

Cluster-in-a-Box System for Compute-Intensive Workloads

Using HP BladeSystem and XC Cluster Software

HP BladeSystem Solution Block



Accelerate and enhance product development and discovery—a small office solution that lightens the load

The people of Ancient Egypt realized that in order to construct massive stone temples and pyramids, they would need to divide the seemingly insurmountable task among thousands of workers. These builders would have understood the English proverb “Many hands make light work.” The inventors of today’s parallel processing computers recognized the truth of this saying and applied this same principle to compute workloads—by dividing and distributing numerous calculations across multiple servers you can achieve enhanced results in less time.

Many scientific and engineering applications are available in parallel versions, enabling cluster users to divide complex, large workloads into discrete tasks, run in parallel on industry-standard systems. Leading scientific institutions and engineering departments in automotive, aerospace, and other manufacturing firms deploy clusters as critical resources. By dividing the workload, HPC users reduce computation time, increase the number of jobs run, and control problem complexity/scale.

Versatile and cost-effective

You can begin lightening your workload with the HP BladeSystem c3000—a versatile, compact enclosure that consolidates hardware resources (compute, storage, network, and power) into a single box. No special power or cooling is required. This small enclosure fits easily into existing racks or new racks, providing room for future expansion or local server consolidation.

HP is the leader in HPC, delivering more HPC systems and clusters than any other vendor¹. This expertise is captured in the design and selection of technologies offered in XC Clusters. The XC software, based on best-in-class software components from a range of open source and commercial developers, provides a

cost-effective, supported environment for running cluster applications on the Linux operating system. The software includes HP-MPI, an interconnect-independent message-passing interface library widely used by many ISVs. Additionally, the software is integrated with Platform LSF to provide a familiar job submittal interface. Easy to install, the XC software is quickly deployed across the nodes and conforms to standard Linux conventions.

Capitalizing on change

HP allows you to capitalize on change with confidence, expertly implementing innovation with industry-standard technology. HP BladeSystems enhance the density and modularity of blade technology with innovative power and cooling. Integration with HP’s XC cluster software provides a familiar and easy-to-manage environment for HPC and Linux users.

With support for the latest multi-core processors from AMD and Intel, as well as an option for DDR InfiniBand, the HP BladeSystem offers the same technologies being deployed in top HPC systems. The flexible, modular design allows server and storage blades to be added or swapped as your needs change.

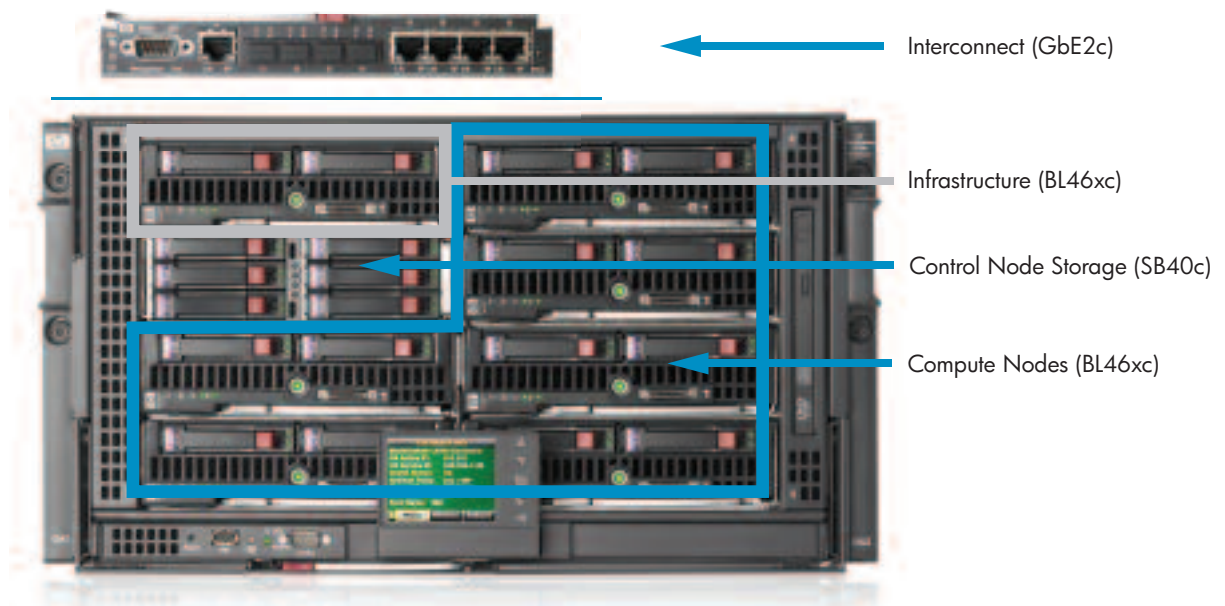
This compact cluster server provides users with a shared resource that supports popular engineering and scientific applications. Users see the cluster as a single system; the XC software manages the allocation of workloads. Jobs can be submitted from any desktop, notebook, or thin client. User accounts and access privileges can be set up using standard Linux administrative procedures.

XC software includes a suite of tools that simplify

¹IDC, Q107 Worldwide Quarterly Server Tracker, May 2007

HP BladeSystem solution

- HP BladeSystem Solution Blocks—proven application solution definitions that cut the time and effort needed to create, combine and upgrade solutions on an HP BladeSystem
- Storage capacity via local head node file services, or external SAN/LAN connectivity
- Single host name and IP address, with private internal network
- XC supplies Linux and core services—DNS/DHCP, security
- XC management—image provisioning, hardware and software monitoring, system commands
- XC job environment—Platform LSF, SLURM, HP-MPI, Job Performance Analyzer



Bill of Materials

1 HP BladeSystem c3000 enclosure
Up to 8 HP BladeSystem BL46xc with 2 Dual-Core Processors
1 HP GbE2c Layer 2/3 Ethernet Blade Switch
1 HP SB40 Storage Blade (optional)
1 InfiniBand Switch Module (optional)
XC System Software
Optional integration and installation services

cluster administration and monitoring. The XC software is delivered with pre-configured rules to monitor all critical systems and to report information through a centralized interface.

The bottom line is value

As your workload grows, your investment in an HP XC Cluster is well protected. All HP BladeSystem components can be moved from the c3000 enclosure to other enclosures.

XC Clusters are part of HP's Unified Cluster Portfolio, an innovative package of hardware, software, and services for scalable computation, data management, and visualization. The portfolio simplifies and streamlines cluster deployment, with proven open

source and commercial software to address a broad spectrum of HPC customer requirements. XC solutions are easily integrated with a scalable file system to deliver high I/O and increased capacity.

Additionally, a visualization capability is bundled with the XC software. Pre-tested hardware and software configurations are also available.

Today, thousands of HPC sites employ HP clusters to achieve performance that is both affordable and manageable. By dividing the computational work into smaller, manageable pieces, tasks can be completed more quickly—ensuring that you aren't slowed down as the complexity of your models grows. HP's cluster-in-a-box streamlines your work, while providing the robustness of proven, standards-based products.

Your next step

You can ease the burden on your computing resources and more effectively manage complex, data-intensive applications with HP's cluster-in-a-box solution. Take the next step toward realizing your goal of a compact, simple, and powerful cluster. Call your local authorized HP reseller today to find out how you can accelerate your team's discovery and design.

For more information, visit www.hp.com/go/hptc

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4AA1-4749ENW, August 2007

