



# Redefining density-optimized 4S blade technology

## HP ProLiant BL660c Gen8 Server series

In today's data centers, server density is increasingly important for enterprise applications due to power, space, and budget constraints. Today, with typical 2P and 4P servers available, this scenario has created a mutually exclusive trade-off: requiring more processor performance and scalability while conserving space, minimizing server sprawl, and reducing overall TCO. With tight resources and limited budget, choosing a server blade that gives you the optimum balance of performance, expandability, and processor density is critical.

Data-intensive applications require greater performance, memory capacity for virtualization, I/O, and have bandwidth and other expandability and scalability needs. Often, servers with at least four processors are essential to accommodate these types of requirements. While meeting these requirements, considerations of budget, space, power, and manageability constraints have to be taken into account. To get outstanding performance and expandability for data-intensive applications, while optimizing your resources, a density-optimized 4P server blade such as the HP ProLiant BL660c Gen8 Server series is ideal.

## Denser 4P servers are the need of the hour

The ProLiant BL660c Gen8 Server series is a new density-optimized offering with 4P performance and features in a single-wide, full-height form factor. Built on the Gen8 features of the ProActive Insight Architecture, the ProLiant BL660c Gen8 server blade provides double the computing density compared to the previous 4P server blade without compromising on performance, scalability, and expandability. Moreover, the ProLiant BL660c Gen8 server blade gives customers the ability to consolidate servers and repurpose valuable enclosure space, further reducing data center server sprawl and improving TCO.

The ProLiant BL660c Gen8 Server series is ideal for virtualization, database, business processing, decision support, high-performance computing (HPC), and general 4P data-intensive applications where fine-tuning of data center space and price versus performance are important. Supporting the high-density and cost-effective Intel® Xeon® processor E5-4600 family, the ProLiant BL660c Gen8 Server series redefines density-optimized four-socket blade technology. It provides exceptional performance and offers significant memory, storage, and I/O capacity in addition to the latest Gen8 features.

- Hardware enhancements include the HP SmartDrive, Smart Socket guide, HP SmartMemory, HP FlexibleLOM technology, 3D Sea of Sensors, the next-generation 6 Gb PCIe 3.0 embedded HP Smart Array P220i RAID controller, and more.
- Embedded management enhancements include Integrated Lifecycle Automation capabilities that are enabled by innovations such as Intelligent Provisioning for easy system set-up, Active Health for agentless hardware monitoring and alerting, and Smart Update for automated firmware and system software maintenance.

## Key features and benefits

### Ideal form factor

The ProLiant BL660c Gen8 Server series delivers 4S computing in a single-wide, full-height form factor. It also has other features, such as:

- Support for up to four cost-effective Intel Xeon E5-4600 processors, each with up to eight cores and 130 watts without system configuration restrictions
- 32 DDR3 DIMM sockets for up to 1.0 TB of Gen8 HP SmartMemory and a maximum memory speed up to 1600 MHz
- Three PCIe 3.0 expansion slots (two x16) supporting the highest performing mezzanine option cards, now and in the future
- Choice of embedded networking supports up to four 10 Gb FlexFabric ports with the Gen8 FlexibleLOM solution

### Innovative design

The ProLiant BL660c Gen8 Server series has user-inspired design features, such as:

- HP SmartDrive hot plug carrier and Smart Socket guide, which anticipate your needs and reduce common issues that can result in downtime
- Integrated Lifecycle Automation, an industry first, which provides embedded provisioning tools, Active Health monitoring features—which monitors system parameters for faster problem resolution, and Smart Update with system maintenance capabilities
- Dynamic Workload Acceleration, which delivers smarter data protection for ever-increasing hard drive capacities
- Automated Energy Optimization, which improves the server's ability to analyze and respond through the 3D Sea of Sensors within the server. These sensors work to self-identify its location and inventory through HP Insight Control for increased workload improvement across the data center

## Improved memory, storage, and I/O performance

You gain higher performance, quality, manageability, and efficiency advantages with:

- Gen8 SmartMemory, which uses less power, leveraging low-voltage registered DIMMs (RDIMMs), with no impact to performance
- Gen8 embedded Smart Array P220i RAID controller with optional 512 MB flash backed write cache (FBWC), which supports the HP Smart Storage and SmartDrive carrier, and a choice of a very wide section of hot plug SAS, SATA, SAS SSD, and SATA SSD hard drives
- PCIe 3.0 I/O technology with one x8 and two x16 slots to support reduced latency and additional bandwidth per I/O expansion slot as compared to G7 blade servers
- FlexibleLOM, which customizes the server networking bandwidth, technology, OEM provider, and number of ports while meeting future server networking needs without overhauling server hardware

## Intuitive, highly configurable management system

Reduce tedious, time-consuming tasks with:

- HP Intelligent Provisioning, which is a single, embedded tool for all server configuration tasks. All the firmware, drivers, and tools that you need to quickly get your systems online are embedded—no more CDs or DVDs needed
- Agentless hardware monitoring and alerting capabilities that are built into the server with HP Agentless Management, which works the moment a power cord and an Ethernet cable are connected to the enclosure
- Active Health System, which provides 24x7 continuous health monitoring and 100 percent configuration change logging. This unified diagnostic tool helps start problem analysis quickly with secure data transfer to the HP support team

## Technical specifications

Processor	
Number of processors	2 or 4
Number of cores	4 or 6 or 8
Processors supported	Intel Xeon processor E5-4600 family
Cache	Up to 16 MB L3
Maximum processor speed	2.9 GHz

Memory	
Memory type	DDR3 RDIMM or Load-Reduced DIMM (LRDIMM)
Maximum memory	1.0 TB
Advanced memory protection features	Data bus ECC protection Advanced ECC/SDDC Rank sparring (on line spare) Lockstep mode DIMM address/control bus parity protection Failed DIMM isolation Demand scrubbing Patrol scrubbing Memory thermal control
Memory slots	32 DIMM slots

Networking and I/O	
<b>I/O expansion slots</b>	Three PCIe 3.0 mezzanine slots: Two x16 and one x8
<b>Networking options</b>	FlexFabric: One or two dual-port FlexFabric adapters Mezzanine options: Wide variety of options including Ethernet, InfiniBand, I/O accelerators, Fibre Channel, and more

Storage	
<b>Internal storage</b>	Two 2.5-inch hot-plug SAS/SATA/SSD bays supporting up to 2.0 TB SAS, 2.0 TB SATA, 1.6 TB SSD of internal storage
<b>Storage controller</b>	HP Smart Array P220i controller with optional 512 MB FBWC
<b>Storage options</b>	Hot plug SAS/SATA/SSD drives Fibre Channel mezzanine options 512 MB FBWC option for the Smart Array P220i Controller Expansion blades including HP Ultrium tape blades and the HP D2200sb Storage Blade HP Smart Array Advanced Pack software

Deployment	
<b>Form factor</b>	Full-height, single-wide c-Class server blade Eight blades per c7000 (10U) enclosure Four blades per c3000 (6U) enclosure
<b>System management</b>	<b>Standard:</b> HP iLO Management Engine Agentless Management Active Health Intelligent Provisioning Remote Support HP Systems Insight Manager (SIM) HP Smart Update <b>Optional:</b> HP iLO Advanced HP Insight Control

Other	
<b>Power supply and fans</b>	Enclosure-based power
<b>Warranty</b>	3-year parts/3-year labor/3-year onsite

## HP Factory Express

HP 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. Visit [hp.com/go/factoryexpress](http://hp.com/go/factoryexpress).

## HP Financial Services

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## Customer technical training

We offer a variety of training courses on storage software, networking, archiving, and disk storage systems. Our classes are available in many delivery modalities—from traditional instructor-led courses at one of our 80 training centers worldwide to online and/or onsite training. Visit [hp.com/learn/storage](http://hp.com/learn/storage).

## Learn more

Blend form and function for an enhanced experience in your data center with the HP ProLiant BL660c Gen8 Server series. For more information, visit [hp.com/servers/bl660c-gen8](http://hp.com/servers/bl660c-gen8).

## HP Services

HP support services, backed by the strategic and technical know-how of our consulting experts, offer single-point accountability for helping you make the most of your investments. Depending on your unique support requirements, choose from three levels of care that cater to different levels of SLA requirements:

- **Optimized Care**

Helps deliver optimum performance and near-continuous availability of crucial ProLiant systems through expert deployment support and proactive management practices.

- 3 years 24x7 Proactive Care includes 6-hour call-to-repair hardware support onsite

- HP Installation Service

- **Standard Care**

Maintains high levels of server availability along with expert help to cut the cost and complexity of implementing and supporting ProLiant server environments.

- 3 years 24x7 Proactive Care includes 24x7 4-hour response hardware support onsite

- HP Installation Service

- **Basic Care**

Delivers the minimum recommended support service level with expert advice for implementation and support.

- 3 years 24x7 Proactive Care includes 24x7 4-hour response hardware support onsite

- HP Installation Service

All options come with HP Insight Remote Support, available at no additional cost, delivering remote monitoring, diagnosis, and problem resolution.

HP brings together deep expertise, proactive and business-critical support, and a strong partner network. For more information, visit [hp.com/services/bladesystem](http://hp.com/services/bladesystem).

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