HP ProLiant Gen9 series

Reimagine the server

Performance meets efficiency to transform your business
Optimize your IT to drive higher business value

Delivering high-quality services with greater speed and efficiency is one of the greatest pressures facing your information technology (IT) infrastructure. The rise of cloud computing, expansive mobility options, fast-growing pools of data, and expanding security threats add even more complexity to your day. Traditional, siloed IT systems are often too laborious and slow to overcome these challenges.

Today’s data-driven organizations need a converged, cloud-ready, software-defined infrastructure that can adapt to their unique and evolving business demands. This starts with a foundation of efficient and agile servers that can deliver the right compute resources for any workload—enabling you to run operations more efficiently, deliver IT services faster, and increase productivity and performance across your business.
As server environments become more virtualized, businesses are struggling to balance the demands of their increasingly mobile workforce, while also continuing to streamline day-to-day server management. What’s more, traditional operations consume roughly 50% of companies’ overall IT budgets, diverting time and resources from innovation and other valuable business opportunities.

Siloed infrastructures and manually intensive IT management processes also waste valuable IT time, especially when combined with poor application workload performance. These obstacles create greater opportunity for errors and often result in an expanding backlog of projects. In order to stay a step ahead, businesses require converged systems that help speed up the delivery of products and services.

HP is leading the way toward a more business-centered approach to IT. Built around the latest generation of servers, HP solutions create more value by helping organizations better align their IT infrastructures with their preferred business outcomes. HP ProLiant Gen9 servers redefine the role of your IT infrastructure by helping drive business growth and innovation, while reducing IT management tasks from hours to mere seconds.

Building on 25 years of server market leadership, the HP ProLiant Gen9 portfolio—which includes HP OneView software for simplified, converged management—offers optimal performance, increased storage, reduced energy consumption, and greater visibility and control across IT environments. Now everyone from enterprises to small and medium businesses (SMBs) can lower the cost of IT services, reduce delivery times, and improve their overall performance to gain a competitive edge.

HP ProLiant Gen9 servers redefine the role of your IT infrastructure in helping drive business growth and innovation, while reducing IT management tasks from hours to mere seconds.

$100,000 Average amount in lost business opportunities, due to slow and inefficient service delivery times

$100,000

Average amount in lost business opportunities, due to slow and inefficient service delivery times
Chapter 1

The foundation for a business-centered compute approach
The foundation for a business-centered compute approach

Let the transformation begin

As the market leader in delivering converged solutions, we’ve designed HP ProLiant Gen9 servers for the realities of today’s virtualized infrastructures. This new generation of servers can help you maximize data center capacity, accelerate time to service, and boost business performance at a lower cost and higher overall value.

HP ProLiant Gen9 servers are the foundation of an innovative HP computing portfolio. Our converged infrastructure integrates servers, storage, networking, and services to help maximize IT efficiency and boost performance. With the addition of HP OneView—a single, software-defined management platform available on all HP ProLiant Gen9 rack and blade servers—businesses can deploy on-site IT resources at cloud speed. HP OneView also allows faster virtual machine (VM) provisioning, automated configuration and management, and a smoother transition to the Infrastructure-as-a-Service (IaaS) model.

Our latest HP ProLiant Gen9 servers and HP Apollo Systems are supported by the new Intel® Xeon® E5-2600 v3 series processor, which enables even faster performance, more intelligent management, and greater efficiency. Backed by more than four decades of industry-leading innovation, the new wave of HP servers can help you grow your business today and prepare for tomorrow’s challenges.
Redefine compute economics

Infrastructure innovations that transform red to black

As your infrastructure grows, power and cooling costs can consume an ever-larger piece of your IT budget. HP ProLiant Gen9 server innovations give you the tools you need to shrink costs, not expand them. With more storage, flexible configuration and networking options, and lower energy and space consumption, the newest generation of HP servers can help triple your compute capacity at half the total cost of ownership.

Key features

Greater storage capacity
Using proven and reliable 12 GB SAS SSD, get up to two times the compute per watt, for every dollar.

Better total cost of ownership
62% TCO savings over 3 years, including initial acquisition cost vs. previous-generation servers— to help you save on energy costs.

Flexible, tailored options
A variety of choices in server, storage, networking, and power means you’ll experience greater efficiencies—even across multiple workloads.

Energy-efficient performance
Reduce power consumption without impacting IT performance. HP Flexible Slot Power Supplies are 25% smaller and 94% more efficient than common slot versions, delivering up to three times more compute performance per square foot.
Accelerate service delivery

On-site IT delivered at the speed of the cloud

IT support issues often consume an excessive share of your attention and can distract your team from more important work. HP ProLiant Gen9 servers are designed to provide faster configuration, provisioning, and service—for IT at the speed of the cloud. Now you can clone virtual machines in seconds rather than days, and experience up to 66 times quicker provisioning.\(^9\)

All HP ProLiant Gen9 rack and blade servers also include the HP OneView platform, which accelerates IT service delivery by automating configuration and management tasks, and enabling three times faster VMware provisioning.

### Key features

**Automated life cycle management**
Secure and reliable embedded management tools provide quicker setup, monitoring, and firmware maintenance.

**Fewer errors and interruptions**
HP Proactive Care allows you to prevent problems before they occur, and keeps your business running smoothly with priority access to advanced specialists and periodic reports.

**Faster provisioning and deployment**
Get up and running faster with HP OneView and HP Helion OpenStack\(^9\), which allow you to deploy VMware in just five easy steps, and receive infrastructure and application services in minutes.\(^9\)
Chapter 1

The foundation for a business-centered compute approach

Boost business performance

IT that fast-forwards your success

Staying ahead of your competition—and gaining a bigger share of the market—requires a smart, nimble infrastructure that moves at the pace of your business. HP ProLiant Gen9 servers can help you transform your organization with innovations that deliver faster workload and networking performance, better memory and I/O, and increased storage.

Experience up to 33% improved memory performance with HP DDR4 SmartMemory\textsuperscript{11} and 70% increased performance\textsuperscript{12} across multiple workloads with Intel Xeon E5-2600 v3 series processors—available on all HP ProLiant Gen9 servers.

Optimized storage performance in HP ProLiant Gen9 servers delivers four times faster workload performance compared with the previous generation\textsuperscript{13} and allows more transactions per server than ever before. Increased networking performance and lower latency enable you to maximize the value of your service in order to increase your revenue margins, make smarter decisions, and achieve business goals more quickly.

\begin{itemize}
  \item \textbf{Key features}
  \begin{itemize}
    \item \textbf{Optimized storage performance}
      Meet the demands of virtualized and data-intensive workloads with a system customized for SSD. HP SmartCache delivers up to four times faster infrastructure and core business workload performance with solid-state storage compared with previous-generation drives.\textsuperscript{13}
    \item \textbf{Better memory and I/O}
      HP DDR4 SmartMemory (up to 2133 MHz) provides up to 33% faster memory performance for HP ProLiant Gen9 servers.\textsuperscript{11}
    \item \textbf{Increased networking performance and bandwidth}
      New adapters improve small packet processing performance by up to four times\textsuperscript{14} and deliver twice the networking bandwidth\textsuperscript{15} at the lowest cost—the industry’s only solution that runs both 10 Gigabit Ethernet and 8 Gigabit Fibre Channel on a single port at the same time.
  \end{itemize}
\end{itemize}
Chapter 2

Selecting the right HP ProLiant Gen9 server
A server for every workload

Rely on HP ProLiant Gen9 server solutions to deliver the right compute, for the right workload, at the right economics—every time.

Whether it’s a departmental server, an enterprise data center, a remote branch or office, or anything in between, HP’s line of ProLiant servers—available in tower (ML), rack-optimized (DL), blade (BL), and hyperscale (SL and XL) options—can meet your exact needs.

HP gives you the simplicity and freedom to build IT that’s truly optimized for your business—with compute blocks for everyday workloads, converged systems for high-intensity virtualized or cloud workloads, or even an entire converged data center. Built on the same HP ProLiant Gen9 foundation, these servers can be delivered on premise or as a service. And as always, they’re backed by HP—the worldwide leader in virtualization infrastructure.

HP ProLiant Gen9 servers maximize your IT operational efficiency by offering industry-leading return on investment and total cost of ownership over a traditional infrastructure. Investing in HP ProLiant Gen9 enables your IT team to run smarter operations—delivering more energy capacity, more compute per square foot, and increased administrative productivity. Postpone data center capital expenses and free up resources so you can focus on innovation to meet your high-priority business requirements.
HP ProLiant 10 Series Gen9 servers

The HP ProLiant 10 Series Gen9 rack servers (DL60, DL80) are simple, easy to deploy, and affordably designed for SMBs needing the right-sized servers for first-time workload deployment.

**HP ProLiant DL60 Gen9**

Powered by Intel Xeon E5-2600 v3 series processors, the HP ProLiant DL60 Gen9 provides just the right combination of density, performance, and manageability—all in a compact 1U chassis. The affordably priced server is ideal for cost-conscious service providers and SMBs to cover all their task and work environment needs—file and print, messaging, collaboration workloads, and cloud computing.

- **Key features**
  - Dense 2-socket, 1U rack form factor offers scalability packaged in a dense design.
  - Compute and I/O density with 8 HP DDR4 SmartMemory DIMM slots, up to two Intel Xeon E5-2600 v3 processors, and three PCIe 3.0 slots.
  - FlexibleLOM support for networking flexibility to adapt and grow.

HP OneView and HP iLO Advanced help accelerate IT service delivery and streamline management.

**HP ProLiant DL80 Gen9**

With affordable storage and I/O expandability, the HP ProLiant DL80 Gen9 is an ideal fit for service providers and SMBs—and also offers just enough compute capabilities for basic IT infrastructure workloads. Housed in a 2U chassis, the server offers the right mix of storage, networking, processor scalability, and manageability.

- **Key features**
  - Affordable storage and scalability in a 2-socket, 2U design.
  - Compute and I/O expandability with up to 12 large form factor (LFF) bays, HDD/SSD drives, and up to six PCIe 3.0 slots.
  - FlexibleLOM and embedded NIC provide network flexibility to adapt and grow.
  - HP OneView and HP iLO Advanced help accelerate IT service delivery and streamline management.
Selecting the right HP ProLiant Gen9 server

Chapter 2

HP ProLiant 100 Series Gen9 servers

HP ProLiant Gen9 Rack and Tower Essential Servers are right-sized to run the New Style of IT—including web, collaboration, and business workloads—making them the most versatile of the HP ProLiant server solutions. HP ProLiant 100 Series Gen9 servers (DL120, DL160, DL180, ML110, ML150) are optimized with the right balance of storage, performance, efficiency, and manageability to address multiple workloads for growing SMBs and enterprise businesses.

**HP ProLiant DL120 Gen9**

Powered by the Intel Xeon E5-2600 v3 series processor, the HP ProLiant DL120 Gen9 packs an enterprise-class design in a dense 1U/1-socket form factor. The server offers a superior combination of performance, redundancy, and expandability compared with traditional 1P servers, making it ideal for the growing needs of virtualization and general-purpose workloads.

- **Key features**
  - High-capacity 8 HP DDR4 SmartMemory DIMM slots support up to 256 GB of memory, generating better performance than traditional single-socket servers.
  - Virtualization capabilities maximize the value of IT infrastructures, reduce costs, boost efficiencies, and offer leading flexibility.
  - Embedded 2x1 Gigabit Ethernet with optional FlexibleLOM provide you networking flexibility to adapt and grow.

HP OneView and HP iLO Advanced offer embedded tools to help streamline management.

**HP ProLiant DL160 Gen9**

The compact HP ProLiant DL160 Gen9 Server provides right-sized performance and storage density, making it well-suited for a small to midsize business or service provider. You get exceptional reliability, manageability, and efficiency in a 2P rack design that fits your available space and won’t strain your budget.

- **Key features**
  - Dense design offers increased scalability and efficiency for hyperscale environments.
  - Embedded 2x1 Gigabit Ethernet with optional FlexibleLOM provide you networking flexibility to adapt and grow.
  - Compute and I/O density with 16 HP DDR4 SmartMemory DIMM slots, up to two Intel Xeon E5-2600 v3 series processors, and three PCIe 3.0 slots.

HP OneView and HP ILO Advanced offer embedded tools to help streamline management.

**HP ProLiant DL180 Gen9**

Designed with just the right balance of scalability and performance, the HP ProLiant DL180 Gen9 Server is an optimized 2U model that helps growing businesses, data centers, and service providers alike manage their infrastructures more efficiently. With high availability and efficiency for dense storage applications, this server allows for more agile management that enables accelerated service delivery.

- **Key features**
  - Variety of storage density and configurations with HP SmartDrives enables scalability for a wide range of storage workloads.
  - Embedded 2x1 Gigabit Ethernet and choice of HP FlexibleLOM provide you networking flexibility to adapt for growth.
  - Standard HP Dynamic Smart Array B140i and choice of HP Smart Array controllers for increased performance.

HP OneView and HP ILO Advanced offer embedded tools to help streamline management.
Selecting the right HP ProLiant Gen9 server

Chapter 2

HP ProLiant Gen9 tower servers

HP ProLiant Gen9 Rack and Tower Scale-up Servers are designed for today’s demanding scale-up workloads. HP ProLiant ML110 and ML150 Gen9 servers are designed to cover a wide range of needs and grow with your business.

HP ProLiant ML110 Gen9

Built for the needs—and budgets—of small to midsize businesses, the HP ProLiant ML110 Gen9 Server is compact and quiet, yet provides room to grow with the needs of your office. This single-processor server is also ideal for remote and branch offices.

Key features

- Up to eight DIMM slots with support for up to 256 GB of HP DDR4 SmartMemory.
- HP SmartDrives deliver optimal performance, capacity, and reliability to satisfy a wide range customer segments and workload requirements.
- Five PCIe expansion slots, eight USB ports, and a redundant power supply option provide flexible expansion options.
- HP iLO Advanced and HP Insight Control streamline essential management tasks for controlling, provisioning, and optimizing the server.

HP ProLiant ML150 Gen9

The HP ProLiant ML150 Gen9 Server—a dual-socket tower server with expansion options—gives you the ability to grow as needed with a low initial capital investment. The server covers a wide range of applications and workloads, helping meet the needs of both sophisticated SMB and large enterprise-class server environments.

Key features

- Reduced 24-inch chassis depth takes up less space, offering greater flexibility and cost savings.
- Up to 12 GB HP Smart Array and HP Smart Memory DDR4 slots, with built-in intelligence to improve performance.
- Compute and I/O expansion and density, with up to six PCIe 3.0 slots and eight USB ports.
- HP iLO Advanced and HP Insight Control help speed deployment and streamline management tasks.
**HP ProLiant 300 Series Gen9 servers**

The HP ProLiant Gen9 Rack and Tower Performance Servers offer the most flexibility and best overall systems performance to run compute-intensive workloads. HP ProLiant 300 Series Gen9 servers (DL360, DL380, and ML350) are the industry standard—tailored with flexible choices for compute-intensive workloads requiring high system performance, manageability, expansion, and security for SMBs and enterprises with high-performance computing needs.

### HP ProLiant DL360 Gen9

Dense and flexible, the high-performance HP ProLiant DL360 Gen9 Server easily accommodates multiple workloads and offers industry-leading energy efficiency to help data centers experience a quicker return on their investment. HP’s leading server for general-purpose computing also boasts the best memory and I/O expandability of any generation to handle demanding workloads.

**Key features**

- Dense, 1U rack design offers the highest level of expandability and efficiency.
- Up to 24 HP DDR4 SmartMemory DIMM slots, with built-in intelligence to improve performance.
- Embedded 4x1 Gigabit Ethernet and choice of HP FlexibleLOM and PCIe standup 1 GbE or 10 GbE adapters provide flexibility of networking bandwidth and fabric to adapt for growth.
- HP OneView and HP iLO Advanced offer embedded tools to help streamline management.

### HP ProLiant DL380 Gen9

The HP ProLiant DL380 Gen9 Server model is the data center standard for general-purpose computing—offering the best performance and expandability in the HP 2P rack portfolio. It also features a “future proof” design that keeps up with your business as needs change.

**Key features**

- Flexible redesigned chassis, with HP Universal Media Bay, and a variety of front and rear-drive configurations provide expandability and investment protection.
- Embedded 4x1 Gigabit Ethernet and choice of HP FlexibleLOM and PCIe standup 1 GbE or 10 GbE adapters provide flexibility of networking bandwidth and fabric to adapt for growth.
- Choice of HP Flexible Smart Array or Smart HBA controllers provides a higher level of performance and additional features.
- HP OneView and HP iLO Advanced offer embedded tools to help streamline management.

### HP ProLiant ML350 Gen9

The HP ProLiant ML350 Gen9 Server is ideal for growing midsize to enterprise businesses that need to balance high performance, efficiency, and reliability. This 2P tower model offers flexible options to expand storage and compute capacity, and also enables agile infrastructure management to help streamline administration.

**Key features**

- Choice of HP Flexible Smart Array or Smart HBA controllers provides a higher level of performance and additional features.
- Integrated 4x1 Gigabit Ethernet provides increased network throughput and redundancy.
- HP Smart Socket guide and toolless, easily removable PCI riser cage allow simple access to server components and easy processor updates.
- HP iLO Advanced and HP Insight Control help speed deployment and streamline management tasks.
Selecting the right HP ProLiant Gen9 server

Chapter 2

Four-socket, x86 server design provides rock-solid reliability, availability, and performance scalability and efficiency for enterprise environments.

HP SmartMemory supports up to 6 TB of memory.16

Fast system performance using up to four Intel Xeon E7-4800/8800 v3 processors and nine PCIe FL/FH 3.0 slots.

Lower power costs with high-efficiency HP Common Slot Power Supplies, and support for HP Power Discovery Services.

Superior performance and scalability in an x86 system, with 72 cores and up to 3 TB of memory.16

Up to four Intel Xeon E5-4600 v3 processors and seven PCIe FL/FH 3.0 slots.

Up to 24 SFF drives with 48 TB maximum capacity.

Agile infrastructure management and serviceability with HP ILO 4, HP Insight Online, and HP OneView.

HP ProLiant 500 Series Gen9 servers

HP ProLiant Gen9 Rack Scale-up Servers are designed for today’s most demanding scale-up workloads. HP ProLiant 500 Series Gen9 servers (DL560 and DL580) deliver unparalleled scalability, reliability, and availability to unleash the power of your business data for enterprise and high-performance computing (HPC) businesses.

HP ProLiant DL560 Gen9

Built for corporate data centers, service providers requiring server consolidation, and virtualized environments with limited space, the HP ProLiant DL580 Gen9 Server delivers powerful four-socket performance in a rack form factor. It provides exceptional expandability, reliability, and management features to handle database, messaging, and business processing tasks.

Key features

Superior performance and scalability in an x86 system, with 72 cores and up to 3 TB of memory.16

Up to four Intel Xeon E5-4600 v3 processors and seven PCIe FL/FH 3.0 slots.

Up to 24 SFF drives with 48 TB maximum capacity.

Agile infrastructure management and serviceability with HP ILO 4, HP Insight Online, and HP OneView.

HP ProLiant DL580 Gen9

The HP ProLiant DL580 Gen9 Server is ideal for mission-critical enterprise, business intelligence, and database applications. This server can handle your most demanding workloads, business data, and advanced analytical tasks—while freeing IT teams to focus on innovations for your business.

Key features

Four-socket, x86 server design provides rock-solid reliability, availability, and performance scalability and efficiency for enterprise environments.

HP SmartMemory supports up to 6 TB of memory.16

Fast system performance using up to four Intel Xeon E7-4800/8800 v3 processors and nine PCIe FL/FH 3.0 slots.

Lower power costs with high-efficiency HP Common Slot Power Supplies, and support for HP Power Discovery Services.
Chapter 2

Selecting the right HP ProLiant Gen9 server

HP ProLiant Gen9 server blades

Designed for a wide range of configuration and deployment options, HP ProLiant Gen9 server blades deliver greater performance and scalability than the previous generation. These servers are combined in an enclosure to provide shared power, cooling, and connectivity, which naturally boosts efficiency. With simple, intuitive management and increased flexibility, server blades are the optimal choice for data center virtualization and consolidation. And with the HP OneView management platform, HP ProLiant Gen9 server blades provide leading infrastructure convergence, ultimate security, and data center automation.

HP ProLiant BL460c Gen9

As the world’s leading server blade with advanced performance, the HP ProLiant BL460c Gen9 Server delivers up to a 70% performance increase with the flexibility to enhance your core IT applications with right-sized storage for any workload. This performance workhorse adapts to any demanding blade environment, including virtualization, IT and web infrastructure, collaborative systems, cloud, and high-performance computing.

Key features

- New Intel Xeon E5-2600 v3 processors enable increased performance.
- Greater storage flexibility with 12 GB SAS bandwidth, tiered array controller offerings, and M.2 Flash technology.
- Optimized for core IT workload performance, helping you grow your revenue margins and market share.
- HP OneView and HP iLO Advanced offer embedded tools to help streamline management.

HP ProLiant BL660c Gen9

The HP ProLiant BL660c Gen9 scales workloads and infrastructure without compromise. Designed to deliver a balance of performance, scalability, and manageability, it delivers outstanding cost and accelerated time to value for data centers. This blade is ideal for workloads that require a fine-tuned balance between space, price, and performance—such as database, virtualization, business processing, analytics, HPC, and other data-intensive applications.

Key features

- Support for two or four Intel Xeon E5-4600 v3 processors with up to 18 cores.
- 32 DDR4 DIMM sockets for up to 2.0 TB of HP SmartMemory and a maximum memory speed of up to 2,133 MHz.
- HP PCIe Workload Accelerators for up to 4x higher OLTP performance.
- HP OneView and the cloud-based HP Insight Online portal help streamline management and resolve issues fast.
Chapter 2

Selecting the right HP ProLiant Gen9 server

HP Apollo 2000 System

These powerful, simple, density-optimized servers pack a lot of high-performance computing and workload capacity into a small amount of data center space. Designed to deliver hyperscale efficiency and performance, HP ProLiant XL170r and HP ProLiant XL190r Gen9 servers are your enterprise bridge to a scale-out infrastructure.

HP ProLiant XL170r Gen9 and HP ProLiant XL190r Gen9

The HP ProLiant XL170r is a 1U server, while the HP ProLiant XL190r Gen9 is a 2U server. Both of these models can be deployed in traditional enterprise data centers without disruption or the need to change anything in the environment. They can be managed at the individual server level with the same hardware and software tools used with traditional rack servers, and use the same service procedures and practices.

Key features

- Up to four powerful servers in 2U chassis—twice the density of 1U servers.
- Traditional racks and cabling for existing data centers.
- Mix and match servers for workload optimization.
- HPC performance with accelerators, top bin CPUs, and fast HPC clustering.
- Storage flexibility and a broad range of I/O options for workload optimization.
- Save administration time and cost with HP iLO Management.
- HP Advanced Power Manager enables more efficient power and shared infrastructure management across each rack.
- HP Insight Cluster Management Utility can monitor, manage, and optimize compute clusters of any size.
HP Apollo 4000 System

The HP Apollo 4000 systems are built for data-intensive workloads like Hadoop-based big data analytics and object storage solutions. This family offers a variety of server options to balance storage capacity, density, and performance scalability for the full range of workload requirements.

**HP Apollo 4200 Gen9 Server**
This density-optimized server is ideal for traditional enterprise and SME rack-server data centers. Start object storage and big data analytics projects cost effectively, at smaller scale, to save space and power without changing your current IT environment.

- **Key features**
  - Space for 28 LFF drives or 50 small form factor (SFF) drives.
  - Intel Xeon E5-2600 v3 series processors.
  - Up to 2,24 terabytes (TB) of internal storage.
  - Selection of server, storage, and networking options tailored to meet workloads and help lower TCO.

**HP Apollo 4510 System**
Meet the challenge of big data requirements at any scale. Configure cost-effective, optimized object storage systems for everything from collaboration and content distribution, to content repositories and active archives, to back-up repositories and cold storage.

- **Key features**
  - 4U chassis with one HP ProLiant XL450 Gen9 Server node provides rack-scale storage server density.
  - Up to 16 cores per processor, and space for 68 LFF drives.
  - Up to 544 TB of internal storage.
  - Purpose-built for object storage.

**HP Apollo 4530 System**
Configure this system for a wide variety of big data analytics solutions based on parallel Hadoop-based data mining, as well as NoSQL-based big data analytics solutions, and other analytics systems for machine generated data or monitoring systems.

- **Key features**
  - Three HP ProLiant XL450 Gen9 Server nodes per chassis—ideal for Hadoop-based analytics, which leverages three-copy data replication.
  - Up to 16 cores per processor, and space for 45 LFF drives.
  - Up to 360 TB of internal storage.
  - Purpose-built for Hadoop-based and NoSQL database analytics.
Selecting the right HP ProLiant Gen9 server

HP Apollo 6000 and 8000 systems servers

HP Apollo 6000 and 8000 systems (XL230a, XL730f, XL740f, XL750f) have reinvented high-performance computing to change the performance-to-space-to-power equation. These systems were designed to deliver breakthroughs in rack-scale performance, power, and cooling—in less space—so businesses can find answers faster and in a more sustainable way.

**HP ProLiant XL230a Gen9**

With up to four times greater performance per watt and 60% less rack space, HP ProLiant XL200 series servers offer the best performance for your budget. Ideal for high-performance computing, service providers, and enterprise businesses, these servers offer flexible choices for storage and networking options—helping meet diverse workloads and lower your total cost of ownership.

- **Key features**
  - Modular chassis requires 60% less rack space, offering greater flexibility and cost savings.
  - 2P server tray with Intel Xeon E5-2600 v3 series processors results in up to 36% greater efficiency.
  - HP Advanced Power Manager delivers dynamic power monitoring and management to conserve energy.

- Selection of server, storage, and networking options tailored to meet workloads and help lower TCO.

**HP ProLiant XL730f Gen9**

With four times the teraflops per square foot, efficient liquid cooling without the risk, and up to 3,800 tons of carbon dioxide (CO2) savings per year, the HP ProLiant XL730f Gen9 is advancing research in science and engineering with leading-edge technologies, while offering a lower environmental impact than ever before.

- **Key features**
  - Dry-disconnect server trays offer component-level cooling.
  - Reusable energy technologies help reduce environmental impact and lower energy costs.
  - Heat sinks and jackets protect processors and memory while heat pipes efficiently transfer heat.

- HP Apollo 8000 System Manager provides environmental rack monitoring and power management, in tandem with HP iLO Advanced and HP Advanced Power Manager.
## HP Apollo 8000 Systems servers (continued)

### HP ProLiant XL740f Gen9
Now supporting Intel® Xeon Phi™ 7120D coprocessors, the HP ProLiant XL740f Gen9 Server is further advancing research in science and engineering in the fields of seismic processing, biochemistry simulations, weather and climate modeling, image, video and signal processing, computational finance, computational physics, CAE, CFD, and data analytics.

<table>
<thead>
<tr>
<th>Key features</th>
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</thead>
<tbody>
<tr>
<td>Two Intel Xeon Phi 7120D coprocessors offer increased performance.</td>
</tr>
<tr>
<td>Reusable energy technologies help reduce environmental impact and lower energy costs.</td>
</tr>
<tr>
<td>Heat sinks and jackets protect processors and memory while heat pipes efficiently transfer heat.</td>
</tr>
</tbody>
</table>

HP Apollo 8000 System Manager provides environmental rack monitoring and power management, in tandem with HP iLO Advanced and HP Advanced Power Manager.

### HP ProLiant XL750f Gen9
Now supporting NVIDIA® Tesla® K40 XL GPUs, the HP ProLiant XL750f Gen9 Server is further advancing research in science and engineering in the fields of seismic processing, biochemistry simulations, weather and climate modeling, image, video and signal processing, computational finance, computational physics, CAE, CFD, and data analytics.

<table>
<thead>
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<tbody>
<tr>
<td>Two NVIDIA Tesla K40 XL GPUs offer increased performance.</td>
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</table>

HP Apollo 8000 System Manager provides environmental rack monitoring and power management, in tandem with HP iLO Advanced and HP Advanced Power Manager.
Chapter 3

Comparing the features of HP ProLiant Gen9 servers
## Chapter 3
### Comparing the features of HP ProLiant Gen9 servers

<table>
<thead>
<tr>
<th></th>
<th><strong>HP ProLiant DL60 Gen9</strong></th>
<th><strong>HP ProLiant DL80 Gen9</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Ideal for</strong></td>
<td>Affordable compute and scalability packaged in a dense design</td>
<td>Affordable storage, scalability, and manageability in a 2U server for cost-conscious service providers and SMBs</td>
</tr>
<tr>
<td><strong>Form factor</strong></td>
<td>Rack (1U)</td>
<td>Rack (2U)</td>
</tr>
<tr>
<td><strong>Number of processors</strong></td>
<td>1 or 2</td>
<td>1 or 2</td>
</tr>
<tr>
<td><strong>Processors supported</strong></td>
<td>Intel Xeon E5-2600 v3 Series</td>
<td>Intel Xeon E5-2600 v3 Series</td>
</tr>
<tr>
<td><strong>Cores per processor</strong></td>
<td>4/6/8/10/12</td>
<td>4/6/8/10/12</td>
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<tr>
<td><strong>I/O expansion slots</strong></td>
<td>Up to 3 PCIe 3.0</td>
<td>Up to 6 PCIe 3.0</td>
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<tr>
<td><strong>Maximum memory/number of slots</strong></td>
<td>256 GB/8</td>
<td>256 GB/8</td>
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<tr>
<td><strong>Storage controller (embedded)</strong></td>
<td>B140i</td>
<td>B140i</td>
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<tr>
<td><strong>Maximum storage drive bays</strong></td>
<td>4 LFF HDD/SSD</td>
<td>12 LFF HDD/SSD</td>
</tr>
<tr>
<td><strong>Maximum internal storage</strong></td>
<td>32 TB</td>
<td>96 TB</td>
</tr>
<tr>
<td><strong>Networking ports (embedded)</strong></td>
<td>2x1 Gigabit Ethernet embedded; optional HP FlexibleLOM slot on riser</td>
<td>2x1 Gigabit Ethernet embedded; optional HP FlexibleLOM slot on riser</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>HP iLO 4, HP RESTful Interface Tool and UEFI; optional HP ILO Essentials or Advanced, HP Insight Control, HP OneView</td>
<td>HP iLO 4, HP RESTful Interface Tool and UEFI; optional HP ILO Essentials or Advanced, HP Insight Control, HP OneView</td>
</tr>
<tr>
<td><strong>Warranty (years): parts/labor/onsite</strong></td>
<td>1/1/1</td>
<td>1/1/1</td>
</tr>
</tbody>
</table>
# Chapter 3
Comparing the features of HP ProLiant Gen9 servers

## HP ProLiant DL120 Gen9
- **Ideal for**: Enterprise-class 1U/1-socket dense server for performance-driven and virtualized workloads
- **Form factor**: Rack (1U)
- **Number of processors**: 1
- **Processors supported**: Intel Xeon E5-1600 v3 Series
- **Cores per processor**: 4/6/8/10/12/14/16/18
- **I/O expansion slots**: Up to 3 PCIe 3.0
- **Maximum memory/number of slots**: 256 GB/8
- **Storage controller (embedded)**: B140i
- **Maximum storage drive bays**: 4 LFF or 8 SFF HDD/SSD
- **Maximum internal storage**: 32 TB
- **Networking ports (embedded)**: 2x1 Gigabit Ethernet embedded; optional HP FlexibleLOM slot on riser
- **Management**: HP ILO 4, HP RESTful Interface Tool and UEFI; optional HP ILO Essentials or Advanced, HP Insight Control, HP OneView
- **Warranty (years): parts/labor/onsite**: 3/1/1

## HP ProLiant DL160 Gen9
- **Ideal for**: Right-sized performance and storage for space- and budget-constrained environments
- **Form factor**: Rack (1U)
- **Number of processors**: 1 or 2
- **Processors supported**: Intel Xeon E5-2600 v3 Series
- **Cores per processor**: 4/6/8/10/12
- **I/O expansion slots**: Up to 3 PCIe 3.0
- **Maximum memory/number of slots**: 512 GB/16
- **Storage controller (embedded)**: B140i
- **Maximum storage drive bays**: 4 LFF or 8 SFF HDD/SSD
- **Maximum internal storage**: 32 TB
- **Networking ports (embedded)**: 2x1 Gigabit Ethernet embedded; optional HP FlexibleLOM slot on riser
- **Management**: HP ILO 4, HP RESTful Interface Tool and UEFI; optional HP ILO Essentials or Advanced, HP Insight Control, or HP OneView
- **Warranty (years): parts/labor/onsite**: 3/1/1

## HP ProLiant DL180 Gen9
- **Ideal for**: The new standard for growing data center needs
- **Form factor**: Rack (2U)
- **Number of processors**: 1 or 2
- **Processors supported**: Intel Xeon E5-2600 v3 Series
- **Cores per processor**: 4/6/8/10/12
- **I/O expansion slots**: Up to 6 PCIe 3.0
- **Maximum memory/number of slots**: 512 GB/16
- **Storage controller (embedded)**: B140i
- **Maximum storage drive bays**: 12 LFF or 16 SFF HDD/SSD
- **Maximum internal storage**: 96 TB
- **Networking ports (embedded)**: 2x1 Gigabit Ethernet embedded; optional HP FlexibleLOM slot on riser
- **Management**: HP ILO 4, HP RESTful Interface Tool and UEFI; optional HP ILO Essentials or Advanced, HP Insight Control, or HP OneView
- **Warranty (years): parts/labor/onsite**: 3/1/1
Comparing the features of HP ProLiant Gen9 servers

<table>
<thead>
<tr>
<th></th>
<th>HP ProLiant ML110 Gen9</th>
<th>HP ProLiant ML150 Gen9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideal for</strong></td>
<td>Small to midsize businesses that need an affordable, performance-optimized server that can expand as needs grow</td>
<td>Tower server with essential performance and lowest acquisition cost</td>
</tr>
<tr>
<td><strong>Form factor</strong></td>
<td>Tower</td>
<td>Tower</td>
</tr>
<tr>
<td><strong>Number of processors</strong></td>
<td>1</td>
<td>1 or 2</td>
</tr>
<tr>
<td><strong>Processors supported</strong></td>
<td>Intel Xeon E5-2600 v3 Series</td>
<td>Intel Xeon E5-2600 v3 Series</td>
</tr>
<tr>
<td><strong>Cores per processor</strong></td>
<td>4/6/8/10</td>
<td>6/8/12</td>
</tr>
<tr>
<td><strong>I/O expansion slots</strong></td>
<td>Up to 5 PCIe 3.0</td>
<td>Up to 6 PCIe 3.0</td>
</tr>
<tr>
<td><strong>Maximum memory/number of slots</strong></td>
<td>256 GB/8</td>
<td>512 GB/16</td>
</tr>
<tr>
<td><strong>Storage controller (embedded)</strong></td>
<td>B140i</td>
<td>B140i</td>
</tr>
<tr>
<td><strong>Maximum storage drive bays</strong></td>
<td>Up to 8 LFF or 16 SFF HDD/SSD</td>
<td>10 LFF or 16 SFF HDD/SSD</td>
</tr>
<tr>
<td><strong>Maximum internal storage</strong></td>
<td>48 TB</td>
<td>80 TB</td>
</tr>
<tr>
<td><strong>Networking ports (embedded)</strong></td>
<td>2x1 Gigabit Ethernet embedded</td>
<td>2x1 Gigabit Ethernet embedded + Standup</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>HP iLO 4, HP RESTful Interface Tool and UEFI; HP iLO Management, HP Insight Control, Intelligent Provisioning, HP SIM, HP SUM, HP Insight Online</td>
<td>HP iLO 4, HP Intelligent Provisioning, HP SIM, HP SUM, HP Insight Online, HP RESTful Interface Tool and UEFI; optional HP iLO Essentials or Advanced, HP Insight Control</td>
</tr>
<tr>
<td><strong>Warranty (years): parts/labor/onsite</strong></td>
<td>3/1/1</td>
<td>3/1/1</td>
</tr>
</tbody>
</table>
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## Comparing the features of HP ProLiant Gen9 servers

<table>
<thead>
<tr>
<th></th>
<th>HP ProLiant DL360 Gen9</th>
<th>HP ProLiant DL380 Gen9</th>
<th>HP ProLiant ML350 Gen9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideal for</strong></td>
<td>Dense performance for multi-workload computes in the data center</td>
<td>The no-compromise data center standard for multi-workload compute</td>
<td>High performance with unmatched capacity and reliability</td>
</tr>
<tr>
<td><strong>Form factor</strong></td>
<td>Rack (1U)</td>
<td>Rack (2U)</td>
<td>Tower or rack (5U)</td>
</tr>
<tr>
<td><strong>Number of processors</strong></td>
<td>1 or 2</td>
<td>1 or 2</td>
<td>1 or 2</td>
</tr>
<tr>
<td><strong>Processors supported</strong></td>
<td>Intel Xeon E5-2600 v3 Series</td>
<td>Intel Xeon E5-2600 v3 Series</td>
<td>Intel Xeon E5-2600 v3 Series</td>
</tr>
<tr>
<td><strong>Cores per processor</strong></td>
<td>4/6/8/10/12/14/16/18</td>
<td>4/6/8/10/12/14/16/18</td>
<td>4/6/8/10/12/14/16/18</td>
</tr>
<tr>
<td><strong>I/O expansion slots</strong></td>
<td>Up to 2 PCIe 3.0</td>
<td>Up to 6 PCIe 3.0</td>
<td>Up to 1 PCIe 2.0, 8 PCIe 3.0</td>
</tr>
<tr>
<td><strong>Maximum memory/number of slots</strong></td>
<td>768 GB/24</td>
<td>768 GB/24</td>
<td>1.5 TB/24</td>
</tr>
<tr>
<td><strong>Storage controller (embedded)</strong></td>
<td>B140i</td>
<td>B140i</td>
<td>B140i</td>
</tr>
<tr>
<td><strong>Maximum storage drive bays</strong></td>
<td>8+2 SFF or 4 LFF HDD/SSD</td>
<td>24+2 SFF or 12+3 LFF HDD/SSD</td>
<td>24 LFF or 48 SFF HDD/SSD</td>
</tr>
<tr>
<td><strong>Maximum internal storage</strong></td>
<td>24 TB</td>
<td>90 TB</td>
<td>192 TB</td>
</tr>
<tr>
<td><strong>Networking ports (embedded)</strong></td>
<td>4x1 Gigabit Ethernet embedded; optional HP FlexibleLOM™</td>
<td>4x1 Gigabit Ethernet embedded; optional HP FlexibleLOM™</td>
<td>4x1 Gigabit Ethernet embedded</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>HP iLO 4, HP RESTful Interface Tool and UEFI; optional HP iLO Essentials or Advanced, HP Insight Control, or HP OneView</td>
<td>HP iLO 4, HP RESTful Interface Tool and UEFI; optional HP iLO Essentials or Advanced, HP Insight Control, or HP OneView</td>
<td>HP iLO 4, HP Intelligent Provisioning, HP SIM, HP SUM, HP Insight Online, HP RESTful Interface Tool and UEFI; optional HP iLO Essentials or Advanced, or HP Insight Control</td>
</tr>
</tbody>
</table>
### Comparing the features of HP ProLiant Gen9 servers

<table>
<thead>
<tr>
<th></th>
<th>HP ProLiant DL560 Gen9</th>
<th>HP ProLiant DL580 Gen9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideal for</strong></td>
<td>High-density, 4-socket server for multi-workload compute</td>
<td>The 4-socket, enterprise standard for resource- and data-intensive workloads</td>
</tr>
<tr>
<td><strong>Form factor</strong></td>
<td>Rack (2U)</td>
<td>Rack (4U)</td>
</tr>
<tr>
<td><strong>Number of processors</strong></td>
<td>Up to 4</td>
<td>Up to 4</td>
</tr>
<tr>
<td><strong>Processors supported</strong></td>
<td>Intel Xeon E5-4600 v3 Series</td>
<td>Intel Xeon E7-4800/8800 v3 Series</td>
</tr>
<tr>
<td><strong>Cores per processor</strong></td>
<td>6/10/12/14/16/18</td>
<td>4/8/10/12/14/16/18</td>
</tr>
<tr>
<td><strong>I/O expansion slots</strong></td>
<td>Up to 7 PCIe 3.0</td>
<td>Up to 9 PCIe 3.0</td>
</tr>
<tr>
<td><strong>Maximum memory/number of slots</strong></td>
<td>3 TB/48</td>
<td>6 TB/96</td>
</tr>
<tr>
<td><strong>Storage controller (embedded)</strong></td>
<td>SATA</td>
<td>P830i</td>
</tr>
<tr>
<td><strong>Maximum storage drive bays</strong></td>
<td>Up to 24 SFF HDD/SSD</td>
<td>Up to 10 SFF HDD/SSD</td>
</tr>
<tr>
<td><strong>Maximum internal storage</strong></td>
<td>48 TB</td>
<td>20 TB</td>
</tr>
<tr>
<td><strong>Networking ports (embedded)</strong></td>
<td>Choice of 4x1 Gigabit Ethernet or 2x10 Gigabit Ethernet HP FlexibleLOM slot (not embedded)</td>
<td>Choice of 4x1 Gigabit Ethernet or 2x10 Gigabit Ethernet HP FlexibleLOM slot (not embedded)</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>HP iLO 4, HP Smart Update Manager, HP RESTful Interface Tool, UEFI/Legacy BIOS, HP iLO Advanced, HP Insight Online, HP OneView</td>
<td>HP iLO 4, HP Smart Update Manager, HP RESTful Interface Tool, UEFI/Legacy BIOS, HP iLO Advanced, HP Insight Online, HP OneView</td>
</tr>
<tr>
<td><strong>Warranty (years): parts/labor/onsite</strong></td>
<td>3/3/3</td>
<td>3/3/3</td>
</tr>
</tbody>
</table>
# Comparing the features of HP ProLiant Gen9 servers

<table>
<thead>
<tr>
<th>Feature</th>
<th>HP ProLiant BL460c Gen9</th>
<th>HP ProLiant BL660c Gen9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideal for</strong></td>
<td>The world's leading server blade—ideal for virtualization and powerful enough to meet any workload need</td>
<td>Demanding workloads—from database to analytics to virtualization</td>
</tr>
<tr>
<td><strong>Form factor</strong></td>
<td>Blade (half height)</td>
<td>Blade</td>
</tr>
<tr>
<td><strong>Number of processors</strong></td>
<td>1 or 2</td>
<td>2 or 4</td>
</tr>
<tr>
<td><strong>Processors supported</strong></td>
<td>Intel Xeon E5-2600 v3 Series</td>
<td>Intel Xeon E5-4600 v3 Series</td>
</tr>
<tr>
<td><strong>Cores per processor</strong></td>
<td>4/6/8/10/12/14/16/18</td>
<td>6/10/12/14/16/18</td>
</tr>
<tr>
<td><strong>I/O expansion slots</strong></td>
<td>Up to 2 PCIe 3.0</td>
<td>3 PCIe 3.0</td>
</tr>
<tr>
<td><strong>Maximum memory/number of slots</strong></td>
<td>1 TB/16</td>
<td>2 TB/32</td>
</tr>
<tr>
<td><strong>Storage controller (embedded)</strong></td>
<td>B140i</td>
<td>B140i</td>
</tr>
<tr>
<td><strong>Maximum storage drive bays</strong></td>
<td>2 SFF HDD/SSD</td>
<td>4 SFF HDD/SSD</td>
</tr>
<tr>
<td><strong>Maximum internal storage</strong></td>
<td>4 TB</td>
<td>8 TB</td>
</tr>
<tr>
<td><strong>Networking ports (embedded)</strong></td>
<td>HP FlexibleLOM; choice of 2x10 Gigabit Ethernet, HP FlexFabric 10 Gb, or HP FlexFabric 10/20 Gb</td>
<td>1 or 2 HP FlexibleLOMs; choice of 2x10 Gigabit Ethernet, HP FlexFabric 10 Gb, or HP FlexFabric 10/20 Gb</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>HP OneView and HP iLO Advanced; HP Insight Online with enhanced mobile app, HP iLO, and HP Smart Update Manager</td>
<td>HP OneView and HP iLO Advanced; HP Insight Online with enhanced mobile app, HP iLO, HP Smart Update Manager</td>
</tr>
<tr>
<td><strong>Warranty (years): parts/labor/onsite</strong></td>
<td>3/3/3</td>
<td>3/3/3</td>
</tr>
</tbody>
</table>
### Comparing the features of HP ProLiant Gen9 servers

#### HP ProLiant XL170r Gen9
- **Ideal for**: High-performance computing clusters for many different applications, including product design and testing simulation, financial risk modeling, and scientific research modeling in HP Apollo 2000 systems
- **Form factor**: 4 1U
- **Number of processors**: 2 per server
- **Processors supported**: Intel Xeon E5-2600 v3 Series
- **Cores per processor**: Up to 18
- **Coprocessors**: N/A
- **GPUs**: N/A
- **Maximum memory/number of slots**: 512 GB/16
- **Storage controller (embedded)**: B140i
- **Maximum storage drive bays**: Dual SATA host-based M.2 2242 NGFF SSDs
- **Maximum internal storage**: 6 TB
- **Networking ports (embedded)**: 2x1 Gigabit Ethernet embedded; optional HP FlexibleLOM
- **Management**: HP iLO 4, HP Advanced Power Manager
- **Warranty (years): parts/labor/onsite**: 1/1/1 (Americas and Europe regions); 3/3/3 (Asia Pacific and China regions)

#### HP ProLiant XL190r Gen9
- **Ideal for**: High-performance computing clusters for many different applications, including product design and testing simulation, financial risk modeling, and scientific research modeling in HP Apollo 2000 systems
- **Form factor**: 2 2U
- **Number of processors**: 2 per server
- **Processors supported**: Intel Xeon E5-2600 v3 Series
- **Cores per processor**: Up to 18
- **Coprocessors**: Intel Xeon Phi 5110p
- **GPUs**: NVIDIA Tesla K40
- **Maximum memory/number of slots**: 512 GB/16
- **Storage controller (embedded)**: B140i
- **Maximum storage drive bays**: Dual SATA host-based M.2 2242 NGFF SSDs
- **Maximum internal storage**: 6 TB
- **Networking ports (embedded)**: 2x1 Gigabit Ethernet embedded; optional HP FlexibleLOM
- **Management**: HP iLO 4, HP Advanced Power Manager
- **Warranty (years): parts/labor/onsite**: 1/1/1 (Americas and Europe regions); 3/3/3 (Asia Pacific and China regions)

#### HP ProLiant XL230a Gen9
- **Ideal for**: Designed for rack-scale efficiency, the HP Apollo 6000 System supports the high-performance computing needs of service providers and enterprise businesses
- **Form factor**: 10 servers in Apollo a6000 chassis
- **Number of processors**: 2
- **Processors supported**: Intel Xeon E5-2600 v3 Series
- **Cores per processor**: Up to 16
- **Coprocessors**: N/A
- **GPUs**: N/A
- **Maximum memory/number of slots**: 512 GB/16
- **Storage controller (embedded)**: B140i
- **Maximum storage drive bays**: Dual SATA host-based M.2 2242 NGFF SSDs
- **Maximum internal storage**: 6.4 TB
- **Networking ports (embedded)**: 2x1 Gigabit Ethernet embedded; optional HP FlexibleLOM
- **Management**: HP iLO 4, HP Advanced Power Manager
- **Warranty (years): parts/labor/onsite**: 1/1/1 (Americas and Europe regions); 3/3/3 (Asia Pacific and China regions)
# Chapter 3

## Comparing the features of HP ProLiant Gen9 servers

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<thead>
<tr>
<th>HP Apollo 4200 Gen9 Server</th>
<th>HP Apollo 4510 System</th>
<th>HP Apollo 4530 System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideal for</strong></td>
<td>Data centers that need to cost-effectively handle object storage and big data analytics projects at a smaller scale, while saving space and power</td>
<td>Cost-effective, optimized object storage systems for collaboration and content distribution, content repositories and active archives, or back-up repositories</td>
</tr>
<tr>
<td><strong>Form factor</strong></td>
<td>2U form factor</td>
<td>4U with one HP ProLiant XL450 Gen9 Server per chassis</td>
</tr>
<tr>
<td><strong>Number of processors</strong></td>
<td>1 or 2</td>
<td>1 or 2</td>
</tr>
<tr>
<td><strong>Processors supported</strong></td>
<td>Intel Xeon E5-2600 v3 Series</td>
<td>Intel Xeon E5-2600 v3 Series</td>
</tr>
<tr>
<td><strong>Cores per processor</strong></td>
<td>Up to 18</td>
<td>Up to 16</td>
</tr>
<tr>
<td><strong>Coprocessors</strong></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>GPUs</strong></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Maximum memory/number of slots</strong></td>
<td>512 GB/16</td>
<td>512 GB/16</td>
</tr>
<tr>
<td><strong>Storage controller (embedded)</strong></td>
<td>B140i and P840ar</td>
<td>B140i</td>
</tr>
<tr>
<td><strong>Maximum storage drive bays</strong></td>
<td>28 LFF or 50 SFF</td>
<td>68 LFF</td>
</tr>
<tr>
<td><strong>Maximum internal storage</strong></td>
<td>224 TB</td>
<td>544 TB</td>
</tr>
<tr>
<td><strong>Networking ports (embedded)</strong></td>
<td>2x1 Gigabit Ethernet embedded with HP FlexibleLOM support</td>
<td>2x1 Gigabit Ethernet embedded with HP FlexibleLOM support</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>HP iLO 4</td>
<td>HP iLO 4</td>
</tr>
<tr>
<td><strong>Warranty (years): parts/labor/onsite</strong></td>
<td>3/1/1</td>
<td>1/1/1</td>
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</tbody>
</table>
### Comparing the features of HP ProLiant Gen9 servers

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<thead>
<tr>
<th></th>
<th>HP ProLiant XL730f Gen9</th>
<th>HP ProLiant XL740f Gen9</th>
<th>HP ProLiant XL750f Gen9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideal for</strong></td>
<td>Advancing research in science and engineering with leading-edge technology, while offering a smaller environmental impact than ever before</td>
<td>Maximum performance to run compute-intensive science and engineering workloads with Intel Xeon Phi 7120D coprocessors</td>
<td>Maximum performance to run compute-intensive science and engineering workloads with NVIDIA Tesla K40 XL GPUs</td>
</tr>
<tr>
<td><strong>Form factor</strong></td>
<td>144 servers in Apollo f8000 rack</td>
<td>144 servers in Apollo f8000 rack</td>
<td>144 servers in Apollo f8000 rack</td>
</tr>
<tr>
<td><strong>Number of processors</strong></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Processors supported</strong></td>
<td>Intel Xeon E5-2600 v3 Series</td>
<td>Intel Xeon E5-2600 v3 Series</td>
<td>Intel Xeon E5-2600 v3 Series</td>
</tr>
<tr>
<td><strong>Cores per processor</strong></td>
<td>Up to 14</td>
<td>Up to 18</td>
<td>Up to 18</td>
</tr>
<tr>
<td><strong>Coprocessors</strong></td>
<td>N/A</td>
<td>Intel Xeon Phi 7120D</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>GPUs</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>NVIDIA Tesla K40 XL</td>
</tr>
<tr>
<td><strong>Maximum memory/number of slots</strong></td>
<td>256 GB/16</td>
<td>256 GB/16</td>
<td>256 GB/16</td>
</tr>
<tr>
<td><strong>Storage controller (embedded)</strong></td>
<td>B140i</td>
<td>B140i</td>
<td>B140i</td>
</tr>
<tr>
<td><strong>Maximum storage drive bays</strong></td>
<td>1 SFF SSD</td>
<td>1 SFF SSD</td>
<td>1 SFF SSD</td>
</tr>
<tr>
<td><strong>Maximum internal storage</strong></td>
<td>1.6 TB</td>
<td>1.6 TB</td>
<td>1.6 TB</td>
</tr>
<tr>
<td><strong>Networking ports (embedded)</strong></td>
<td>1 Gigabit Ethernet embedded; optional HP InfiniBand adapter kit</td>
<td>1 Gigabit Ethernet embedded; optional HP InfiniBand adapter kit</td>
<td>1 Gigabit Ethernet embedded; optional HP InfiniBand adapter kit</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>HP Apollo 8000 System Manager, HP ILO, HP Advanced Power Manager</td>
<td>HP Apollo 8000 System Manager, HP ILO 4, HP Advanced Power Manager</td>
<td>HP Apollo 8000 System Manager, HP ILO 4, HP Advanced Power Manager</td>
</tr>
<tr>
<td><strong>Warranty (years): parts/labor/onsite</strong></td>
<td>1/1/1</td>
<td>1/1/1</td>
<td>1/1/1</td>
</tr>
</tbody>
</table>
Why choose HP

HP ProLiant Gen9 is transforming data center expectations and economics with servers that deliver a more converged, cloud-ready, software-defined IT experience. We’ve focused on delivering what you need and expect from an industry leader—reliability, innovation, quality, and best-in-class embedded server management.

We offer a comprehensive set of services to manage and optimize every aspect of the server environment. HP Proactive Care Services provide advanced technical expertise combined with 24/7 monitoring, automated parts dispatching, and personalized reporting to help prevent problems before they occur and keep your team productive.

Our end-to-end HP Lifecycle Event Services include working with your IT team to design your environment from scratch, or integrate new technology into your existing infrastructure.

As IBM exits the x86 server market, we have launched Project Smart Choice to give you full access to details about HP servers and how we can help keep your enterprise moving forward. Similarly, as Microsoft prepares to discontinue support of Windows Server® 2003 in July 2015, HP has the infrastructure and expertise to help you transition with confidence.

For more information about HP ProLiant Gen9 products, contact your HP representative or visit hp.com/go/servers.

HP Financial Services provide customized leasing and financing options to smooth your HP ProLiant purchase and keep your technology expenditures in line with your overall budget.

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4. HP Internal Lab result: SSD Smart Path Performance done with equivalent controller in a controlled environment with and without Smart Path enabled. HP Smart Storage engineers, Houston, Texas, as of April 18, 2014, posted on internal Smart Array wiki page.

5. HP Internal analysis: 100 DL380 G6 servers consolidated down to 16 DL380 Gen9 enabling 62% TCO savings over 3 years including initial acquisition costs. There is also a potential reduction in monthly OPEX expenditure of over 80%. Includes software support for vSphere and Windows®. Also includes a 25% discount on hardware, August 2014.

6. HP Flexible Slot Power Supplies are supported on the Gen9 Performance Servers. Note: 1U ATX Non-RPS solution for Gen9 Essential Servers.


9. Sixty-six times faster to build and deploy infrastructure—anonymous customer results. Customer was able to reduce the time to build and deploy infrastructure for 12 call centers from 66 days to 1. Total of 2,000 servers were deployed. IDC white paper sponsored by HP. “Achieving Organizational Transformation with HP Converged Infrastructure Solutions for SDDC,” January 2014, IDC #246385.

10. The number of steps was determined by comparing HP OneView v1.0.5 with the HP Insight Control for VMware vCenter Server v7.30 plugin versus traditional HP management tools. HP Internal, Houston, Texas, January 2014.

11. Up to 33% better performance is based on similar capacity DIMM running on an HP server compared with a non-HP server with DDR4. Intel recommends running DDR4 server memory (under fully populated mode at 1600 MHz) with Haswell processors. By combining a fully populated HP ProLiant Gen9 BladeSystem with HP DDR4 SmartMemory innovations, HP realizes a 33% memory improvement, by running HP DDR4 SmartMemory (RDIMM and LRDIMM) at 2133 MHz. (12133–1600/1600) * 100 = 33%.

12. As of April 3, 2014: Intel internal measurements on platform with two E5-2697 v2 (12C, 2.7GHz), 8 x 8 GB DDR3–1866, RHEL6.3. Platform with two E5-2697 v3 (14C, 2.6GHz, 145W), 8 x 8 GB DDR4–2133, RHEL6.3. Performance based on geometric mean of Black Scholes, binomial CPU, Monte Carlo workloads. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYMark 95 and MobileMark, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information, go to intel.com/performance. Other names and brands may be claimed as the property of others.

13. HP SmartCache performance done with equivalent controller in a controlled environment. HP Smart Storage engineers, Houston, Texas, as of May 18, 2014, posted on internal SmartCache wiki page.


15. Based on Demartek testing. 10 GB previous vs. 20 GB with HP Virtual Connect Flex Fabric 20/40.

16. Support with 64 GB DIMMs, which are scheduled to be available in the second half of 2015.

17. Based on 8 TB drives, which are scheduled to be available in the second half of 2015.

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