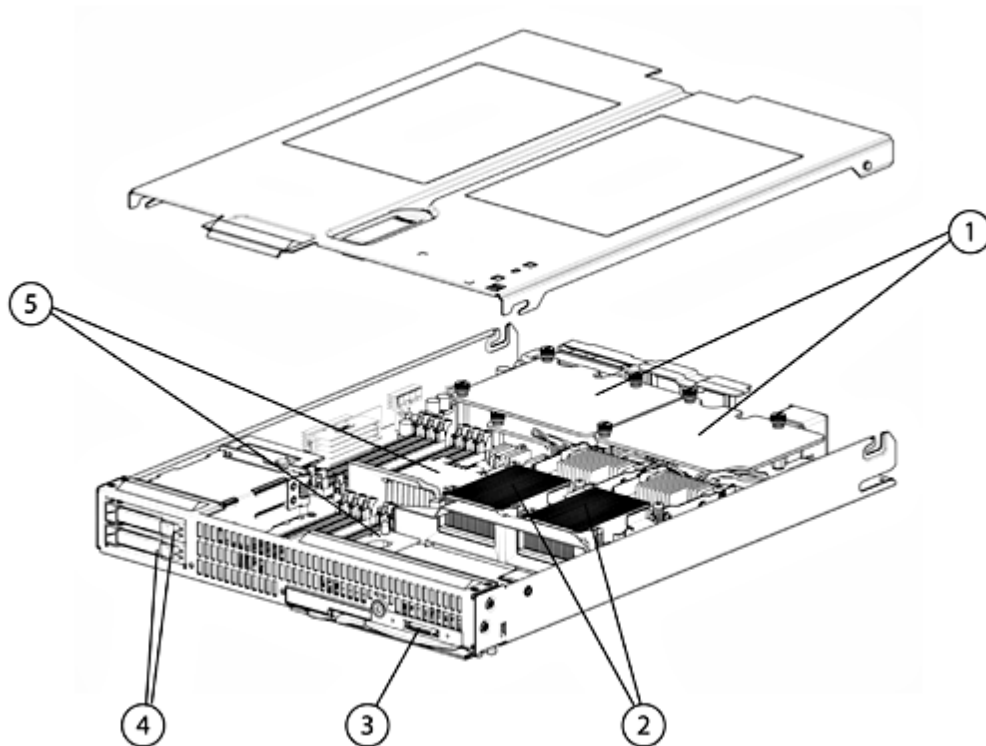


Overview



1. Three Mezzanine slots
2. Up to two Intel Itanium™ 2 9000 series processors
3. Local I/O connector
4. Two small form factor (SFF) hot-plug drive bays
5. Up to 48 GB PC2-4200, DDR2 memory (12 DIMMs)

At A Glance

This document covers the HP Integrity BL860c server blade only. For more information on HP BladeSystem c-Class Infrastructure and HP BladeSystem c-Class Interconnects, please see the following QuickSpecs:

- HP BladeSystem c-Class Infrastructure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12517_na/12517_na.HTML
- HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.HTML

The HP Integrity BL860c delivers the performance, reliability, and availability on 64-bit operating systems for the ultimate in scalability. HP-UX, Integrity Virtual Machines, 64-bit versions of Red Hat and SUSE Linux Windows Server 2003 (Enterprise and Datacenter editions), and OpenVMS. provides flexibility in deployment.

HP Integrity BL860c server blade includes:

- **Processor:**
 - Up to two Intel Itanium™ 2 9000 Series processors
- **Memory:**
 - Up to 48 GB of memory. Supporting (12) DDR2-533 ECC memory DIMMS
- **Storage Controller:**
 - Embedded LSI 1068 SAS RAID Controller integrated on system board
 - Standard RAID 1 controller
- **Internal Drive Support:**

Overview

- Supports up to (2) two small form factor (SFF) SAS hot plug hard drives
- **Network Controller:**
 - Four (4) Embedded Standard Gigabit NICs
 - Plus one (1) additional 10/100 NIC dedicated to Integrity iLO 2 Management
- **Mezzanine Support:**
 - Three (3) additional I/O expansion slots via mezzanine cards.
 - Supports up to (3) mezzanine cards
 - Dual-Port Fibre Channel Mezzanine (4-Gb) options for SAN connectivity (QLogic).
 - 4X DDR InfiniBand (IB) Mezzanine (20 Gb/s) options for low latency server interconnectivity

NOTE: For Linux support See the HPC Cluster Platform 6000 at:
<http://www.hp.com/go/hptc>

 - HP PCIe Pass Thru for support of BLc SB40c Storage Blade

NOTE: For SB40c information see:
<http://h18004.www1.hp.com/products/servers/storageworks/c-class/sb40c/index.html>
- **Internal USB Support:**
 - No internal USB port on the BL860c
- **Management:**
 - Integrity Integrated Lights Out 2 (iLO 2) management processor
 - HP Integrity Integrated Light Out 2 (iLO 2) with Advanced Pack (shipped standard)
 - Ignite-UX for HP-UX
 - HP System Insight Manager
 - HP System Management Homepage
- **Form Factor:**
 - HP Integrity BL860c server blade is a full-height, BladeSystem c-Class form factor. The BL860c server blade plugs vertically into the BladeSystem c7000 enclosure, 8 server blades are supported per 10U enclosure. 4 enclosures can be configured to a standard 42U rack; 32 BL860c server blades can be configured in a fully populated rack.
- **Warranty:**
 - Protected by HP Services and a worldwide network of resellers and service providers. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply. Pre-Failure Notification on processors, memory, and SAS hard drives

Standard Features (Server Blade)

Processor	Intel Itanium™ 2 Dual-Core Processor Model 9040 (1.6 GHz, 18MB L3 cache, FSB533) Intel Itanium™ 2 Dual-Core Processor Model 9015 (1.4 GHz, 12MB L3 cache, FSB400) Intel Itanium™ 2 Single-Core Processor Model 9010 (1.6 GHz, 6MB L3 cache, FSB533)		
Upgradeability	Upgradeable to two (2) processors NOTE: The HP Integrity BL860c only supports 1 or 2 processor configurations. Processors must be identical		
Cache Memory	1.2MB per Core Level 2 cache memory		
Chipset	Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR memory)		
Memory	Type	PC2-4200 DDR2 DIMMs (DDR2-533)	
	Minimum	1 GB (2 x 512 MB)	
	Maximum	48 GB (12 x 4 GB)	
	NOTE: Memory modules are DIMM pairs.		
	NOTE: Double Chip Spare is enabled in a single memory module. Double Chip Spare requires identical DIMM types and capacities		
Network Adapter	Four (4) embedded NIC ports, plus one (1) additional management NIC port: Four (4) NIC ports via (2) Broadcom 5704 Dual Port Gigabit NIC One (1) additional 10/100 NIC dedicated to Integrity iLO 2 Management		
Expansion Slots	Three Mezzanine slots (two (2) Type II PCIe, one (1) Type I PCIe x4)		
Integrated Manageability	Integrity Integrated Lights-Out 2 (iLO 2) Advanced Pack (shipped standard)		
Storage Controller	LSI 1068 SAS Controller	2 SAS Channels (one to each HDD) Supports RAID 1	
Maximum Internal Storage	Hot Plug Serial Attach SCSI (SAS)	292GB SAS	2 x 146GB Serial Attached SCSI
Graphics	Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR memory)		
Graphics Resolution Supported	Resolution Color Depths	Depths 1280 x 1024, 16.7M, 64k, 256, 16 1024 x 768, 16.7M, 64k, 256, 16 800 x 600, 16.7M, 64k, 256, 16 640 x 480, 16.7M, 64k, 256, 16	

Standard Features (Server Blade)

Fiber Channel on the HP Integrity BL860c server blade

Optional Fibre Channel HBAs are supported by the HP Integrity BL860c. The mezzanine circuit board connects directly to the server blade system board.

QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem (403619-B21)

- Uses common drivers which means that customers can standardize on one QLogic driver whether they are using the QMH2462 or other 4Gb and 2Gb HBAs powered by QLogic

QLogic Fibre Channel HBAs feature

- Optimal performance utilizing PCI Express
- 4/2/1Gb/s auto negotiating speeds
- Dual-ports for redundant path connections
- Up to two FC HBAs per server blade providing redundant FC HBA support
- Optimized for HP StorageWorks and supported by third party SAN vendors
- Support for HP-UX, Microsoft® Windows® OpenVMS, and Linux operating systems environments

Compatible SAN

HP Integrity BL860c server blades are optimized for HP StorageWorks MSA, EVA, and XP

HP Integrity BL860c server blades are compatible with select third party SANs (please see blade storage page for more details: <http://h18000.www1.hp.com/products/servers/proliant-bl/c-Class/storage.html>)

Standard Features

Insight Control Data Center Edition

Insight Control Data Center Edition delivers foundation management for HP BladeSystem lifecycles, including hardware resource deployment, health monitoring, software version control, performance monitoring, vulnerability, scanning and patch management.

Installs the following components by default using the wizard-based integrated installer:

- HP Systems Insight Manager
- Rapid Deployment Pack (not supported on HP-UX)
- Performance Management Pack (not supported on HP-UX nor Linux on Integrity)
- Vulnerability and Patch Management Pack (not supported on Integrity)

Additional Integrity Essentials software and management tools included on the Insight Control Data Center Edition DVD can be installed manually.

- Virtualization Management Suite
- Workload Management Pack
- HP Open Service Event Manager
- HP Instant Support Enterprise Edition

NOTE: For Licensing and Packaging Options please see the options section of this QuickSpecs.

NOTE: Insight Control Data Center Edition is delivered with HP BladeSystem c-Class enclosures with either 16-server licenses or 8-server evaluation licenses (30-days). For additional information on HP BladeSystem c-Class Infrastructure please visit: HP BladeSystem c-Class Infrastructure QuickSpecs at http://h18000.www1.hp.com/products/quickspecs/12517_na/12517_na.HTML

NOTE: For additional product and licensing information about Insight Control Data Center Edition, HP Systems Insight Manager and Essentials software refer to <http://www.hp.com/servers/proliantessentials>.

Foundation Management and Essentials Software Plug-ins

HP Systems Insight Manager

HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible environment to centrally manage servers, storage and other infrastructure devices across multiple operating system platforms.

IgniteUX for HP-UX Deployments

The Ignite-UX product is a free toolset that enables a network install of HP-UX onto multiple PA-RISC and/or Integrity servers on a network. It can also be used to create custom install configurations, or golden images, recover systems remotely, create custom recovery media including tape, CD and DVD, and manage and monitor multiple client installation sessions

Standard Features

Integrity Essentials for HP-UX

The HP Integrity Essentials for HP-UX is essential software for Software Deployment, Configuration Management, and Workload Management.

Software Deployment:

- Ignite-UX
- Software Distributor-UX
- Software Package Builder
- Security Patch Check
- Patch Assessment tool

Configuration Management:

- Systems Management Homepage
- HP-UX Bastille
- Serviceguard Manager
- Distributed System Administrative Utilities
- HP-UX webmin-based Admin
- Integrated Lights-Out & Management Processor

Workload Management:

- Virtualization Manager*
- Capacity Advisor*
- OpenView GlancePlus*
- OpenView Performance Agent
- Process Resource Manager
- Global Workload Manager*

***NOTE:** Fee based software products which aren't bundled with the HP-UX Foundation OE. GlancePlus and the Performance Agent are bundled with the HP-UX Enterprise OE.

ProLiant Essentials Rapid Deployment Pack (not supported for HP-UX)

Rapid Deployment Pack (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP Integrity server blades running Linux or Windows (available mid 2007). RDP provides a central location to configure server hardware, deploy the Windows, Linux operating environments and install HP Integrity Support Pack drivers using images and scripted profiles.

Standard Features

HP Integrity Essentials Foundation Pack for Linux The HP Integrity Essentials Foundation Pack for Linux contains software designed to simplify the installation, configuration, and management of Linux on HP Integrity Servers with Linux in a Data Center. HPIEFPL simplifies tasks including system and disk partitioning as well as prepares your system for installing either the RHEL or SLES distribution.

The Smart Setup application is a bootable media that HP recommends to be used prior to installing the operating system distribution. This application media contains the latest documentation, firmware, and tools to help configure and optimize your system. Smart Setup provides the following: a system hardware inventory tool, tools to help configure system internal storage arrays and adapters, installation of the hardware diagnostics tools, and tools to launch the appropriate Red Hat or Novell distribution installer.

The Support Pack component of HPIEFPL includes HP value added software that can be used to either integrate with existing system management solutions or directly manage an HP Integrity server. Following the installation of the Linux distribution of choice, use the Management media to install additional tools, HP Insight Management Agents, HP WBEM providers, and System Management Homepage (SMH).

- HP System Insight Manager
- HP Insight Manager Agents
- HP System Management Homepage
- Web-based Enterprise Management (WBEM) Solutions
- HP Management Base for Integrity Servers
- OpenPegasus
- HP Array Configuration Utility

GlancePlus GlancePlus provides performance information about your system. It lets you easily examine system activities, identify and resolve performance bottlenecks, and tune your system for more efficient operation.

ProLiant Essentials Performance Management Pack (Windows on Integrity Only; Windows support available mid 2007) Performance Management Pack detects, analyzes, and explains hardware bottlenecks on HP Integrity servers running Windows.

Standard Features

Insight Management Agents

The Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers.

The HP System Management Homepage (SMH) and OS instrumentation (WBEM providers) to support management tools such as SMH and HP SIM are included in the HP-UX Operating Environments

Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack

For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at <http://www.hp.com/servers/manage>.

Blades Visualization

Used by System Administrators to identify, associate and group blades into collections, using tables, trees, and picture views, and it can also be used to monitor performance and launch Integrity Essentials.

NOTE: For more information about Manageability solutions for Integrity Servers go to <http://www.hp.com/go/integrityessentials>

Optional ProLiant Essentials Value Packs

Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:

- Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus.

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to <http://www.hp.com/servers/proliantessentials> or the various Essentials Value Pack product QuickSpecs for more information.

Standard Features

OS Support

HP-UX 11i v2 Mission Critical Operating Environment
HP-UX 11i v2 Enterprise Operating Environment
HP-UX 11i v2 Foundation Operating Environment
HP-UX 11i v2 Technical Computing Operating Environment
Red Hat Enterprise Linux AS & ES v4
Novell SUSE Enterprise Linux v10
Windows Server 2003, Enterprise and Datacenter (64-bit)
OpenVMS i64 Foundation Operating Environment for Itanium Servers
OpenVMS i64 Enterprise Operating Environment for Itanium Servers
OpenVMS i64 Mission Critical Operating Environment for Itanium Servers

NOTE: For a more complete and up to date information on HP-UX 11i support, please visit the HP-UX 11i website at <http://www.hp.com/go/hpux11i>

NOTE: For a more complete and up to date information on OpenVMS support, please visit the HP-OpenVMS website at <http://www.hp.com/go/openvms>

NOTE: For a more complete and up to date information on Integrity Windows support, please visit the HP Integrity Windows website at

<http://h18004.www1.hp.com/products/servers/software/microsoft/Integrity-index.html>

NOTE: For a more complete and up to date information on Linux Operating Systems on Integrity or BladeSystem platforms, please visit the Integrity and BladeSystem Linux matrix website:

<http://www.hp.com/go/lxintegritycert>

Supported Software Options

HP Integrity Virtual Machines (with HP-UX guest OS's and Windows Guest OS's)
HP Virtualization Manager
HP Capacity Advisor
HP Process Resource Manager
HP Global Workload Manager

Intelligent Manageability

HP Integrity Integrated Lights-Out 2 (iLO 2) Advanced Pack (shipped standard with the HP Integrity BL860c)

Virtual serial console (Multiple, mirrored sessions, with previous context and console log buffer)

Virtual Media (CD, DVD, and ISO file image)

Virtual Power Button Control

Embedded system health and Integrity fault management Diagnostics and troubleshooting:

- virtual front panel
- log access to Integrity SEL
- FPL Blade power consumption reading

Dedicated LAN Connectivity

Automatic IP Configuration via DHCP/DNS/WINS browser

Command Line and scripted access Industry Standard RC4, 128-bit Secure Sockets Layer (SSL) and Secure Shell (SSH) Security

Directory Services Integration (LDAP)

Support for 19 user accounts with customizable access privileges

NOTE: Advanced features such as Directory Services Integration (LDAP), vKVM for Windows (available mid 2007) and browser accessible Virtual Media are included with the HP Integrity BL860c server blade.

Standard Features

Availability

Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection
Two hot-plug SAS hard drive bays and integrated RAID (LSI 1068) controller on every server blade

Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

On line memory page deallocation

- ECC protected DDR2 memory
- Memory double chip spare to overcome two DRAM chip failures
- Dynamic Processor resilience and deallocation with HP-UX
- Journal file system with HP UX*
- Auto reboot
- HP Serviceguard for HP UX*
- HP Serviceguard Extension for RAC for HP UX*
- HP Serviceguard Extension for SAP for HP UX*
- Serviceguard Manager for HP UX and Linux Clusters*
- HP Event Monitoring Service
- HA Monitors for HP UX
- HA Toolkits for HP UX and Linux
- HP Mirrordisk/UX*
- Extended Campus Cluster*, HP Metrocluster*, and HP Continentalclusters* for HP UX
- HP System Insight Manager (SIM) for proactive fault management
- HP StorageWorks Cluster Extension XP for Linux
- HP Serviceguard Storage Management Suites for HP-UX*

*NOTE: Fee based software products

Security

Hardware Security

- Power-on password
- Administrator's password
- Integrity Integrated Lights Out 2 has 19 customizable user accounts and SSL encryption
- Integrity Integrated Lights Out 2 can be disabled via a Global Setting
- SSL encryption on web console

Platform security fundamentals

The most basic goal of operating system security is to preserve the integrity of the system in the face of attack. The HP-UX 11i operating system includes a number of features that assist the administrator in locking down the platform:

- **HP-UX Bastille** provides a graphical interface that guides an administrator in tasks to harden the system against attack, including locking down system ports, files, and other components.
- **Host IDS** uses kernel-level system audit information to continuously monitor many systems for attacks, generating alerts and, as an option, also responding in real time.
- **IPFilter** provides system firewall capabilities, including stateful connection filtering to limit the "attack surface" of the platform, and connection throttling to limit the effectiveness of denial-of-service attacks.
- **Install-Time Security** eases default lockdowns by offering a menu of security profiles that may be applied as part of the operating-system installation process.
- **Security Patch Check** helps ensure security patch currency by periodically connecting to HP and recommending the latest security-relevant patches.
- **Execute-Protected Stack** prevents common types of buffer overflow attacks, which are a leading

Standard Features

contributor to platform compromise.

Security containment

HP Security Containment for HP-UX 11i is a suite of security technologies designed to dramatically reduce the likelihood of system compromise. HP incorporates these enhanced security features into the mainstream HP-UX 11i operating environment to help businesses combat increasingly complex threats. Without requiring modification to applications, HP Security Containment isolates compromised applications, which are denied unauthorized access to other applications or files on the system.

HP-UX 11i Security Containment comprises three core technologies that together provide a highly secure operating environment:

- **Compartments** provide isolation and restrict access to application and system resources outside of the compartment to prevent catastrophic damage should a compartment be penetrated. HP-UX Security Containment accomplishes this by controlling the flow of information between processes in different compartments. For example, outside compartments can accept and process customer-facing data and then transfer it securely, by rule, to inside compartments for non-public access and processing.
- **Fine-Grained Privileges** grant only the privileges needed for a task and, optionally, only for the time needed to perform the task. Applications that are "privilege-aware" are able to elevate their privilege level during the operation and lower it after completion of the operation.
- **Role-Based Access Control** provides a mechanism to allow non-root users to perform administrative tasks, effectively splitting the power of root into a manageable set of roles. An out-of-the-box configuration supports many common HP-UX 11i commands and, when combined with HP OpenView Select Access, also supports multi-system access management.

Identity management and accountability

- **Standard Mode Security Enhancements** offer granular account and password policies on a system-wide or per-user basis, including the ability to generate detailed system audits for user accountability.
- **HP-UX LDAP-UX** client services simplify identity management by allowing system authentication and naming services to leverage a new or existing LDAP directory.
- **Kerberos** server and clients offer enterprise-class Single-Sign-On (SSO) services as well as enhanced interoperability with Windows® ADS.
- **HP-UX AAA** server (RADIUS) authenticates network devices and controls access.
- **Red Hat Directory Server** for HP-UX provides an industry-standard, centralized directory service to store digital identity information.

Common Criteria certification

The HP-UX 11i v2 operating system running on HP 9000 or HP Integrity platforms has been successfully evaluated against the requirements for the EAL4 Common Criteria (ISO 15408) Assurance Level, augmented by ALC_FLR.3 (flaw remediation), using the Controlled Access (CAPP) and Role-Based Access Control (RBAC) Protection Profiles. EAL4+ is sometimes used as the abbreviated form for additional assurances. Details of the evaluation and evaluated configuration are available at <http://www.commoncriteriaportal.org/public/files/epfiles/CRP225.pdf> and <http://www.commoncriteriaportal.org/public/files/epfiles/hp-ux11iv2.pdf>.

New Security Features:

- **HP-UX Identity Management Integration for Select Access**, an HP OpenView Select tool included at no charge with the HP-UX operating system, simplifies user management with improved provisioning and manageability. Instead of accessing each machine individually to update security policies, it is now possible to manage HP-UX 11i servers on a one-to-many basis; and add policies

Standard Features

and rules that define user privileges and manage access rights. With this tool, it takes just a single click to define and apply high-level security policies that accompany a specific role within an organization. For example, the tool automatically assigns system backup and restore rights when an employee joins the operations team, and withdraws these privileges when the employee leaves the team.

- **Encrypted Volume and File System** transparently protects "data-at-rest" against unauthorized disclosure if the data is lost or stolen, and may also provide "safe harbor," avoiding the need for breach disclosure required by some state laws.
- **Trusted Computing Services** provides software support for embedded security hardware that is available on selected HP Integrity servers for enhanced key protection and EVFS auto-boot support.
- **HP Protected Systems** offers an automated mechanism to configure and deploy more secure systems by leveraging the built-in protection of HP-UX 11i servers, reducing the time and level of security knowledge required by IT personnel when configuring such mechanisms as Security Containment, which isolates processes and resources.
- **HP-UX Bastille** with drift reporting checks the consistency of a system's hardening configuration with previously applied hardening policy to avoid risk of system changes. This data reduces system exposure to malware, simplifies compliance maintenance, and provides visibility into undone hardening to allow planned response without risk of unexpected system breakage.

HP-UX AAA Server offers more flexible integration with enterprise databases in combination with centralized, RADIUS-based user authentication and network access logging to simplify auditing and compliance.

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP Integrity Server Blades, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to <http://www.hp.com/go/factory-express>.

HP Enterprise Configurator

The HP eCo-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. For additional information please visit:

<http://h30099.www3.hp.com/configurator/>

Service and Support

HP Premium Services are available for the HP Integrity BL860c server blade. These services offer integrated hardware and software support to help customers maintain a robust, stable, flexible IT environment that enhances their business agility. They encompass today's most popular products, including UNIX, Windows (available mid 2007), and Linux servers, as well as mobile technology, network devices, desktops, printers, storage solutions, management software and more.

All of these Premium offerings let customers leverage HP Services multi-vendor, multi-technology experience and expertise; global reach with delivery capabilities from 600 offices in 160 countries;

Standard Features

single-point-of-contact problem diagnosis and resolution; advanced remote monitoring and performance enhancement technologies; and proven support management processes based on IT best practices.

HP Services professionals can help customers identify the Premium support offering that fits their business and technology goals. HP Premium Hardware and Software Services include:

- [Mission Critical Partnership](#) - custom services to help you achieve your strategic business goals and fulfill your most demanding service-level commitments through continual service-quality improvements
- [HP Critical Service](#) - comprehensive preventive services and super-responsive support to maximize availability and minimize downtime risk exposure in mission-critical environments
- [HP Proactive 24 Service](#) - collaborate with HP Services professionals to improve operational effectiveness, performance, and stability through joint services planning and 24x7 hardware/Software Support
- [Support Plus 24](#) - 24x7x365 onsite hardware and over-the-phone Software Support for HP and selected multi vendor products, plus software updates at substantial subscription savings
- [Support Plus](#) - the economical choice for single-source hardware/Software Support delivered during extended business hours, as well as cost-saving software updates

This product is covered by a global limited warranty and supported by HP Services.

NOTE: Server Blade Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

NOTE: Server Blade Enclosure Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support.
- System Management, Performance Services and Mission Critical Support Solution

NOTE: For more information regarding the Blade service portfolio visit our worldwide web site on the internet at: <http://h20219.www2.hp.com/services/cache/81725-0-0-225-121.html>

HP Care Pack services for the c7000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP Supported Ethernet devices covered include the Ethernet Pass-Through Module, Fibre Channel Pass-Through Module and GbE2c Ethernet Blade Switch and Cisco Catalyst 3020 Blade Switch.

For a complete listing of service offerings and information visit:

<http://www.hp.com/services/bladessystemservices>

<http://www.hp.com/go/proliant/carepack>

Models

Two (2) Processors Base Models

<p>HP Integrity BL860c 9010 SC (2P) AD323A Opt #001</p>	<p>Processor(s) One of the following depending on model</p>	<p>Two (2) Intel Itanium™ 2 Single-Core Processors Model 9010 (1.6 GHz, 6MB L3 cache) Two (2) Intel Itanium 2 Dual-Core Processors Model 9015 (1.4 GHz, 12MB L3 cache) Two (2) Intel Itanium 2 Dual-Core Processors Model 9040 (1.6 GHz, 18MB L3 cache)</p>
<p>HP Integrity BL860c 9015 (2P) AD323A Opt #002</p>	<p>Cache Memory</p>	<p>1.2MB per Core Level 2 cache memory</p>
<p>HP Integrity BL860c 9040 DC (2P) AD323A Opt #003</p>	<p>Memory Network Adapter</p>	<p>No memory included (PC2-4200, DDR2-533) 4 Embedded NICs: Dual Broadcom 5704 Gigabit NICs plus (1) additional 10/100 NIC dedicated to Integrity iLO 2 Management</p>
	<p>Storage Controller</p>	<p>LSI 1068 SAS Controller</p>
	<p>Hard Drives</p>	<p>No drives included; (2) SFF SAS drive bays</p>
	<p>Internal Storage</p>	<p>292GB SAS</p>
	<p>Optical Drive</p>	<p>None</p>
	<p>Form Factor</p>	<p>Up to 8 supported in HP BladeSystem c7000 Enclosure</p>

One (1) Processor Base Models

<p>HP Integrity BL860c 9010 SC (1P) AD217A Opt #001</p>	<p>Processor(s) One of the following depending on model</p>	<p>One (1) Intel Itanium™ 2 Single-Core Processors Model 9010 (1.6 GHz, 6MB L3 cache) One (1) Intel Itanium 2 Dual-Core Processors Model 9015 (1.4 GHz, 12MB L3 cache) One (1) Intel Itanium 2 Dual-Core Processors Model 9040 (1.6 GHz, 18MB L3 cache)</p>
<p>HP Integrity BL860c 9015 (1P) AD217A Opt #002</p>	<p>Cache Memory</p>	<p>1.2MB per Core Level 2 cache memory</p>
<p>HP Integrity BL860c 9040 DC (1P) AD217A Opt #003</p>	<p>Memory Network Adapter</p>	<p>No memory included (PC2-4200, DDR2-533) 4 Embedded NICs: Dual Broadcom 5704 Gigabit NICs plus (1) additional 10/100 NIC dedicated to Integrity iLO 2 Management</p>
	<p>Storage Controller</p>	<p>LSI 1068 SAS Controller</p>
	<p>Hard Drives</p>	<p>No drives included; (2) SFF SAS drive bays</p>
	<p>Internal Storage</p>	<p>292GB SAS</p>
	<p>Optical Drive</p>	<p>None</p>
	<p>Form Factor</p>	<p>Up to 8 supported in HP BladeSystem c7000 Enclosure</p>

Configuration Information - Factory Integrated Models

NOTE: This product offering does not support HP Factory Express Server Configuration Level 1.

NOTE: FIO indicates that this option is a Factory Installable Option.

Step 1: Base Server Blade Configuration

Models	HP Integrity BL860c Server Blade
	NOTE: Choose from base models above.
	NOTE: Adding Option code "#0D1" to the Server Blade PN will integrate the configured blade into the enclosure (which must be on the same order)
	Configurable Model ships with:
	Four embedded Gigabit Ethernet NIC ports plus (1) additional 10/100 NIC dedicated to Integrity iLO 2 Management
	Integrated LSI 1068 hardware RAID controller
	Two small form factor (SFF) SAS hot plug hard drive bays
	HP Integrity Integrated Lights-Out 2 Advanced Pack

Step 2: Choose Required Options (one of the following from each list unless otherwise noted):

Processors	Select a base model (either 2P or 1P models) which has the desired CPU offering.								
Memory	<table> <tr> <td>HP 1GB REG PC2-4200 2x512MB 1RANK Kit</td> <td>AD342A</td> </tr> <tr> <td>HP 2GB REG PC2-4200 2x1GB 1RANK Kit</td> <td>AD343A</td> </tr> <tr> <td>HP 4GB REG PC2-4200 2x2GB 2RANK Kit</td> <td>AD344A</td> </tr> <tr> <td>HP 8GB REG PC2-4200 2x4GB 2RANK Kit</td> <td>AD345A</td> </tr> </table> <p>NOTE: Memory Modules consist of pairs of DIMMs</p> <p>NOTE: DIMMs must be installed in pairs</p>	HP 1GB REG PC2-4200 2x512MB 1RANK Kit	AD342A	HP 2GB REG PC2-4200 2x1GB 1RANK Kit	AD343A	HP 4GB REG PC2-4200 2x2GB 2RANK Kit	AD344A	HP 8GB REG PC2-4200 2x4GB 2RANK Kit	AD345A
HP 1GB REG PC2-4200 2x512MB 1RANK Kit	AD342A								
HP 2GB REG PC2-4200 2x1GB 1RANK Kit	AD343A								
HP 4GB REG PC2-4200 2x2GB 2RANK Kit	AD344A								
HP 8GB REG PC2-4200 2x4GB 2RANK Kit	AD345A								
RAID 1 Configuration Upgrade Option	<table> <tr> <td>Factory configured hardware RAID 1</td> <td>AD248A #106</td> </tr> </table> <p>NOTE: Requires two (2) SAS Hard Drives identical in speed and capacity</p> <p>NOTE: Ordering AD242A#106 provides factory configuration of the embedded LSI 1068 SAS controller to RAID1.</p>	Factory configured hardware RAID 1	AD248A #106						
Factory configured hardware RAID 1	AD248A #106								

Step 3: Choose Additional Options for Factory Integration

Fibre Channel Mezzanine Options	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21
Hard Drives	Serial Attached SCSI (SAS) SFF Hot Plug	
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	HP 146GB 3G SAS 10K SFF HDD	431958-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
Fibre Channel Mezzanine Options	HP Dual Port 4Gbps QLogic FC HBA (Type I Mezz)	403619-B21

Configuration Information - Factory Integrated Models

c-Class Mezzanines	HP BLc SB40c PCIe Mezzanine Pass Tru Option Kit	431643-B21
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NOTE: Needed to support the SB40c storage blade with HP c-Class BladeSystem full-height server blades.

NOTE: Adding option "OD1" to these options indicates factory integration of that product.

Step 4: Choose Additional Options for Field Upgrades

NOTE: For additional options, including server blade enclosure with enhanced backplanes, interconnect options and power subsystem options; please refer to the "Options" section below.

Options

Processors (field upgrade only)	Intel Itanium™ 2 Dual-Core Model 9040 (1.6 GHz, 18MB L3 cache, FSB533)	AD270A
	Intel Itanium 2 Dual-Core Model 9015 (1.4 GHz, 12MB L3 cache, FSB400)	AD271A
	Intel Itanium 2 Single-Core Model 9010 (1.6 GHz, 6MB L3 cache, FSB533)	AD272A

NOTE: HP Integrity BL860c processor upgrade kits contain one processor. Processors must be identical. No mixing of processor models is allowed.

NOTE: The Integrity BL860c only supports 1 or 2 processor configurations.

Memory	HP 1GB REG PC2-4200 2x512MB 1RANK Kit	AD342A
	HP 2GB REG PC2-4200 2x1GB 1RANK Kit	AD343A
	HP 4GB REG PC2-4200 2x2GB 2RANK Kit	AD344A
	HP 8GB REG PC2-4200 2x4GB 2RANK Kit	AD345A

NOTE: Memory Modules consist of pairs of DIMMs
DIMMS must be installed in pairs

NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the lowest numbered slots.

Hard Drives	Serial Attached SCSI (SAS) SFF Hot Plug	
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	HP 146GB 3G SAS 10K SFF HDD	431958-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21

NOTE: SAS drives have a 3 year warranty.

NOTE: Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:

http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.HTML

c-Class Mezzanines	HP BLc SB40c PCIe Mezzanine Pass Tru Option Kit	431643-B21
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NOTE: Required to support the SB40c storage blade (P/N 411243-B21) with HP c-Class BladeSystem full-height server blades.

Fibre Channel Mezzanine Options	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21
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NOTE: Supports HP c-Class BladeSystem server blades

InfiniBand Mezzanine Options	HP 4X DDR IB Mezzanine HCA (no Software)	410533-B21
	HP 4X DDR IB Mezzanine HCA (with Voltaire Software)	409377-B21
	HP 4X DDR IB Mezzanine HCA (with Cisco Software)	438670-B21

NOTE: For Linux support See the HPC Cluster Platform 6000 at

<http://www.hp.com/go/hptc>

Options

HP StorageWorks SB40c Storage Blade	HP StorageWorks SB40c Storage Blade NOTE: Please see the SB40c Storage Blade QuickSpecs for additional options and configuration information at http://h18000.www1.hp.com/products/quickspecs/12587_na/12587_na.HTML	411243-B21
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HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000 NOTE: Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML	201723-B22
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USB Options	HP Multi Bay II cradle (to hold DVD Drives below) HP Multi Bay II DVD+/-RW Drive NOTE: HP-UX does not support writing to a DVD drive. MultiBay cradle/drive is cabled to c-Class enclosure via local I/O cable (shipped with c-Class enclosure). NOTE: PC or Notebook computer is NOT required.	PA509A PA851A
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Service and Support Offerings (HP Care Pack Services)

NOTE: The HP Care Pack service part numbers below for the Integrity BL860 c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.

NOTE: HP Care Pack services for the c7000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP Supported Ethernet devices covered include the Ethernet Pass-Through Module, Fibre Channel Pass-Through Module, Cisco Catalyst 3020 Blade Switch and GbE2c Ethernet Blade Switch.

NOTE: The services listed below are available for both Integrity and ProLiant blades, as well as the c7000 enclosure, when ordering flexible services

Support Plus

Support Plus, 1 Year	HA109A1
Support Plus, 3 Years	HA109A3
Support Plus 24, 1 Year	HA110A1
Support Plus 24, 3 Years	HA110A3

HP Proactive Service

HP Proactive Service, 24 Hour, 1 Year	HA111A1
HP Proactive Service, 24 Hour, 3 Year	HA111A3

HP Critical Service

Hardware Only, Critical Service, 7-Day x 24 Hour, 1 Year	HA112A1
Hardware Only, Critical Service, 7-Day x 24 Hour, 3 Years	HA112A3

Installation Services

Integrity BL860c Server Blade Hardware Installation	HA113A1
ProLiant BL c-Class Enclosure and Server Blade Hardware Installation	HA113A1

Installation & Start-up Services

Options

Provides for the Installation and Start-up of ProLiant Essentials Rapid Deployment Pack NOTE: Provides installation on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office ours, standard office days.	HA114A1
Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic) (Electronic)	HA114A1
Provides for the Installation and Start-up of System Insight Manager (Electronic)	HA124A1
HP Installation & Startup Service for HP BladeSystem Infrastructure	HA114A1
Provides for an integrated hardware and software implementation that includes remote service planning, onsite deployment of hardware and software, installation verification testing and customer orientation. Hardware deployment covers the installation of a single BladeSystem enclosure that includes server blades (up to 16), Ethernet network interconnect, and power options. Software deployment covers the installation and configuration, where required of HP BladeSystem Essential Insight Control Datacenter Edition which includes Systems Insight Manager (SIM), HP Rapid Deployment Pack (RDP) and Performance Management Pack (PMP), HP-UX ignite server or HP-UX manual load, and deploy up to two editions of either Windows or Linux, using scripted operating system installation software.	

For more information <http://www.hp.com/services/bladessystemservices>

Memory

DIMM installation guidelines:

1. All DIMMs must be PC2-4200 DIMMs (DDR2 533MHz)
2. Both DIMM slots in a memory bank must be populated.
3. Banks must be populated in sequential numeric order, starting with bank 0.
4. Both DIMMs in a memory bank must be identical. Install identical DIMMs in pairs, starting with DIMM socket A, bank 0.
5. DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the smallest numbered DIMM slot.

HP Integrity BL860c Server Blade

Standard Memory

4GB Registered PC2-4200, DDR2 533MHz ECC DIMMs (4 x 1 GB)

Memory Bus Bandwidth: 12.8 GB/s

Standard Memory Plus Optional Memory

Up to 48GB of PC2-4200, DDR2-533 DIMMs memory is available.

Memory		Slot					
Standard	4GB	0A	0B	2A	2B	4A	4B
		1GB	1GB	Empty	Empty	Empty	Empty
		1A	1B	3A	3B	5A	5B
		1GB	1GB	Empty	Empty	Empty	Empty
Maximum	48GB	0A	0B	2A	2B	4A	4B
		4GB	4GB	4GB	4GB	4GB	4GB
		1A	1B	3A	3B	5A	5B
		4GB	4GB	4GB	4GB	4GB	4GB

Following are memory options available from HP:

HP 1GB REG PC2-4200 2x512MB 1RANK Kit

AD342A

HP 2GB REG PC2-4200 2x1GB 1RANK Kit

AD343A

HP 4GB REG PC2-4200 2x2GB 2RANK Kit

AD344A

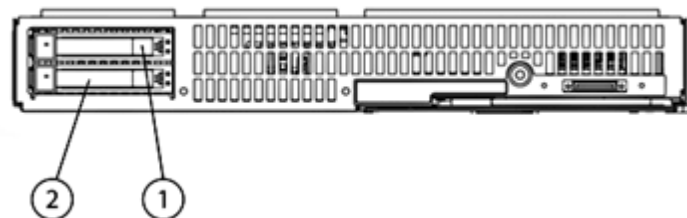
HP 8GB REG PC2-4200 2x4GB 2RANK Kit

AD345A

NOTE: Must be installed in pairs.

NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs smallest numbered slot.

Storage



1-2 2 x SFF SAS Hot Plug Hard Drives

Hard Drives

SAS Hard Drive

	Quantity Supported	Position Supported	Controller
72GB 15,000 rpm SAS SFF, SP	2	1-2	LSI 1068
36GB 15,000 rpm SAS SFF, SP			
146GB 10,000 rpm SAS SFF SP			
72GB 10,000 rpm SAS SFF, SP			
36GB 10,000 rpm SAS SFF, SP			

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 1000	Please see the Modular Smart Array 1000 QuickSpecs below to determine configuration requirements	External	Please see the Modular Smart Array 1000 QuickSpecs (URL below) for the latest list of supported HBAs

Modular Smart Array 1000:

http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML

Power Specifications

NOTE: To review maximum system power ratings for facilities planning purposes use the Active Answers Blade Power Sizer which is available via the online tool located at URL: <http://h71019.www7.hp.com/ActiveAnswers/cache/347628-0-0-0-121.html>

Technical Specifications

System Unit	Dimensions	Height	14.42 in (36.63 cm)
		Depth	20.02 in (50.85 cm)
Shipping Dimensions	Shipping Dimensions	Width	2.03 in (5.16 cm)
		Height	21.50 in (54.61 cm)
		Depth	23.13 in (58.75 cm)
Weight	Weight	Width	9.94 in (25.25 cm)
		Maximum	22.8 lbs (10.3 kg)
		Temperature Range*	Operating
Temperature Range*	Temperature Range*	Non-Operating	-40° to 60° C (-40° to 140° F)
		Storage	-20° to 60° C (-4° to 140° F)
		Maximum Wet Bulb Temperature	30° C (86° F)
		Relative Humidity**	Operating
Relative Humidity**	Relative Humidity**	Shipping	10% to 90%
		Storage	10% to 95%

*NOTE: All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.

**NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

SAS RAID LSI 1068 Controller	Disk Drive and Enclosure Interface	3G SAS (Serial Attached SCSI)
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR-1/266 MHz provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 2.5G PCIe provides 2GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	Cache Memory	40-bit 64MB or 128MB cache: ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical volumes
	Maximum Logical Drive Capacity	292GB (2 x 146GB)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 1 (Mirroring)
	Upgradeable Firmware	Upgradeable Firmware

Technical Specifications

Embedded Dual Broadcom 5704 Gigabit NICs	Network Interface	1000Base-Sx	
	Compatibility	IEEE 802.3ab 1000Base-Sx	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Network Transfer Rate (Theoretical Maximum Values)	1000Base-SX	2000 Mb/s
	Connector	RJ-45 (at SWM of enclosure)	
	Cable Support	1000 Base-TX	Cable Support 1000 Base-TX Category 5 UTP up to 328 ft (100 m)

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.