

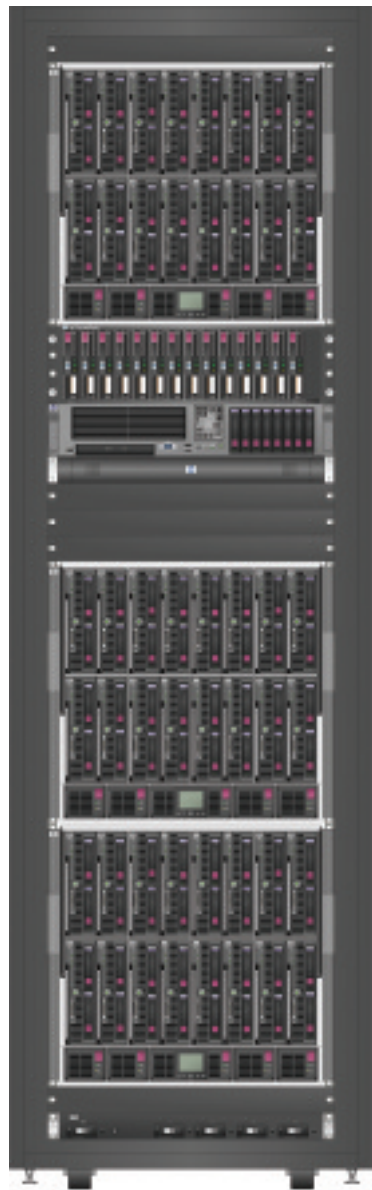
HP Cluster Platform 3000BL

Based on Intel® Xeon® processors

A member of the HP Unified Cluster Portfolio



Deploy a cluster solution with HP BladeSystems designed to meet your exact specifications. Select the fastest interconnect technology with increased processor and node support, efficient energy usage, and increased cooling capabilities. Partner with a team of innovative specialists to achieve a successful implementation—one that is fast, simple, and cost-competitive.



Powerful choices for cluster computing

Constantly expanding compute requirements and the corresponding increases in node counts are causing multiple challenges for HPC datacenters. Cabling complexity, increased power/cooling requirements, configuration changes, and total cost of ownership are all compounding the typical cluster challenges.

Blades systems deliver advantages over traditional rack-mount server clusters, including superior manageability, reduced floor space, and minimized cabling. Blades are also easier to add or replace since individual blades plug into a blade enclosure that integrates power, cooling, and management system. Additionally, the cost of the solution is typically lower because much of the infrastructure such as power supplies, cooling, and mid-plane and management hardware can be shared among the blade nodes.

HP, the leader in HPC and cluster solutions, provides organizations with the choice of industry-leading cluster components and the experience needed to ensure a risk-free, simple, and cost-effective assembly and deployment. With the HP Unified Cluster Portfolio (UCP), HP combines the flexibility of a custom solution with the simplicity and value of a factory-built product.

The UCP is an innovative, modular package of hardware, software, and services for scalable computation, data management, and visualization. It features flexible platforms, a wide range of open source and commercial middleware, and the latest in industry-standard technology—all with the simplicity and affordability of a pre-configured, tested, and supported solution.

Hardware engineered to deliver performance

The HP Cluster Platforms are the foundation of the UCP, providing customers with a choice of processors, operating systems, and interconnects. Integrated, customer-ready solutions, the HP Cluster Platforms offer a wide range of qualified options to ensure flexible choices, simple implementation, and successful results.

The HP Cluster Platform 3000BL is based on the HP BladeSystem c-Class infrastructure, which consolidates and packages all supporting infrastructure elements—compute, storage, network, and power—into a single platform that accelerates data center integration and optimization.

The HP BladeSystem c-Class enclosure provides extensive connectivity, power, cooling, and manageability options. The enclosure holds up to 16 server and/or storage blades plus redundant network and storage switches. It includes a shared, five terabit/second mid-plane for wire-once connectivity of server blades to external networks and shared storage. Power is delivered through a pooled power backplane that increases power efficiency and ensures that power is distributed as needed to all blades.

The c-Class enclosure features an innovative new cooling technology strategy that uses built-in instrumentation to monitor changes in workload demand and environment. An onboard administrator then adjusts power load and thermal controls automatically to maintain system performance within the constraints of the power and cooling capacity of a data center.

HP ProLiant Server blades combine power-efficient compute power and high density with expanded memory and I/O. The CP3000BL supports the HP ProLiant BL460c and BL480c blades. Both feature next-generation multi-core Intel® Xeon® processors with DDR2 memory, serial attached SCSI (SAS) or serial ATA (SATA) hard drives, support of multifunction Gigabit NICs, and PCI Express mezzanine slots for multiple I/O cards.

The CP3000BL supports industry-standard interconnect choices, including the highest performance interconnect available in a blade-based system. The HP 4x DDR InfiniBand Interconnect Switch Module and the InfiniBand HCA both support a 20 Gbps signaling rate in each direction. Users can also choose from a range of industry-standard adapters, including Gigabit Ethernet, Fibre Channel, and multifunction PCI Express adapters.

Another benefit of the CP3000BL is its virtualization ability, allowing incredible flexibility for change management. Virtualization provides a pool of resources—including compute, storage, and visualization—that can be allocated as needed. Servers need only be wired once; subsequent changes can then be made without re-wiring.

Extensive software options

HP Cluster Platforms are designed to support standard cluster deployments using popular open source Linux software stacks and/or Microsoft® Windows®. HP complements these deployment options with a set of commercial products, developed and supported by HP or its partners. All HP Cluster Platform software offerings are tested and verified by HP or its partners to run on the platform, enabling rapid deployment and a comprehensive environment for high performance computing.

Software available from HP for the Cluster Platform 3000BL includes a choice of Linux (Red Hat or SUSE subscriptions) or Microsoft® Windows® Compute Cluster Server 2003 (CCS). HP Services Care Packs are included with the operating system, which provide access to HP's experienced service professionals and hands-on cluster expertise.

The HP Cluster Platform 3000BL can be delivered with the following optional cluster management software products:

- The HP-developed XC System Software v3.1 integrates leading open source cluster packages with the Linux operating system, HP-MPI, and Platform Computing's LSF. The XC System Software provides a complete turnkey cluster environment for provisioning, administration, and job management. The cluster environment is delivered pre-configured and ready for immediate deployment, resulting in enhanced ease of use and unprecedented levels of productivity.
- HP Cluster Management Utility (CMU) is an efficient and robust tool for the management of Linux-based nodes in HPC clusters and compute farms. A simple graphical user interface enables centralized console management, monitoring, and software installation. CMU enables rapid provisioning and management of multiple images, making it ideal for a site with frequent changes to its software configuration.
- HP Insight Control Linux Edition is an integrated suite of software that simplifies provisioning and management of the CP3000BL. Insight Control uses an integrated installer to deploy and configure core HP management software rapidly and consistently, reducing manual procedures and time to production. Insight Control also provides features for ongoing

	Feature	Benefit
Simplicity	Integrated, customer-ready solutions	Enables cost-effective, rapid deployment
	All software is tested and verified by HP and/or partners to run on the HP Cluster Platforms	Provides a comprehensive environment for high performance computing
	Clusters are built to uniform, worldwide specifications	Eases and lowers costs of implementation and use
Agility	Broad choice of processors, interconnects, and middleware	Provides a wide range of hardware/software to meet specific needs
	Intel Xeon processor-based servers featuring dual- and quad-core technology	Dramatic performance improvement in small form factor
	Supports HP StorageWorks Scalable File Share and HP Scalable Visualization Array	Provides complete solution—computation, visualization, and data management in an integrated package
Value	Fully integrated with HP warranty and support	Provides industry-leading expertise for reduced TCO
	Partnerships with leading suppliers of software development tools	Offers customers a powerful set of tools for developing cluster applications
	Optional on-site systems software support, applications development and optimization, and clusters training	Enhances the HP Cluster Platforms to achieve best possible results

health monitoring, routine maintenance tasks, redeployment or repurposing, and support for patching and updating.

- Scali Manage™ is a commercial, standards-based application that delivers total cluster management for heterogeneous environments. This application offers image- and package-based provisioning, monitoring, and fault handling as well as cluster optimization.
- Microsoft Windows Compute Cluster Server 2003 (CCS) provides an HPC platform that is simple to deploy, operate, and integrate. CCS is built on top of the industry-leading Windows Server platform and provides a set of capabilities for scheduling, administration, and parallel job execution. CCS is especially well-suited in Windows-based environments that need to grow into a larger compute resource.

To ease the burden of supporting applications across multiple interconnects and platforms, HP offers HP-MPI, a high performance and production quality implementation of the Message-Passing Interface (MPI) standard. HP-MPI supports multiple interconnects, allowing a single executable to transparently and dynamically take advantage of the highest performing interconnect available on the cluster.

To complete the software development portfolio, HP is allied with leading suppliers of software development tools to test and qualify a comprehensive portfolio of compilers, libraries, debuggers, and other HPC tools. A comprehensive list of development tools for the Cluster Platform 3000BL is available at the Unified Cluster Portfolio web site (www.hp.com/go/clusters).

Scalable storage

Recent technology advances in computational performance has outpaced capabilities in scalable storage. HP has solved these challenges with the revolutionary offering in the UCP—the StorageWorks Scalable File Share (SFS), based on Lustre technology. HP SFS is a powerful file server that reliably scales I/O bandwidth across dozens to thousands of distributed compute nodes.

Tuning and customization with HP Services

Complement the HP CP3000BL with HP custom services. Over the years, HP and their partners have implemented best practices associated with component choice, integration, power and thermal requirements, and maintainability. Service options include on-site systems software support, applications development and tuning, and clusters training. In addition, customers can choose to have their own software installed and tested in HP factories—all with support from the HP Consulting and Integration Services team.

The modular design and flexible options of the HP CP3000BL allows customers to choose all or part of the UCP portfolio with corresponding service and support. Customers can choose a full solution from HP—a fully supported and unified software and hardware product. Alternatively, customers can purchase a combination software and hardware solution, with software certified and supported by HP software partners and hardware supported by HP.

HP Cluster Platform 3000BL

Specifications

Platform	HP ProLiant BL460c blade server	HP ProLiant BL480c blade server	HP ProLiant DL140 G3 server	HP ProLiant DL380 G5 server
Node type	Compute	Compute	Control or Visualization	Control
Processor	Up to two Multi-Core Intel® Xeon™ Processors 5100 and 5300 Sequence; up to 3.0 GHz with 1333 MHz FSB	Up to two Multi-Core Intel® Xeon™ Processors 5100 and 5300 Sequence; up to 3.0 GHz with 1333 MHz FSB	Up to two Multi-Core Intel® Xeon™ Processors 5100 and 5300 Sequence; up to 3.0 GHz with 1333 MHz FSB	Up to two Multi-Core Intel® Xeon™ Processors 5100 and 5300 Sequence; up to 3.0 GHz with 1333 MHz FSB
Processors/cores per node	2P/4C or 2P/8C	2P/4C or 2P/8C	2P/4C or 2P/8C	2P/4C or 2P/8C
Memory per node	PC2-5300 FB DDR2 32 GB max	PC2-5300 FB DDR2 48 GB max	PC2-5300 FB DDR2 16 GB max	PC2-5300 FB DDR2 32 GB max
Disk/Media bays	2 hot-plug SFF ¹ SAS ² or SATA ³ SmartArray E200i Standard RAID 0/1 controller with optional BBWC ⁴	2 hot-plug SFF ¹ SAS ² or SATA ³ SmartArray P400i Standard RAID 0/1/5 controller with optional BBWC ⁴	2 hot-plug SAS ² or SATA ³ Standard RAID 0/1 controller	8 hot-plug SFF ¹ SAS ² or SATA ³ SmartArray E200i Standard RAID 0/1 controller
Networking	2 integrated multifunction Gigabit Ethernet	2 integrated multifunction Gigabit and 2 integrated Gigabit Ethernet	2 integrated Dual 10/100/1000 Ethernet	2 embedded NC371i multifunction Gigabit adapters with TCP/IP Offload Engine
Expansion Slots	2 PCI Express (1-x8, 1-x4) mezzanine connectors	3 PCI Express (2-x8, 1-x4) mezzanine connectors	2 slots—1 full height PCI-Express x16 and 1 low-profile PCI-Express x8; PCI-X slots (optional)	4 slots—3 full and 1 low profile PCI-Express slots; optional PCI-X slots
Enclosure Density	16 per enclosure	8 per enclosure	1U Rack Height	2U Rack Height
Cluster interconnect	Gigabit Ethernet or 4X DDR InfiniBand			
Management network	10/100 network or Gigabit Ethernet			
Operating System options	Linux: Red Hat Enterprise Linux 4.0; SUSE SLES 9 or 10 Microsoft Windows			
Cluster management software options	HP XC System Software v3.1 HP Cluster Management Utility 3.1 HP Insight Control Linux Edition Scali Manage 5 Microsoft Windows Compute Cluster Server 2003 ⁵ Integrated Lights Out 2 Standard Blade Edition			
Services	HP Enhanced Services available for HP Cluster Platforms. HP offers on-site field installation. HP software support available for operating systems and HP software options.			
Warranty	Standard hardware warranty on platforms, based on underlying components			
¹ SFF—Small Form Factor ² SAS—Serial attached SCSI ³ SATA—Serial ATA ⁴ BBWC—Battery-backed write cache ⁵ InfiniBand support TBA				

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To learn more, visit www.hp.com/go/clusters

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