

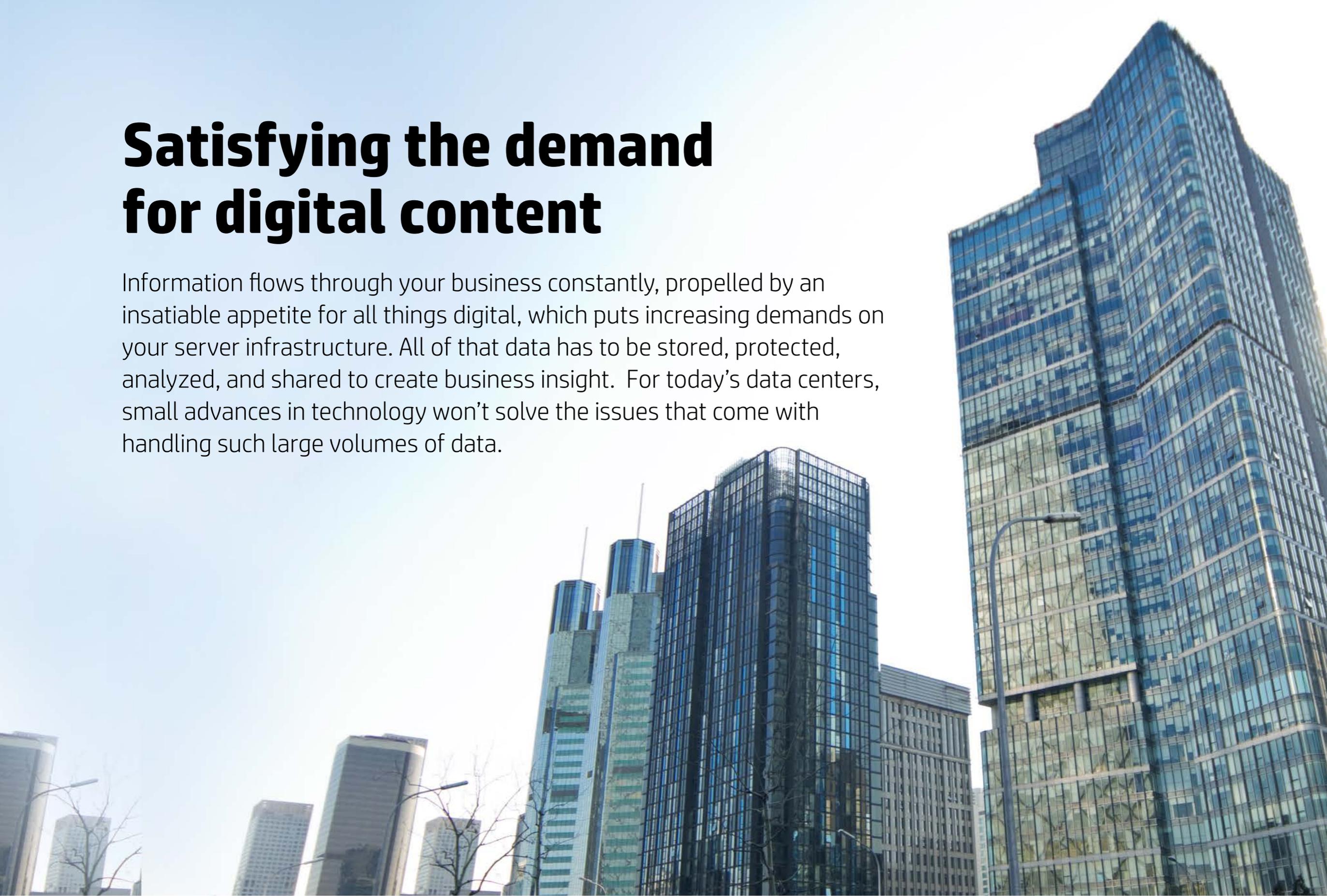
Transform your data centers

HP ProLiant Gen8—the world's most intelligent servers



Satisfying the demand for digital content

Information flows through your business constantly, propelled by an insatiable appetite for all things digital, which puts increasing demands on your server infrastructure. All of that data has to be stored, protected, analyzed, and shared to create business insight. For today's data centers, small advances in technology won't solve the issues that come with handling such large volumes of data.



With a typical 10,000-square-foot data center, you can expect your storage capacity requirements to increase by 45% each year—creating ever-growing management challenges.¹ Every new rack of storage creates the need for an additional seven racks of servers that must be integrated into your environment—managed, powered, cooled, and supported on an ongoing basis.¹

To respond effectively to this explosion of applications, data, and digital content, your information technology (IT) organization needs intelligent technology built for the challenges of the cloud computing era. That's IT convergence: servers, storage, and networking that integrate into your existing data center infrastructure, supported by intuitive management tools.

HP ProLiant Gen8 servers help you gain a competitive edge by delivering maximum performance and reliability while simplifying day-to-day management. Designed with an unprecedented set of innovations and featuring the latest Intel® Xeon® v2 processors, the HP ProLiant Gen8 family provides the heart and mind of a self-managing and intelligent HP Converged Infrastructure strategy.

**45%
increase**

**in storage
capacity
requirements
each year¹**



HP ProLiant Gen8 servers help you gain a competitive edge by delivering maximum performance and reliability while simplifying day-to-day management.

The foundation for a new generation of data centers





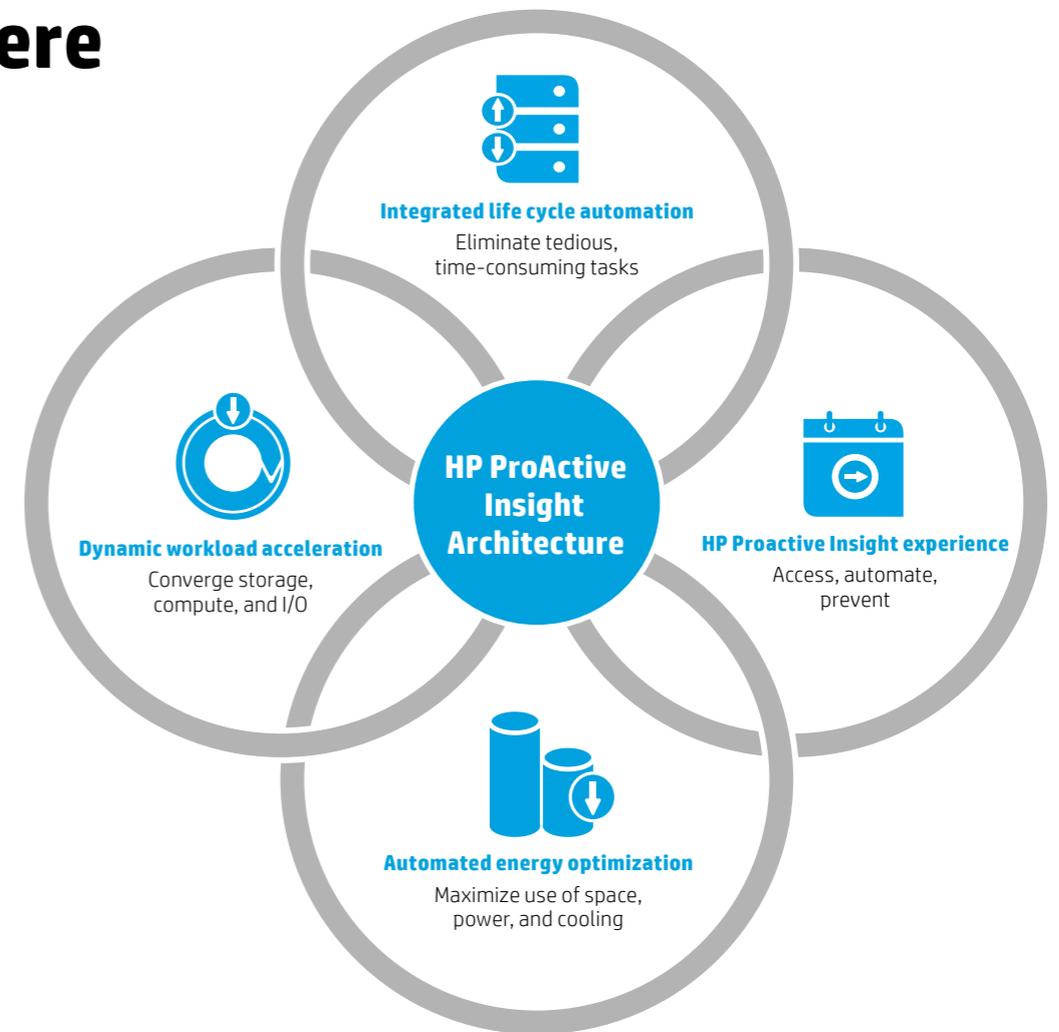
The HP Converged Infrastructure is here

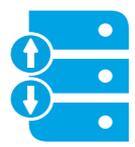
As the market leader in delivering converged solutions, we've designed the HP ProLiant Gen8 servers for the emerging realities of today's enterprise data centers. More than 150 client-inspired design innovations help you increase application performance, shift staff time to more productive uses, extend data center capacity, and improve uptime by preventing data loss and failures.

Our Gen8 family is powered by the HP ProActive Insight Architecture, a range of intelligent automation and management features that provides your organization with insight into virtually every aspect of your IT infrastructure. The four pillars of this architecture—integrated life cycle automation, dynamic workload acceleration, automated energy optimization, and HP Proactive Insight experience—automate and simplify all aspects of server administration.

The HP ProActive Insight Architecture continuously analyzes thousands of system parameters and resolves potential issues before they turn into problems. Every HP ProLiant Gen8 server is built with these capabilities—providing the foundation for an intelligent, responsive, and converged infrastructure that transforms the entire server experience.

Our latest HP ProLiant Gen8 two-processor offerings also support the new Intel Xeon E5-2600 v2 processor—enabling even faster performance, more intelligent management, and greater efficiency. With a 5-month return on investment (ROI),² the new wave of HP ProLiant servers can help you compete and grow your business today and stay ready for what's next.





Eliminate tedious tasks with integrated life cycle automation

With today's data centers, your life is harder than it should be. Too often, your workday is a stream of error alerts, system events, installation and update issues, and calls to support desks.

HP ProLiant Gen8 servers help your IT team eliminate these tedious, time-consuming tasks and get back to focusing on more strategic objectives. With the HP ProActive Insight Architecture embedded in every ProLiant Gen8 server, you'll get deep insight into your IT environment along with a rich set of capabilities for automating and simplifying system provisioning, troubleshooting, and software updates.

**Video: Learn more about
integrated life cycle automation**

Key features

HP Intelligent Provisioning

Everything you need for painless system setup and deployment is built in. Bring your systems online and deploy updates three times faster—thanks to a fully integrated system configuration tool.³

HP Active Health

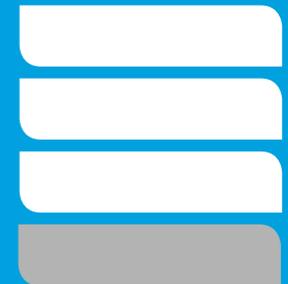
Your 24/7 mission control for automated monitoring, diagnostics, and alerts. It monitors and securely logs more than 1,600 system parameters and 100% of configuration changes.

HP Smart Update

Schedule, stage, and deploy updates across hundreds of servers with a single click. All your needed firmware, drivers, and tools are preloaded and ready to deploy with 93% less system downtime.⁴

**3X
more**

**administrative
productivity³**





Turbo-charge performance with dynamic workload acceleration

To stay ahead of information and application demands, your IT team needs smarter servers that converge storage, computing, and input/output (I/O). By bringing server and storage solutions together, and optimizing them for solid-state disk (SSD) performance, HP ProLiant Gen8 servers get rid of the bottlenecks and accelerate your most demanding, data-intensive applications. Compared with previous-generation G7 servers, HP ProLiant Gen8 servers combine smarter algorithms and analytics with a 50% increase in transactional workload⁵ and twice the cache capacity.⁶

Video: Learn more about dynamic workload acceleration

Key features

Solid-state optimized

Meet the demands of virtualized and data-intensive workloads with a system customized for SSD. HP ProLiant servers deliver up to nine times faster workload performance with solid-state storage compared with previous-generation drives.⁷

Smart data protection

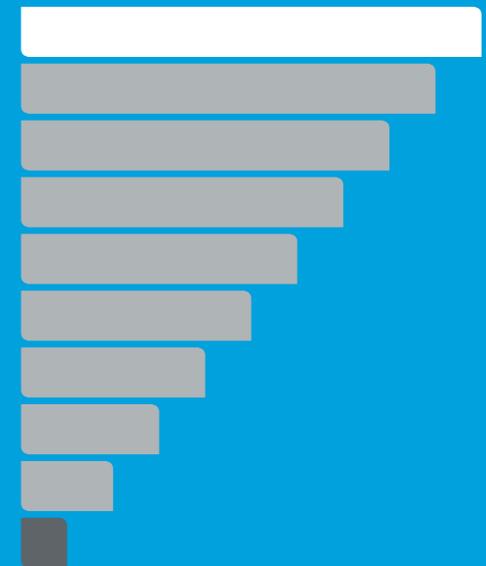
Confidently protect your data and help ensure uptime.

Smart data services

Enable real-time application tuning and acceleration, using HP Smart Storage analytics technology that provides workload-aware intelligence to optimize system performance.

9X faster

workload performance vs. previous generations⁷





Fine-tune space, power, and cooling demands with automated energy optimization

As data centers grow, power and cooling costs consume an ever-larger piece of your IT budget.

HP ProLiant Gen8 servers include automated controls that help minimize energy consumption. And HP 3D Sea of Sensors technologies deliver unmatched visibility and control over the energy use and efficiency of your data center. Embedded into Gen8 servers, these sensors report across several performance dimensions and offer insight into process location, power utilization, and thermal demand.

**Video: Learn more about
automated energy optimization**

Key features

HP Location Discovery Services

Enable energy-aware workload placement and automatic asset management—without the need for tedious, manual asset collection and tracking.

HP Thermal Discovery Services

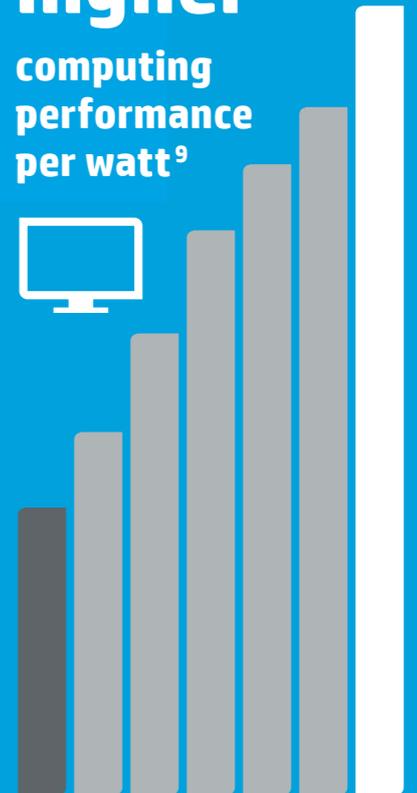
Get the highest performance out of every bit of data center power and cooling capacity—and reduce energy consumption by 10% compared with an HP ProLiant G6 server.⁸

HP Power Discovery Services

Automatically track power usage and document configurations to increase system uptime and reduce the risk of outages.

**70%
higher**

**computing
performance
per watt⁹**





Resolve issues quickly with HP Proactive Insight experience

IT support issues often consume an excessive share of your attention and distract your team from more important work. The HP Proactive Insight experience simplifies IT infrastructure management through a unique, end-to-end offering that combines HP Insight Online monitoring, HP Proactive Care Services problem prevention, and HP remote support. This helps you prevent problems, minimize unplanned downtime, and create an IT environment that can better support growing business demands.

Taking advantage of the rich insight collected by the HP ProActive Insight Architecture, ProLiant Gen8 servers help you quickly and proactively resolve issues and gain valuable insights into your data center operations.

**Video: Learn more about
HP Proactive Insight experience**

Key features

HP Insight Online

Access your IT information anytime, anywhere with a personalized, online dashboard.

HP Proactive Care

Prevent problems before they occur, and keep your business running smoothly with priority access to advanced specialists and periodic reports.

HP remote support

Automate routine tasks to reduce costs and time spent troubleshooting, with access to phone support and 24/7 hardware monitoring.

66%
faster

**problem
resolution
compared with
traditional phone
support¹⁰**



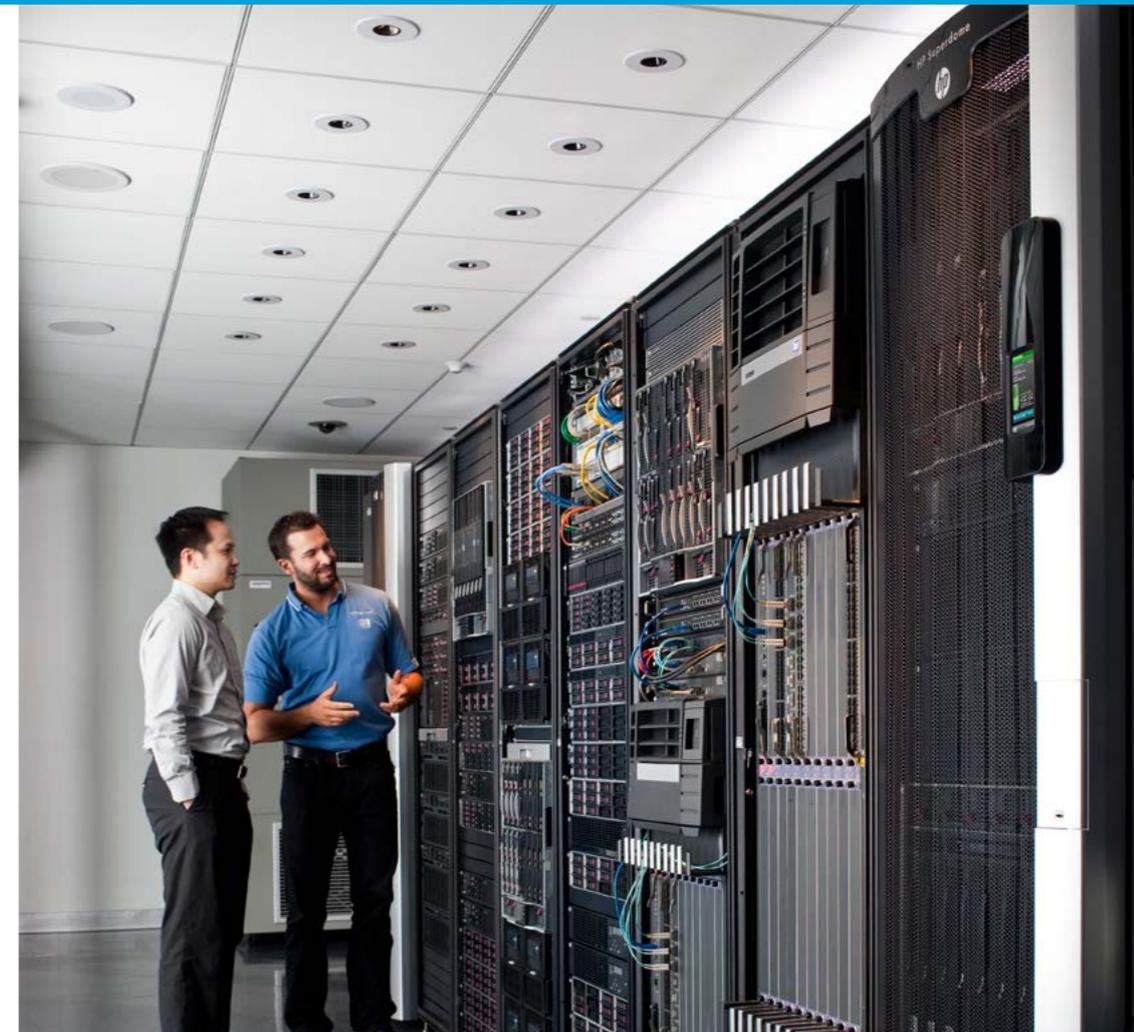


Success story: Turkcell

HP ProLiant enables Turkcell to reduce costs and improves manageability with virtualization

Turkcell is the largest mobile telecommunications company in Turkey, with more than 34 million subscribers. The company wanted to extend its use of virtualization technology in order to reduce operating costs and respond to the growing demands of its customers.

Turkcell chose a joint solution proposed by HP and Microsoft that is based around the Microsoft® Hyper-V® virtualization platform and runs on HP ProLiant DL580 rack mount servers. To manage the Hyper-V environment, Turkcell uses HP Insight Control for Microsoft System Center. This provides an easy way to manage and integrate the company's virtualized servers.



The foundation for a new generation of data centers



“HP Insight Control enables us to monitor and manage our servers and the hypervisor platform. It makes management easier than before and increases our flexibility in administering the virtualized environment.”

—**Bülent Saltürk**, Division Head, Infrastructure Operations, Turkcell

IT improvements

Improved manageability and boosted flexibility of servers with HP management tools

Increased productivity of IT staff with HP Insight Control, saving time and freeing up people to work on other projects

Delivered reliable solution for business-critical projects with no issues in the first 2 years of operation

Business benefits

Reduced total cost of ownership of PCs running on virtual desktop infrastructure, due to simplified management

Reduced licensing costs thanks to Hyper-V virtualization



Chapter 2

Selecting the right HP ProLiant Gen8 server for your enterprise



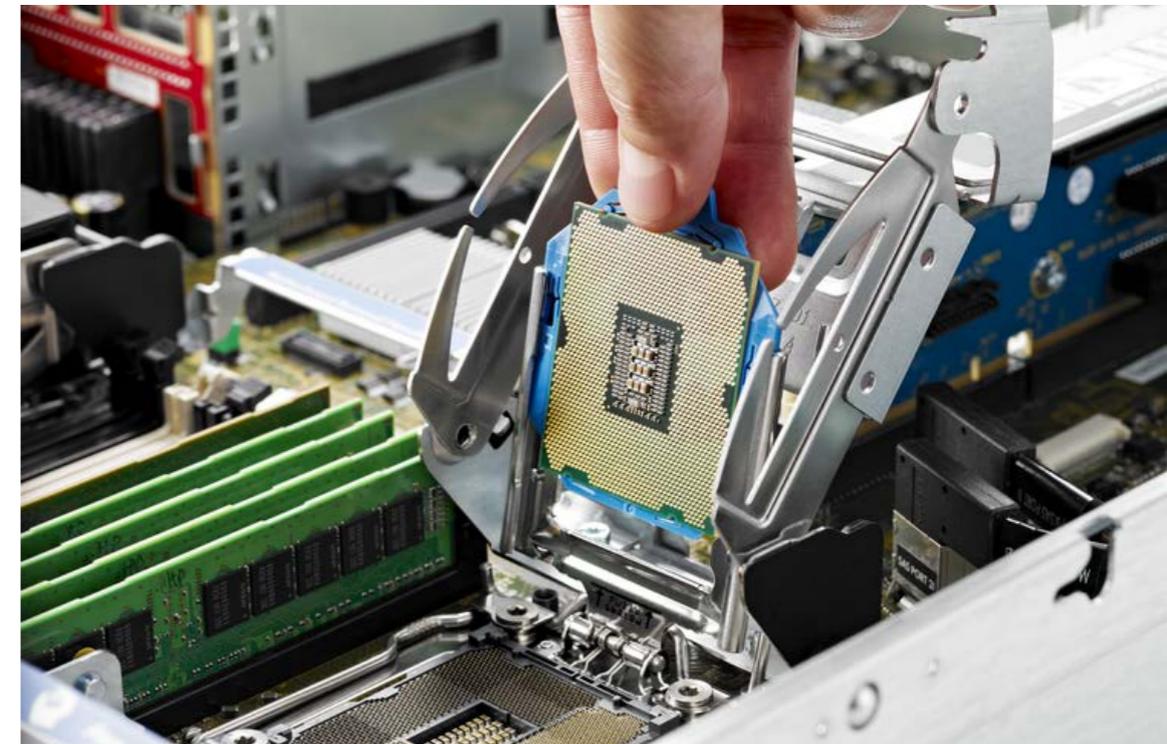
Selecting the right HP ProLiant Gen8 server for your enterprise



HP ProLiant Gen8 servers are efficient and flexible enough to handle today's enterprise computing requirements, while safeguarding the future growth of your data center. We make it easy to achieve your ideal combination of performance, availability, expandability, and manageability.

Our two-processor (2P) servers are well suited for more modest demands such as web hosting, file and print management, and email or other collaboration workloads. For more challenging business demands such as complex file and print management or applications, HP ProLiant Gen8 four-processor (4P) servers let you easily scale up to higher levels of compute performance, memory capacity, and I/O bandwidth.

Whether it's a departmental server, an enterprise data center, or anything in between, HP can meet your exact needs. We have the most extensive server portfolio in the industry—our designs include tower server (ML), rack-optimized (DL), server blade (BL), and extreme HyperScale (SL).





Premium performance and versatility

For enterprises that have moderate workloads, the HP ProLiant Gen8 p-series rack servers deliver exceptional storage performance, flexible networking options, energy-efficient operation, and industry-leading management controls. Our dual-processor offerings include the HP ProLiant Gen8 ML350p, DL360p, and DL380p, each of which support the new Intel Xeon E5-2600 v2 family processor.

Key features

Support for HP Smart Array RAID controller provides more secure and faster access to data.

HP Integrated Lights-Out (iLO) 4 Management Engine helps speed deployment and streamline management tasks.

HP Smart Socket Guide and toolless, easily removable PCI riser cage allow simple access to server components and easy processor updates.

Integrated quad gigabit Ethernet provides increased network throughput and redundancy.

Key features

HP Flexible Network adapters enable more flexible configuration and faster serviceability.

HP iLO 4 Management Engine helps speed deployment and streamline management tasks.

HP ProLiant 3D Sea of Sensors helps save energy and lower costs through more precise and efficient cooling.

HP Smart Socket Guide and toolless, easily removable PCI riser cage allow simple access to server components and easy processor updates.

Key features

Increased performance with greater processor core count, memory capacities, and internal storage capacities.

HP Smart Array P420i technology improves manageability.

HP Smart Socket guides, improved Peripheral Component Interconnect Express (PCIe) riser access, and elegant cabling enhance serviceability.

HP FlexibleLOM supports a broad choice of networking solutions.

HP iLO Management Engine provides embedded provisioning tools, active health monitoring, and easier system maintenance.



Power and versatility in a space-saving design

HP ProLiant Gen8 Scale-up servers are ideal for handling the rigorous demands of virtualization, business processing, decision support, high-performance computing, and data-intensive applications, while also minimizing space and power consumption. These servers provide improved memory performance, enabling you to consolidate more virtual applications on fewer servers.

Key features

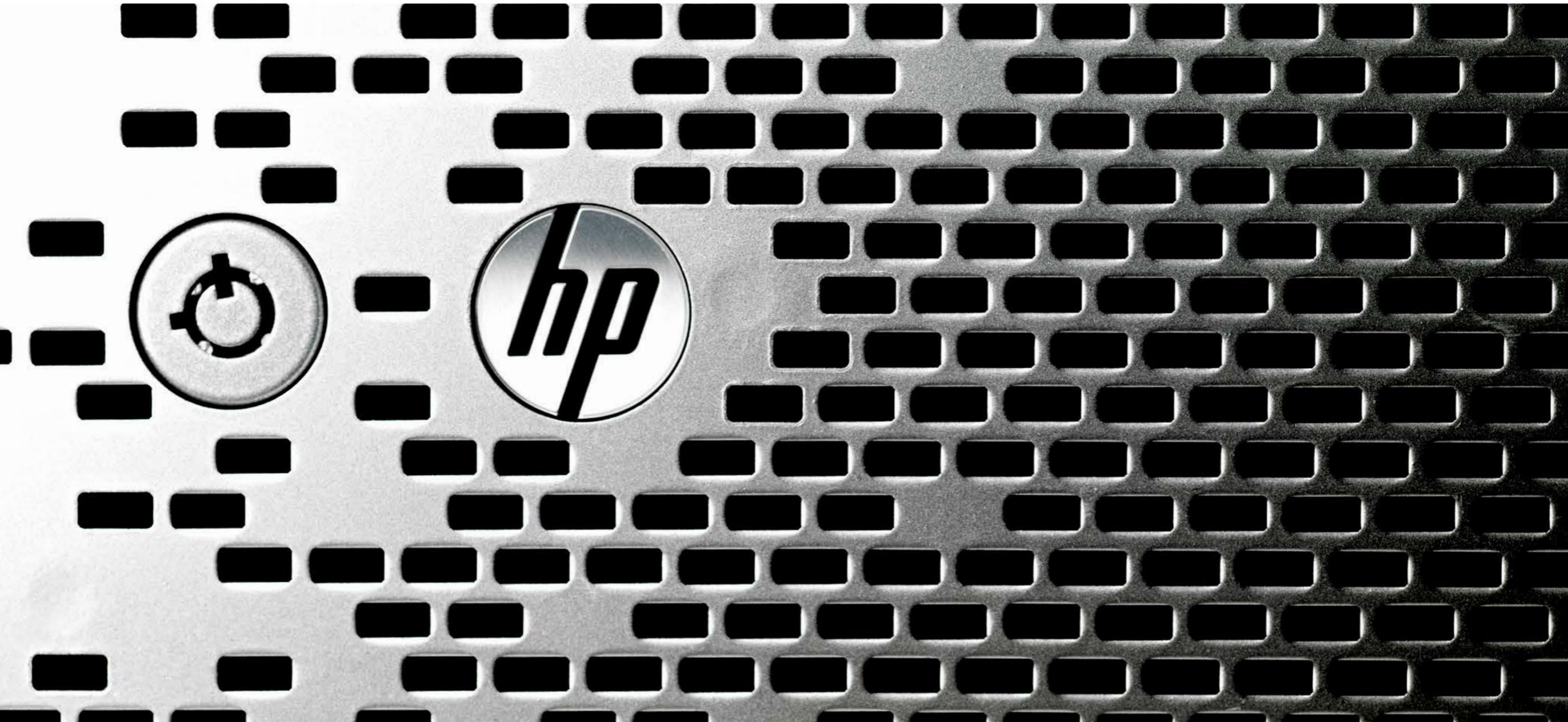
Support for up to four Intel Xeon E5-4600 processors allows you to consolidate servers and free up valuable space.

HP SmartMemory improves performance, manageability, and efficiency while reducing downtime and energy costs.

HP SmartDrive hot-plug drive carrier simplifies drive-status monitoring, helps reduce data loss, and improves serviceability.

HP Smart Socket guides enable quicker processor installation and upgrades, virtually eliminating downtime.

Comparing the features of HP ProLiant Gen8 servers



Comparing the features of HP ProLiant Gen8 servers



HP ProLiant ML350p

Ideal for

Growing businesses, enterprise data centers, and remote branch offices



Features and benefits

HP Smart Array RAID controller—secure and fast access to data

HP iLO 4 Management Engine—rapid deployment, streamlined management

HP Smart Socket guides—simplified access, easy processor updates

Quad gigabit Ethernet—increased network throughput and redundancy

Processor family

Intel Xeon E5-2600 v2

Number of processors

1 or 2

Memory

24 DIMM slots for DDR3
Maximum speed: 1866 MHz
Maximum capacity: 768 GB

Storage

HP Smart Array P420
Up to 24 small form factor (SFF) or 18 large form factor (LFF) hard drives

Networking

4 x 1 GB (4-port) 331i Ethernet adapter

Expandability

Eight PCIe 3.0 and one PCIe 2.0

Management

HP iLO 4 Management Engine with Always-On HP Active Health System

Comparing the features of HP ProLiant Gen8 servers



HP ProLiant DL360p

Ideal for

High-performance workloads and cloud environments



Features and benefits

HP Flexible Network adapters—easy configuration, fast serviceability

HP iLO 4 Management Engine—rapid deployment, streamlined management

HP ProLiant 3D Sea of Sensors—lower energy costs

HP Smart Socket guides—simplified access, easy processor updates

Processor family

Intel Xeon E5-2600 v2

Number of processors

1 or 2

Memory

24 DIMM slots for DDR3
Maximum speed: 1600 MHz
Maximum capacity: 768 GB

Storage

Up to 10 SFF or 4 LFF hard drives

Networking

HP FlexibleLOM—choice of 4 x 1 GB or 2 x 10 GB Ethernet, InfiniBand, 2 x 10 GB FlexFabric

Expandability

Two PCIe 3.0 slots (x16-FHHL, x8LP) with quick-access system

Management

HP iLO 4 Management Engine with Always-On HP Active Health System

Comparing the features of HP ProLiant Gen8 servers



HP ProLiant DL380p

Ideal for

Flexibility to keep pace with your growing needs



Features and benefits

HP Smart Array P420i technology— improved manageability

HP Smart Socket guides—simplified access, easy processor updates

HP iLO Management Engine—proactive health monitoring, easier system maintenance

Processor family

Intel Xeon E5-2600 v2

Number of processors

1 or 2

Memory

24 DIMM slots for DDR3
Maximum speed: 1600 MHz
Maximum capacity: 768 GB

Storage

HP Smart Array P420i
Up to 25 SFF or 12 LFF hard drives

Networking

HP FlexibleLOM—choice of 4 x 1 GB or 2 x 10 GB Ethernet, 2 x 10 GB FlexFabric

Expandability

Up to six PCIe Gen3 slots

Management

HP iLO 4 Management Engine with Always-On HP Active Health System

Comparing the features of HP ProLiant Gen8 servers



HP ProLiant DL560

Ideal for

Performance, scalability, and expandability



Features and benefits

Multi-processor support—consolidate servers, conserve space

HP SmartMemory—improved performance, manageability, efficiency; reduced downtime, lower energy costs

HP SmartDrive—simplified monitoring, reduced data loss, better serviceability

HP Smart Socket guide—simplified access, easy processor updates

Processor family

Intel Xeon E5-4600

Number of processors

2 or 4

Memory

48 DIMM slots for DDR3
Maximum speed: 1600 MHz
Maximum capacity: 1.5 TB

Storage

HP Smart Array P420
Up to 5 hot-plug 2.5-inch SFF hard drives

Networking

HP FlexibleLOM—choice of 4 x 1 GB or 2 x 10 GB Ethernet, 2 x 10 GB FlexFabric

Expandability

Up to six PCIe Gen3 slots

Management

HP iLO 4 Management Engine with Always-On HP Active Health System, optional HP Insight Control

Comparing the features of HP ProLiant Gen8 servers



HP ProLiant BL660c

Ideal for

Virtualization, data handling, and demanding x86 workloads



Features and benefits

Multi-processor support—consolidate servers, conserve space

HP SmartMemory—improved performance, manageability, efficiency; reduced downtime, lower energy costs

HP SmartDrive—simplified monitoring, reduced data loss, better serviceability

HP Smart Socket guide—simplified access, easy processor updates

Processor family

Intel Xeon E5-4600

Number of processors

2 or 4

Memory

32 DIMM slots for DDR3
Maximum speed: 1600 MHz
Maximum capacity: 1 TB

Storage

HP Smart Array P220i
2 hot-plug 2.5-inch SFF hard drives

Networking

HP FlexibleLOM—choice of 2 x 10 GB FlexFabric, 2 x 10 GB Ethernet Flex-10, or 2 x 10 GB Ethernet

Expandability

Up to six PCIe Gen3 slots

Management

HP iLO 4 Management Engine with Always-On HP Active Health System, optional HP Insight Control



Comparing the features of HP ProLiant Gen8 servers



	HP ProLiant ML350p	HP ProLiant DL360p	HP ProLiant DL380p	HP ProLiant DL560	HP ProLiant BL660c
Ideal for	Growing businesses, enterprise data centers, and remote branch offices 	High-performance workloads and cloud environments 	Flexibility to keep pace with your growing needs 	Performance, scalability, and expandability 	Virtualization, data handling, and demanding x86 workloads 
Features and benefits	<p>HP Smart Array RAID controller—secure and fast access to data</p> <p>HP iLO 4 Management Engine—rapid deployment, streamlined management</p> <p>HP Smart Socket guides—simplified access, easy processor updates</p> <p>Quad gigabit Ethernet—increased network throughput and redundancy</p>	<p>HP Flexible Network adapters—easy configuration, fast serviceability</p> <p>HP iLO 4 Management Engine—rapid deployment, streamlined management</p> <p>HP ProLiant 3D Sea of Sensors—lower energy costs</p> <p>HP Smart Socket guides—simplified access, easy processor updates</p>	<p>HP Smart Array P420i technology—improved manageability</p> <p>HP Smart Socket guides—simplified access, easy processor updates</p> <p>HP iLO Management Engine—proactive health monitoring, easier system maintenance</p>	<p>Multi-processor support—consolidate servers, conserve space</p> <p>HP SmartMemory—improved performance, manageability, efficiency; reduced downtime, lower energy costs</p> <p>HP SmartDrive—simplified monitoring, reduced data loss, better serviceability</p> <p>HP Smart Socket guide—simplified access, easy processor updates</p>	<p>Multi-processor support—consolidate servers, conserve space</p> <p>HP SmartMemory—improved performance, manageability, efficiency; reduced downtime, lower energy costs</p> <p>HP SmartDrive—simplified monitoring, reduced data loss, better serviceability</p> <p>HP Smart Socket guide—simplified access, easy processor updates</p>
Processor family	Intel Xeon E5-2600 v2	Intel Xeon E5-2600 v2	Intel Xeon E5-2600 v2	Intel Xeon E5-4600	Intel Xeon E5-4600
Number of processors	1 or 2	1 or 2	1 or 2	2 or 4	2 or 4
Memory	24 DIMM slots for DDR3 Maximum speed: 1866 MHz Maximum capacity: 768 GB	24 DIMM slots for DDR3 Maximum speed: 1600 MHz Maximum capacity: 768 GB	24 DIMM slots for DDR3 Maximum speed: 1600 MHz Maximum capacity: 768 GB	48 DIMM slots for DDR3 Maximum speed: 1600 MHz Maximum capacity: 1.5 TB	32 DIMM slots for DDR3 Maximum speed: 1600 MHz Maximum capacity: 1 TB
Storage	HP Smart Array P420i Up to 24 small form factor (SFF) or 18 large form factor (LFF) hard drives	HP Smart Array P420i Up to 10 SFF or 4 LFF hard drives	HP Smart Array P420i Up to 25 SFF or 12 LFF hard drives	HP Smart Array P420i Up to 5 hot-plug 2.5-inch SFF hard drives	HP Smart Array P220i 2 hot-plug 2.5-inch SFF hard drives
Networking	4 x 1 GB (4-port) 331i Ethernet adapter	HP FlexibleLOM—choice of 4 x 1 GB or 2 x 10 GB Ethernet, InfiniBand, 2 x 10 GB FlexFabric	HP FlexibleLOM—choice of 4 x 1 GB or 2 x 10 GB Ethernet, 2 x 10 GB FlexFabric	HP FlexibleLOM—choice of 4 x 1 GB or 2 x 10 GB Ethernet, 2 x 10 GB FlexFabric	HP FlexibleLOM—choice 2 x 10 GB FlexFabric, 2 x 10 GB Ethernet Flex-10, or 2 x 10 GB Ethernet
Expandability	Eight PCIe 3.0 and one PCIe 2.0	Two PCIe 3.0 slots (x16-FHHL, x8LP) with quick access system	Up to six PCIe Gen3 slots	Up to six PCIe Gen3 slots	Up to six PCIe Gen3 slots
Management	HP iLO 4 Management Engine with Always-On HP Active Health System	HP iLO 4 Management Engine with Always-On HP Active Health System	HP iLO 4 Management Engine with Always-On HP Active Health System	HP iLO 4 Management Engine with Always-On HP Active Health System, optional HP Insight Control	HP iLO 4 Management Engine with Always-On HP Active Health System, optional HP Insight Control

Why choose HP

From core to cloud, HP ProLiant Gen8 servers are transforming data center expectations and economics with the world's most intelligent servers. Since 1989, when HP developed the first x86 servers, we've focused on making the HP ProLiant series deliver 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 Technology Services are proactive to help prevent problems, personalized to provide the right balance of coverage and control, and simplified to keep your team productive.

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

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.

Whether it's a departmental server, an enterprise data center, or anything in between, HP can meet your exact business needs. You can choose the right level of performance, availability, expandability, and manageability from the world's most comprehensive portfolio of industry-standard servers and networking solutions.

For more information about HP ProLiant Gen8 products, contact your HP representative or visit hp.com/go/proliant.

- 1 IDC Q3 DSS Storage Market Forecast, 2011.
- 2 Based on HP internal testing and calculations. HP ProLiant DL360p Gen8 servers compared with HP ProLiant DL360 G5 and G6 servers. ROI, operational costs, and total cost of ownership may vary due to configuration, environment, or country-specific costs.
- 3 Based on HP testing with a fully online firmware and system software update comparing HP Smart Update Manager (SUM) 5.0 with HP SUM 4.2.
- 4 Based on HP testing with a fully online firmware and system software update comparing SUM 5.0 with HP SUM 4.2, update time for a blade enclosure was reduced from six to eight hours to 20 minutes.
- 5 Based on HP Performance Lab testing. Comparison benchmark on an HP ProLiant DL380 G7 server using the latest processors, memory, and Smart Array controller, compared with an HP ProLiant DL380 Gen8 server using the latest processors, memory, and Gen8 Smart Array controllers. The testing was performed on SQL using an OLTP workload, and Video Performance was performed using the STREAM application.
- 6 HP ProLiant DL380 Gen8 server with a Smart Array P420 with 2 GB Flash-Backed Write Cache (FBWC), compared with an HP ProLiant G7 server with a Smart Array P410 with 1 GB FBWC.
- 7 HP tests in 2013 using an HP ProLiant DL380 G7 with SSDs and a similarly configured HP ProLiant DL380p Gen8 running a simple OLTP workload of 70% read/30% write ratio. The identical workload ran nine times faster on the Gen8.
- 8 Based on HP internal testing of HP ProLiant Gen8 servers compared with a similarly configured HP ProLiant G6 server. The 10% total power savings comes from a combination of a 20% reduction in system memory power from operating HP SmartMemory at 1.35v DIMM vs. 1.5v; a 30% reduction in system fan power as a result of ProLiant Sea of Sensors technology improvements; and a 5% improvement in system power efficiency provided by new ProLiant Gen8 94% efficient Common Slot Platinum Plus power supplies. Total power savings includes both server power and the power required for server cooling.
- 9 Based on HP internal testing across a set of applications that show an average performance improvement of more than 65% compared with ProLiant G6. Combined with the 10% lower power use compared with ProLiant G6, this results in 70% higher computing performance per watt.
- 10 HP internal call center data, Q4 FY11. Revalidated August 2013.
- 11 "New ProLiant DL560 Gen8 is #1 on the VMmark 2.1.1 benchmark," ISS, June 2012.

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