Memory, March 31, 2017.

[16] HPE internal lab testing. Data gathered on pre-release hardware and software, final results may differ, March 31, 2017.

HPE Support for ASHRAE guidelines
Data center cooling systems represent a significant portion of your capital expenditure (CAPEX) and use a substantial amount of energy.

Hewlett Packard Enterprise supports the adoption of less expensive and eco-friendly cooling methods encouraged by the latest American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) guidelines for temperature and humidity operating ranges of IT equipment.

Most HPE Gen10 server products support the 2014 ASHRAE class A3 guidelines or higher. Available 2H2017.

For specific server details, visit **hpe.com/servers/ashrae**.

For additional details on supported options, refer to the server QuickSpecs at **hpe.com/info/qs**.

HPE server and infrastructure management software

For better insight and control

Today, most IT professionals wrestle with numerous management pains, including:

- **Infrastructure management complexity**—There are too many infrastructure management tools to learn and operate, resulting in high IT operating expenses. This proliferation drives up software license costs, as well as increases the time and cost of maintenance—including skills maintenance.
- **Scale and speed**—In enterprise data centers with thousands or tens of thousands of servers, traditional infrastructure management tools cannot scale or operate at the high speeds necessary to effectively manage server sprawl.
- **Siloed infrastructure and outdated IT operational models**—There are often too many non-standard manual tasks, an over-reliance on subject matter experts, and an ever-expanding backlog of projects. The answer to these challenges is to follow a new IT operational model—namely the software-defined data center (SDDC).
- **Planned and unplanned downtime**—Depending on your line of business, the cost of downtime can be millions of dollars of lost revenue. Knowing these costs, IT pros need tools and processes designed to eliminate or dramatically reduce downtime.

To address these gaps, a new management methodology is required—one that drives better system control and greater insight into problems before they occur. And Hewlett Packard Enterprise has it.

HPE infrastructure management is delivered through a complete portfolio of HPE ProLiant lifecycle management capabilities that can flexibly operate from embedded management and system utilities, converged management for software-defined data centers, and support management. Managing HPE ProLiant servers with HPE infrastructure management results in increased efficiency and precise control of resources, with a rich set of capabilities that are easy to access and simple to use, HPE infrastructure management encompasses critical areas such as server deployment and configuration, health and alerting, energy, power, remote management, and warranty and contract information access via a cloud-based portal. The core components that comprise HPE infrastructure management are Embedded Management, Integrated Lights-Out (iLO), and HPE OneView. With HPE infrastructure management's built-in automation, HPE ProLiant servers are so intelligent that they practically manage themselves.

In addition, scripting tools such as the Scripting Tool Kit (STK) as well as Service Pack for ProLiant and Smart Update Manager provide breakthrough system maintenance tools that systematically update HPE ProLiant rack and tower servers with one-click simplicity at the scale of your data center.

HPE OneView infrastructure management

HPE OneView is your infrastructure automation engine to simplify operations, increasing the speed of IT delivery for new applications and services. Through software-defined intelligence, HPE OneView brings a new level of automation to infrastructure management by taking a template driven approach to provisioning, updating, and integrating compute, storage, and networking infrastructure. Designed with a modern, standard-based API and supported by a large and growing partner ecosystem, HPE OneView also makes it easy to integrate powerful infrastructure automation into existing IT tools and processes.

Take command with HPE OneView to:

- **Deploy infrastructure at cloud like speed:** Template-based automation enables IT generalists to rapidly and reliably provision resources in response to application owner requirements.
- **Simplify lifecycle operations:** Agentless monitoring, online frictionless, non-disruptive firmware updates, autodiscovery of hundreds of servers in just one click, and the Global Dashboard software deliver streamlined lifecycle operations at scale.
- **Develop more apps faster:** The unified API gives developers and ISVs the power to unify infrastructure automation with application and IT service delivery.

HPE OneView innovations provide you the industry's best infrastructure management experience, simplifying operations for HPE BladeSystem, HPE ProLiant servers, HPE Apollo servers and HPE Superdome X systems, HPE StoreServ 3PAR storage, HPE StoreVirtual VSA iSCSI storage, HPE Networking, and HPE ConvergedSystem. It is an essential ingredient in the HPE Hyper Converged 380 virtual machine vending environment and powers management for the industry's first composable infrastructure, HPE Synergy. By deploying HPE OneView today, you place your IT operations firmly on the path toward a composable future.

Please note that the HPE OneView license includes the right to use HPE Insight Control until you complete your transition.

HPE iLO 5 server management
HPE Integrated Lights-Out (iLO) allows you to configure, monitor and update your HPE servers seamlessly from anywhere in the world. Providing you with consistent insight into the health and operation of your servers, HPE iLO arms you with the tools to resolve issues and keep your business running. Featuring the latest innovations in simplified operations, performance, and security, HPE iLO allows you to manage your entire server environment with ease.

Upgrade your licenses for additional functionality, such as graphical remote console, multi-user collaboration, video record/playback, and much more. Use the **HPE iLO Licensing Guide** to determine which of our three licensing upgrade options is right for you.

iLO Advanced Premium Security Edition
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**.

iLO Advanced
Ideal for the enterprise environment, this license provides advanced remote functionality and all the HPE iLO features to improve speed, scale, and simplicity. Key features include Integrated Remote Console, Virtual Media and iLO Federation (rapid discovery, inventory and management at scale).

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

iLO Essentials
This license offers remote server management features that are uniquely designed for small and midsize business at an affordable price.

Learn more at **hpe.com/servers/ilo/essentials**.

iLO Scale-Out
For companies with massive scale-out data centers, this license delivers advanced power management and scripting tools to help lower operating costs.

Learn more at **hpe.com/servers/ilo/scale-out**.

In addition to embedded offerings like iLO, other products and tools, such as System Utilities, **Intelligent Provisioning**, **Smart Update Manager** (SUM), **Service Pack for ProLiant** (SPP), **iLO Amplifier Pack**, **Active Health System Viewer** and scripting tools such as **RESTful Interface Tool**, **Scripting Toolkit for Windows and Linux**, and **Scripting Tools for Windows PowerShell**, are available to all HPE ProLiant server customers.

Optimize performance with Intelligent System Tuning
Intelligent System Tuning (IST) is a new set of server tuning technologies that enable you to dynamically configure server resources to match specific workloads. IST produces significant performance improvements, real savings, and a more intelligent server environment.

Jitter Smoothing
Engaging processor turbo boost can cause frequency fluctuations or "jitter" which results in a constant struggle between maximum output and deterministic performance needs. HPE's Jitter Smoothing technology mitigates processor frequency fluctuation to reduce latency and deliver deterministic and reliable performance. In variable workloads where processor frequency changes occur often, Jitter Smoothing can improve overall throughput above turbo boost mode alone.[17]

Jitter Smoothing is ideal for high frequency traders, high performance computing, and workloads where processor frequency is highly variable.

Available on all Gen10 Intel based servers with iLO 5 and an iLO Advanced or above license.

Core Boosting
Maximize the performance of all of the cores in your Intel processors. Core Boosting is ideal for virtualized environments, high performance computing, and Big Data analytics where maximum performance is required. Lower core-based licensing costs by using fewer cores for your workloads. Two processors are available on the ProLiant DL360, DL380, DL560 and DL580 Gen10 Servers, the Intel Xeon Gold 6143 processor and the Intel Xeon Platinum 8165 processor. Core Boosting also requires an iLO Advanced and may require additional hardware options.*

Workload Matching
Automatically match internal server resources to the specific requirements of your workload. Workload Matching offers preconfigured workload profiles that tune your server's BIOS settings for optimal performance and can save hours of server tuning time.

Available on all ProLiant Gen10 AMD and Intel based servers with iLO 5.

For more information, visit **hpe.com/info/ist**

[17] HPE internal testing from the Performance Engineering Benchmarking team, April 2017.

* Requires HPE high performance heatsinks and fans.

Maximize Security with AMD EPYC
The AMD EPYC processor provides several security related features, including AMD secure processor, secure memory encryption (SME), and secure encrypted virtualization (SEV). The AMD secure processor technology ties with and compliments, the HPE Silicon Root of Trust at the UEFI or BIOS level as an added validation of the BIOS during the boot process. The AMD secure processor validates the BIOS, upon boot-up, that there are no firmware anomalies or compromised code present. After this confirmation, the server boot process is allowed to continue. The AMD secure memory encryption provides encryption on data stored in the server memory. The AMD secure encrypted virtualization creates security between virtual machines on the HPE ProLiant server, when supported by operating system and hypervisor software.

Available on all ProLiant Gen10 AMD based servers with iLO 5.

HPE storage solutions for HPE ProLiant servers

No matter what your storage needs, HPE offers virtualized shared storage, data protection, and data retention and archiving solutions that complement your HPE ProLiant investment and are designed to offer a seamless service, support, and management experience. With storage solutions for any scale, performance or investment level, you can handle more workloads more simply and more affordably by combining servers and storage solutions from HPE.

HPE disk enclosures
Manage growing storage needs with modular solutions for ProLiant capacity expansion. HPE disk enclosures let you expand your ProLiant server storage capacity at a low cost for a variety of general use cases. For more information, visit **hpe.com/storage/disk-enclosures**.

Entry-level shared storage
When performance and scale are your priorities, HPE also offers low-cost external storage systems that deliver the benefits of virtualized, shared storage and file sharing capably designed with ProLiant server users in mind. Our flexible entry storage options let you choose from direct attached storage to extend your server capabilities, NAS appliances for file sharing and home directory consolidation, and highly scalable shared storage arrays for physical and virtual applications that can run on your existing IP network or a dedicated Fibre Channel SAN. For more information, visit **hpe.com/storage/entry**.

All-flash and hybrid flash storage
The world is changing, fast. An all-flash data center is now a reality thanks to Nimble Storage, a Hewlett Packard Enterprise company—with a choice between all flash and adaptive flash arrays—and the HPE 3PAR StoreServ family of all-flash and flash-optimized arrays. These lightning fast arrays deliver 99.9999% uptime with built-in resiliency. In addition, HPE Nimble Storage offers radical simplicity of management and a transformative support experience through HPE InfoSight Predictive Analytics. For more information, visit **hpe.com/storage/flash**.

Data availability, protection, and retention
Today's businesses demand aggressive service levels. Data loss, risk, and downtime must be avoided at all costs. When an outage does occur, recovery time must be minimized. HPE can equip you meet the most stringent Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs), all while reducing your protection storage capacity requirements. Learn more about our affordable portfolio of modern data availability, protection, and retention solutions with the right scale, performance, and application integration to meet your needs. For more information, visit **hpe.com/storage/bura**.

HPE Financial Services
Our IT investment solutions can help you modernize and expand your servers with better economic control, control that will help you extend your capacity to fund IT for business transformation. We can help you increase financial agility to scale and manage change. Access the best IT more affordably when you need it.

Select the program that fits your goals

- **Transition from old legacy IT to new Hybrid IT:** Shift existing owned assets to a flexible usage payment model. Receive the value hidden in your existing IT equipment to invest in new technology innovation.
- **Increase deployment flexibility:** Acquire forecasted compute and storage capacity in advance of the actual need, begin monthly payments as you deploy and install it over 12 months.
- **Manage experimental deployments:** Lower risks and improve control with built in flexibility to return equipment without penalty within a set time window.
- **Routinely refresh your servers:** Regularly update your IT infrastructure more affordably every 24–48 months for predictable monthly or quarterly payments.
- **Simplify IT consumption for small and mid-sized businesses:** Subscribe to a complete, customized solution for a predictable monthly subscription fee and eliminate the hassle of ownership. Trade in your old IT to make room for a new subscription.

Optimize your IT investment strategy with new ways to acquire, pay for and use technology, in lock-step with your business and transformation goals.
hpe.com/solutions/hpefinancialservices

Storage management and orchestration
With Hewlett Packard Enterprise, you can get past hardware management limitations with open, automated orchestration. Control storage, compute, and networking resources as well as data services across physical and virtual domains. It's all compatible with many third-party tools and fully integrated into HPE data storage solutions—from flash-optimized to software-defined. For more information, visit **hpe.com/storage/management**.

Storage networking
Hewlett Packard Enterprise provides dynamic end-to-end solutions, solving your storage networking challenges with nearly 15 million storage area network (SAN) fabric ports deployed worldwide. Agile HPE StoreFabric host adapters, multi-protocol switches and highly scalable directors for cloud-optimized SANs ensure reliability and high performance. For more information, visit **hpe.com/storage/san**.

Integration services

HPE Factory Express provides customization and deployment services along with your storage and server purchases. You can customize hardware to your exact specifications in the factory—helping speed deployment. For more information, visit **hpe.com/info/factoryexpress**.

Training and certification

Gain the skills you need with ExpertOne training and certification from Hewlett Packard Enterprise. With HPE ProLiant server training, you will accelerate your technology transition, improve operational performance, and get the best return on your Hewlett Packard Enterprise investment. Our training is available when and where you need it, through flexible delivery options and a global training capability. For more information, visit **hpe.com/ww/learnproliant**.

HPE Pointnext

HPE Pointnext leverages our strength in infrastructure, partner ecosystems and the end-to-end lifecycle experience, to accelerate powerful, scalable IT solutions to provide you the assistance for faster time to value. HPE Pointnext provides a comprehensive portfolio including Advisory and Transformational, Professional, and Operational Services to help accelerate your digital transformation.

Operational Services

- **Flexible Capacity:** An infrastructure service that offers on-demand capacity, combining the agility and economics of public cloud with the security and performance of on-premises IT.
- **Datacenter Care:** HPE's most comprehensive support solution tailored to meet your specific data center support requirements. It offers a wide choice of proactive and reactive service levels to cover requirements ranging from the most basic to the most business-critical environments. HPE Datacenter Care Service is designed to scale to any size and type of data center environment while providing a single point of contact for all your support needs for HPE as well as selected multivendor products.
- **Proactive Care:** An integrated set of reactive and proactive services designed to help you improve the stability and operation of your device.
- **Foundation Care:** Support for HPE servers, storage, networking hardware and software to meet your availability requirements with a variety of coverage levels and response times.

Continued success built on commitment
With one HPE ProLiant server shipping every 15.8 seconds and more than 41.1 M servers shipped through CQ1 2017, HPE tied with Dell in x86 Server shipments (21% of market share for both).[18] The success of HPE ProLiant stems in part from our ongoing commitment to providing a complete industry-standard server infrastructure that delivers innovation, quality, and proven performance.

Advisory and Transformation Services—HPE Pointnext designs the transformation and builds a road map tuned to your unique challenges including Hybrid IT, Workload and Application Migration, Big Data, and the Intelligent Edge. HPE leverages proven architectures and blueprints, integrates HPE Enterprise Group and partner products and solutions, and engages HPE Pointnext Professional and Operational Services teams as needed.

Professional Services—HPE Pointnext creates and integrates configurations that get the most out of software and hardware, and works with your preferred technologies to deliver the optimal solution. Services provided by the HPE Pointnext team, certified channel partners, or specialist delivery partners include installation and deployment services, mission-critical and technical services, and education services. For more information visit **hpe.com/info/pointnext**.

HPE server families

A server for every need
Hewlett Packard Enterprise understands that when it comes to servers, one size does not fit all. That's why we offer you a comprehensive array of server families, designed for a wide variety of business needs. Explore our other server portfolios:

- **HPE BladeSystem family**—Simplify your data center with modular infrastructure platform.
- **HPE Hyperconverged**—Smaller, faster systems with integrated storage, networking, compute, and virtualization.
- **HPE ConvergedSystem**—Optimized for Big Data, client virtualization, cloud and density optimized workloads.
- **HPE Moonshot System family**—Software-defined servers designed for specific workloads.
- **HPE Apollo System family**—Purpose-built platforms delivering extreme performance, scale, and efficiency for your AI and HPC workloads.
- **HPE Edgeline IoT Systems**—Edge computing that delivers secure control and accelerate time to insight from the Industrial Internet of Things.
- **HPE Cloudline Server**—Open systems that keep service providers ahead of growth, ensure adaptability and reduce costs while complying with Open Compute Project standards.
- **HPE Synergy**—A new category of infrastructure that accelerates application delivery in both traditional and new IT environments.
- **HPE Integrity server family**—High-speed, resilient, mission-critical servers that exceed the demands of today's always-on world.

Learn more at
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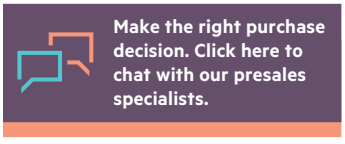
[18] IDC Worldwide Quarterly Server Tracker CQ1 2017.



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