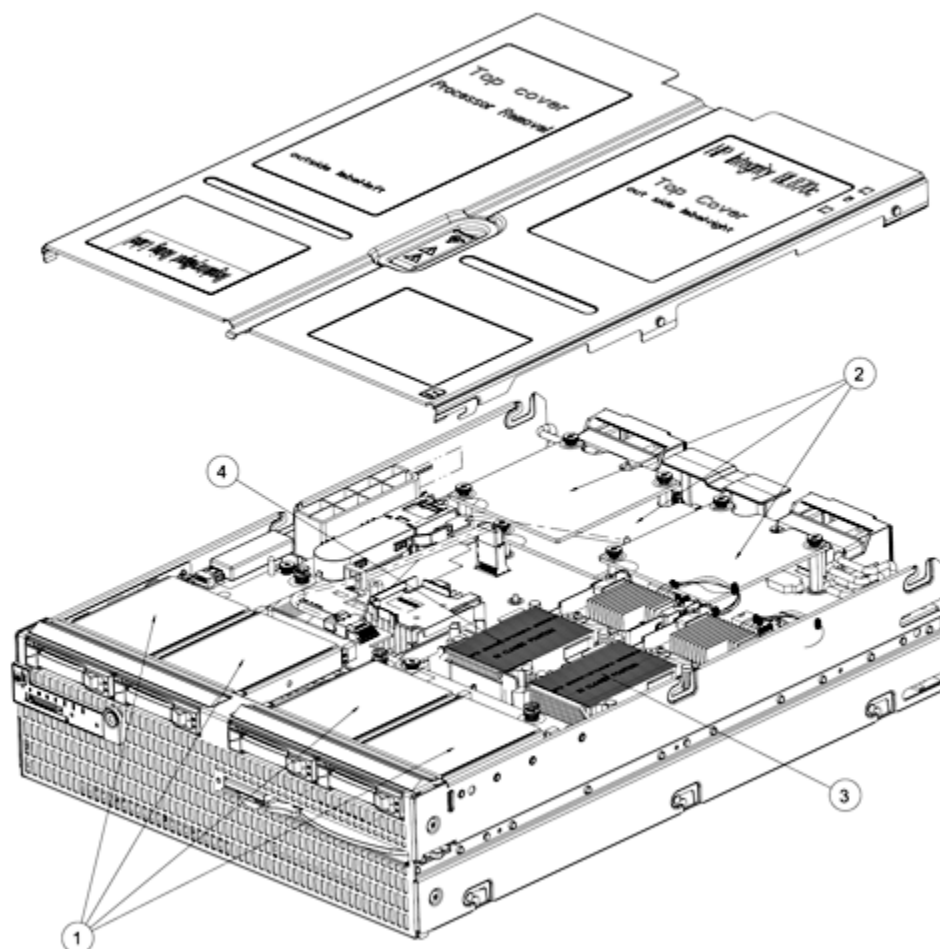


Overview



1. Four small form factor (SFF) hot-plug drive bays
2. Three PCIe Mezzanine slots
3. Processor 0 of up to four Intel® Itanium® 9100 series processors
4. Processor 1 of up to four Intel® Itanium® 9100 series processors

At A Glance

This document covers the HP Integrity BL870c 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_div/12517_div.html
- HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html

The HP Integrity BL870c delivers the performance, reliability, and availability on 64-bit operating systems for the ultimate in scalability and flexibility in deployment: HP-UX 11i v3/v2, 64-bit versions of Red Hat and SUSE Linux Windows® Server 2003 (Enterprise and Datacenter editions), and OpenVMS v8.3. To further enrich your cost-efficient, consolidated Integrity blade infrastructure, HP Virtual Server Environment (VSE) can help with solution components such as HP Integrity Virtual Machines, HP Integrity Essentials Capacity Advisor and Virtualization Manager, HP-UX Workload Manager, HP VSE Reference Architectures, and HP Serviceguard.

HP Integrity BL870c server blade includes:

- **Processor:**

Overview

- Up to four Intel® Itanium® 9100 Series processors
- **Memory:**
 - Up to 96 GB of memory. Supporting (24) DDR2-533 ECC memory DIMMS
- **Storage Controller:**
 - Embedded LSI 1068 SAS RAID Controller integrated on system board
 - Standard SAS controller (RAID 1 only)
- **Internal Drive Support:**
 - Supports up to (4) four 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>
 - Four-Port GbE adapter expansion via HP NC364m PCI-Express Quad-Port Adapter
- **Internal USB Support:**
 - Internal USB port on the BL870c
- **Management:**
 - HP Integrity Server Blades Management Software
 - Integrity Integrated Lights Out 2 (iLO 2) management processor www.hp.com/go/integrityilo
 - HP Integrity Integrated Light Out 2 (iLO 2) with Advanced Pack, (factory integrated)
 - HP Integrity Essentials, www.hp.com/go/integrityessentials
 - HP System Insight Manager
 - HP System Management Homepage
 - HP-UX 11i Management Software for Integrity Blades, www.hp.com/go/hpuxblades
 - HP Ignite-UX
 - HP-UX Software Assistant (SWA)
 - HP BladeSystem Infrastructure Management Software:
 - HP BladeSystem Integrated Manager in HP SIM
 - HP Insight Control Environment for BladeSystem
 - HP BladeSystem c-Class Onboard Administrator
 - HP BladeSystem c-Class Virtual Connect
 - Enterprise Management Software
 - Data Protector Software
 - GlancePlus Pak
 - Performance Manager and Agent
- Virtualization with HP Virtual Server Environment, www.hp.com/go/vse
 - Intelligent Control
 - HP Integrity Essentials Capacity Advisor
 - HP Integrity Essentials Virtualization Manager
 - HP-UX Workload Manager
 - HP Systems Insight Manager
 - Partitioning Continuum
 - HP Integrity Virtual Machines (with HP-UX guest OS's and Windows Guest OS's)
 - HP Process Resource Manager/pSets
 - Secure Resource Partitions
 - Continuous availability
 - HP Serviceguard for HP-UX 11i
 - HP Serviceguard Extensions for SAP
 - HP Serviceguard Extensions for Faster Failover
 - VSE Reference Architectures
 - VSE Suites including HP Integrity Essentials Capacity Advisor, HP Integrity Essentials Virtualization Manager, HP-UX Workload Manager, HP Integrity Virtual Machines, and VSE Reference Architectures
- **Form Factor:**

Overview

- The BL870c server blade plugs vertically into the BladeSystem c7000 and c3000 enclosures
- HP Integrity BL870c server blade is a full-height, BladeSystem c-Class form factor occupying two (2) full height slots.
- BL870c server blades can be configured in a fully populated rack.
- **Enclosures:**
 - HP offers three different c-Class server blade enclosures to meet your individual needs:
 - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to 4 HP ProLiant BL870c servers plugged vertically. Four (4) enclosures can be configured to a standard 42U rack
 - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to 2 HP ProLiant BL870c servers plugged horizontally. Up to 7 enclosures can be configured to a standard 42U rack
 - The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to 2 HP ProLiant BL870c servers plugged vertically.
 - The HP BladeSystem c3000 Enclosure targets three separate market segments:
 - Remote sites needing between 2 and 8 server blades
 - Mid-sized companies with between 3 and 100 servers in their company
 - Enterprise accounts with special datacenter requirement, such as DC power, or very limited rack power and cooling capacity.
 - Server blades, storage blades, and interconnect modules are all designed to fit into the c7000 and c3000 enclosures.
- **Warranty:**
 - Protected by HP Services and a worldwide network of HP Authorized Channel Partners. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply

Standard Features

Processor	Intel® Itanium® Dual-Core Processors Model 9150N (1.6 GHz, 24MB L3 cache, FSB533) Intel® Itanium® Dual-Core Processors Model 9140N (1.6 GHz, 18MB L3 cache, FSB533) Intel® Itanium® Dual-Core Processors Model 9120N (1.42 GHz, 12MB L3 cache, FSB533)		
Upgradeability	Upgradeable to four (4) processors NOTE: The HP Integrity BL870c supports 1, 2, 3 or 4 processor configurations. Processors must be identical		
Cache Memory	L2 cache per core; 1MB Instruction, 256KB Data		
Chipset	HP zx2		
Memory	Type	PC2-4200 DDR2 DIMMs (DDR2-533)	
	Minimum	4 GB (4 x 1 GB)	
	Maximum	96 GB (24 x 4 GB)	
	NOTE: Memory modules consist of four (4) DIMMs.		
	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 (LOM) 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 (Factory integrated) HP BladeSystem c-Class Onboard Administrator HP BladeSystem c-Class Virtual Connect		
Storage Controller	LSI 1068 SAS Controller	4 SAS Channels (one to each HDD) Supports RAID 1 only	
Maximum Internal Storage	Hot Plug Serial Attach SCSI (SAS)	584GB SAS	4x 146GB Serial Attached SCSI
Graphics	Integrated ATI ES1000 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

Fibre Channel on the HP Integrity BL870c server blade

Optional Fibre Channel HBAs are supported by the HP Integrity BL870c. The mezzanine circuit board connects directly to the server blade system board.

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

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 BL870c server blades are optimized for HP StorageWorks MSA, EVA, and XP HP Integrity BL870c 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>)

Integrity Server Blades Management Software and HP Integrity Essentials Software Plug-ins

HP-UX 11i Management Software for HP Integrity BL870c Server Blade and HP BladeSystem

• Getting Started

- HP Systems Insight Manager
- HP Integrity Essentials for HP-UX 11i
- HP-UX 11i System Management
- HP BladeSystem Integrated Manager in HP System Insight Manager
- HP Onboard Administrator
- HP BladeSystem c-Class Onboard Administrator Firmware
- HP BladeSystem c-Class Virtual Connect Firmware
- HP Insight Control Environment for BladeSystem

• Deploy

- HP Ignite-UX
- Software Distributor-UX
- Software Package Builder

• Monitor

- HP Systems Insight Manager
- HP System Management Homepage
- Glance Plus Pak*
- Performance Manager and Agent
- HP Serviceguard Manager

• Control

- HP Integrity Integrated Lights Out (iLO) 2 (Advanced Pack factory integrated with BL870c)
- HP Integrity iLO 2 Power Regulation for HP-UX 11i v3

• Protect

- HP-UX Bastille
- Secure Resource Partitions
- Data Protector Software
- Software Assistant (SWA)
- Security Patch Check and Patch Assessment Tool

• Optimize

- HP Integrity Essentials Capacity Advisory
- HP Integrity Essentials Virtualization Manager
- HP-UX Workload Manager
- Process Resource Manager
- HP Insight Power Manager*

Standard Features

- **Integrate**
 - HP Business Technology Optimization
 - IT Management Software
 - HP Virtual Server Environment Suite for HP-UX 11i for HP Integrity server blades
- **Learn More**
 - HP-UX 11i on Integrity Server Blades

*Fee based software products which aren't bundled with the HP-UX 11i v3/v2 Foundation OE. GlancePlus Pak and the Performance Agent are bundled with the HP-UX 11i v3/v2 Enterprise OE.

NOTE: For additional information on HP Insight Control Environment BladeSystem support on specific components supported with HP-UX please visit:

http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html

Glossary of Integrity Server Blades Management Software Product Description

HP BladeSystem Integrated Manager in HP Systems Insight Manager

The HP BladeSystem Integrated Manager is a component in HP Systems Insight Manager (SIM) that provides streamlined management for the entire HP BladeSystem product family. The HP BladeSystem Integrated Manager enables users to quickly navigate their HP blade environments including blade servers, enclosure infrastructures, racks, and integrated switches, via automatically generated blade rack picture views and hierarchical trees. Users are able to conveniently configure, deploy, and manage individual or groups of blade systems. Additionally, users are able to quickly set up logical collections of blade systems for convenient management and control.

HP 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>

HP GlancePlus Pak

HP GlancePlus Pak provides you with a single product for managing a system's availability and performance. It is an integrated product that includes **HP GlancePlus**. As an integrated product, the GlancePlus Pak includes the real-time diagnostic capabilities of GlancePlus and the historical data collection capabilities of the Performance Agent. The performance agent is used with other availability and performance management products, thus providing an integrated real-time and historical performance management solution.

HP Ignite-UX for HP-UX Deployments

HP Ignite-UX 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

HP Integrity Essentials Capacity Advisor

HP Integrity Essentials Capacity Advisor is the industry's first lightweight, integrated tool for ongoing capacity planning, simulating placement of application workloads to help IT administrators improve server utilization. Capacity Advisor provides planning capability for the intelligent control of the HP Virtual Server Environment.

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.

Standard Features

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

HP Integrity Essentials Virtualization Manager

HP Integrity Essentials Virtualization Manager is easy-to-use virtualization management software that reduces complexity by providing unified visualization and management of physical and virtual servers. Virtualization Manager provides a central point of control that allows you to manage all the resources in your [Virtual Server Environment \(VSE\)](#). It is a powerful way to connect IT resources to real business needs.

HP Integrity Integrated Lights Out (iLO) 2 (Advanced Pack factory integrated with BL870c)

HP Integrity Integrated Lights Out (iLO) management processors make it simpler, faster, and less costly to remotely manage your Integrity servers. Integrity iLO 2 enables a complete remote console experience with the addition of Virtual Media and Integrated Remote Console (virtual keyboard, video, and mouse). Blade power can be monitored and regulated directly through the Integrity iLO 2 interface.

HP Onboard Administrator

The Onboard Administrator for the HP BladeSystem c7000 enclosure is the brains of the new c-Class infrastructure. Together with the enclosure's HP Insight Display, the Onboard Administrator has been designed for both local and remote administration of HP BladeSystem c-Class. This module and its firmware provides:

- Wizards for simple, fast setup and configuration
- Highly available and secure access to the HP BladeSystem infrastructure
- Security roles for server, network, and storage administrators
- Automated power and cooling of the HP BladeSystem infrastructure
- Agent-less device health and status
- Thermal Logic power and cooling information and control

HP Serviceguard Manager

HP Serviceguard Manager is a graphical user interface (GUI) that provides configuration, administration, and monitoring capabilities for Serviceguard, Serviceguard Extension for RAC, Metrocluster, and Continentalclusters. Using Serviceguard Manager, operators see color-coded icons that provide a big-picture view of multiple clusters. From this big-picture view, operators can drill down and proactively manage

Standard Features

	clusters, systems (nodes), and packages that run applications.
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.
HP System Management Homepage	HP System Management Homepage is a web-based interface that consolidates and simplifies the management of individual ProLiant and Integrity servers running Microsoft Windows or Linux operating systems, or HP 9000 and HP Integrity servers running HP-UX 11i . By aggregating data from HP Insight Management Agents and other management tools, the System Management Homepage provides a secure and intuitive interface to review in-depth hardware configuration and status data, performance metrics, system thresholds and software version control information. The System Management Homepage can also be used to access the HP Lights-Out Management processor on ProLiant and Integrity servers.
HP Virtual Server Environment for HP Integrity	HP Virtual Server Environment (VSE) for HP Integrity servers and blades provides an automated infrastructure that can adapt in seconds with mission-critical reliability. HP VSE allows you to optimize server utilization in real time by creating virtual servers that can automatically grow and shrink based on business priorities and service-level objectives.
HP-UX Software Assistant (SWA)	HP-UX Software Assistant (SWA) is a command-line based tool that consolidates and simplifies patch management and security bulletin management on HP-UX systems. The SWA tool is new for HP-UX releases and includes Security Patch Check (SPC), and is the HP-recommended utility to use to maintain currency with HP-published security bulletins for HP-UX software.
HP-UX Workload Manager	HP-UX Workload Manager (HP-UX WLM) is a resource management tool that provides automatic CPU resource allocation and application performance management based on your service-level objectives (SLOs) and business priorities. WLM is most effective managing applications that are CPU-bound. It automatically adapts system or partition CPU resources (cores) to the demands, SLOs, and priorities of the running applications. (A core is the actual data processing engine within a processor, where a single processor can have multiple cores, and a core can support multiple execution threads through Hyper-Threading, introduced with HP-UX 11i v3, as discussed below.) It adjusts the CPU allocation of a group of processes known as a workload, basing adjustment on the current needs and performance of the applications in that workload.
Insight Management Agents	<p>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.</p> <p>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</p> <p>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</p>

For additional information about the Management Agents and the HP

Standard Features

	<p>System Management Homepage please visit the management Web site at http://www.hp.com/servers/manage.</p>
Performance Manager and Agent	<p>HP Performance Manager, Agents, and Monitor combine to provide a powerful and flexible distributed management solution. This solution is a single interface for centrally monitoring, analyzing, and forecasting resource utilization for distributed multi-vendor environments, enabling you to offer the best possible level of service in a cost-effective manner.</p>
Process Resource Manager	<p>HP Process Resource Manager (HP PRM) is a resource management tool used to control the amount of resources that processes use during peak system load. HP PRM can manage allocation of the following resources:</p> <ul style="list-style-type: none">● CPU: Ensures a minimum allocation of CPU; can also simultaneously cap CPU resource usage for each group in the configuration. (Starting with HP-UX 11i v3, per-group capping is available.)● Memory: Ensures a minimum allocation of private real memory; can also cap private memory usage. Allows you to allocate an exact amount of shared memory.● Disk bandwidth: Ensures a minimum allocation of disk bandwidth
ProLiant Essentials Performance Management Pack (Windows for HP Integrity Server Blades only)	<p>Performance Management Pack detects, analyzes, and explains hardware bottlenecks on HP Integrity servers running Windows.</p> <p>NOTE: No PMP license is required to manage Integrity servers.</p>
ProLiant Essentials Rapid Deployment Pack (designed for Windows and Linux for HP Integrity Server Blades only)	<p>Rapid Deployment Pack (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP Integrity server blades running Linux or Windows. 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.</p>
Secure Resource Partitions	<p>One method the HP VSE uses to improve server resource utilization is to consolidate multiple applications within a single operating system image. Secure Resource Partitions combine kernel level security and proven resource management to stack multiple applications within the same operating system. HP Process Resource Manager and HP-UX Workload Manager can dedicate specific resources to specific applications within an operating system image, avoiding resource contention issues. Using HP-UX 11i V2 Security Containment, organizations can ensure that application instances cannot access processes or files from other applications or the system. This ensures that multiple application instances run securely in a consolidated environment, providing the benefits of consolidation while preserving the security of a scale out environment. For software licensing purposes, the maximum number of CPUs in a Secure Resource Partition can be capped.</p>
Software Distributor-UX	<p>Software Distributor (SD) is the HP-UX administration tool set used to deliver and maintain HP-UX operating systems and layered software applications. SD is delivered as part of HP-UX; you do not need to download it separately.</p>

Standard Features

Insight Control Environment for BladeSystem

Insight Control Environment for BladeSystem delivers foundation management for HP BladeSystem lifecycles, including hardware resource deployment, health monitoring, software version control, performance monitoring, and power management.

Integrity blades are supported with the following ICE components, installed automatically when using the wizard-based integrated installer:

- HP Systems Insight Manager
- Extensions for SIM on Microsoft Windows CMS (to manage HP-UX and Linux systems)
- HP BladeSystem Integrated Manager
- Insight Power Manager
- Rapid Deployment Pack (Support for Windows and Linux)
- Performance Management Pack (Support for Windows)

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

NOTE: Insight Control Environment for BladeSystem is delivered with HP BladeSystem c-Class enclosures with either 8 or 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_div/12517_div.html

NOTE: For additional product and licensing information about Insight Control Environment, HP Systems Insight Manager and Essentials software refer to

<http://www.hp.com/servers/proliantessentials>.

OS Support

HP-UX 11i v3 Update 1 (or later) for Mission Critical Operating Environment
HP-UX 11i v3 Update 1 (or later) for Enterprise Operating Environment
HP-UX 11i v3 Update 1 (or later) for Foundation Operating Environment
HP-UX 11i v3 Update 1 (or later) for Technical Computing Operating Environment
HP-UX 11i v2 0712 (or later) for Mission Critical Operating Environment
HP-UX 11i v2 0712 (or later) for Enterprise Operating Environment
HP-UX 11i v2 0712 (or later) for Foundation Operating Environment
HP-UX 11i v2 0712 (or later) for Technical Computing Operating Environment
Red Hat Enterprise Linux 4.5 & 4.6 (AS/ES)
RedHat Enterprise Linux 5.1 (Server/AP)
Novell SUSE Enterprise Linux 10 SP1
Microsoft® Windows Server™ 2003, Enterprise and Datacenter Editions for Itanium®-based systems with Virtualization Rights w/ SP2
OpenVMS I64, Version 8.3-1H1 (or later) for Foundation Operating Environment for Itanium Servers
OpenVMS I64, Version 8.3-1H1 (or later) for Enterprise Operating Environment for Itanium Servers
OpenVMS I64, Version 8.3-1H1 (or later) for 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-UX11i website at <http://www.hp.com/go/hpux11iblades>

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://www.hp.com/go/integrity/windows>

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>

Standard Features

Supported Software Options	HP Integrity Virtual Machines HP Integrity Essentials Virtualization Manager HP Integrity Essentials Capacity Advisor HP Secure Resource Partition HP-UX Workload Manager HP Virtual Server Environment Suite for HP-UX 11i for HP Integrity server blades HP Serviceguard for HP-UX 11i HP Serviceguard Manager HP Serviceguard Extensions for SAP HP Serviceguard Extensions for Faster Failover HP Integrity iLO Power Regulation supported by HP-UX 11i v3 HP Insight Power Manager GlancePlus Pak Performance Manager and Agent
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Intelligent Manageability

	HP Integrity Integrated Lights-Out 2 (iLO 2) Advanced Pack (factory integrated with the HP Integrity BL870c) Virtual serial console (Multiple, mirrored sessions, with previous context and console log buffer) Virtual Media (CD, DVD, and ISO file image) Virtual Floppy and USB Flash for Windows environments Virtual Serial Console Virtual Power Button Control Integrated Remote Console (virtual KVM) for Windows environments Power monitoring Power regulation through a supporting OS Embedded system health and Integrity fault management Diagnostics and troubleshooting: <ul style="list-style-type: none">• 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: For additional details please visit: http://www.hp.com/go/integrityilo NOTE: Advanced features such as Directory Services Integration (LDAP), vKVM for Windows and browser accessible Virtual Media are included with the HP Integrity BL870c server blade.
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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* (Included if purchase HP-UX 11i Enterprise or Mission-Critical OEs)
- 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*

*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

Designed for the optimal protection against both external and internal threats, HP-UX 11i offers industry-leading breadth and depth of UNIX security features. Focused on feature integration aimed at proactively mitigating risk, reducing compliance cost and accelerating time to implementation, HP-UX security solutions significantly lower IT costs. This set of fully integrated and complementary features is designed to provide layered security with in-depth protection of all your enterprise assets by protecting data, systems and identities. For more details, visit www.hp.com/go/hpux11isecurity

Downloads and documentation

[Encrypted volume and file system \(EVFS\)](#)

Function

EVFS is an operating system service that fills the compliance need to store files in a way that they cannot be read by unauthorized parties who obtain physical access to storage. Files and databases from current applications can be encrypted without changes to the application or underlying storage infrastructure. Read more

Standard Features

Trusted Computing Services (TCS)	HP-UX TCS provides software support for hardware-enforced key management on supported HP Integrity servers. By providing a low-cost embedded security chip option (known as a Trusted Platform Module) in its zx2-based Integrity servers, HP has established a foundation for strong protection of sensitive information - including cryptographic keys, such as for EVFS.
Security containment	HP-UX 11i security containment introduces three core technologies: compartments, fine-grained privileges, and role-based access control. Together, these three components provide a highly secure operating environment without requiring applications to be modified. Read more
Protected Systems: Webserver (PS-Webserver)	PS-Webserver is a pre-configured secure Web services platform built on HP-UX. The secure architecture and run time environment isolates the Internet from backend servers and isolates the Web server from the intranet. Read more
Open SSL	Open SSL offers a general-purpose cryptography library and implementation of the Secure Sockets Layer (SSL v2/v3) and Transport Layer Security (TLS v1) protocols.
Secure Shell	Secure Shell is a powerful software-based approach to encrypted network security. It provides secured remote login. Credentials and data sent over the network are encrypted by SSH-1 or SSH-2 protocols and decrypted once they reach their destination
IPSec	IPSec adds integrity protection and confidentiality to network communication over the Internet and within the enterprise to applications which lack these capabilities without modifying existing applications.
MD5 Secure Checksum (MD5sum)	MD5sum provides a cryptographic file integrity utility and API based on the standard Message Digest 5 (MD5) algorithm.
HP-UX 11i Internet Express	In addition to the fully-supported features listed above, HP packages a number of limited-support open source products that offer additional data security, including: OpenSC/OpenCT, ClamAV, CyrusSASL, GnuPG, SSLDump, Stunnel, and Tripwire.
Bastille	Bastille is a very easy-to-use security hardening wizard (also known as a lockdown wizard) that enhances the security of an HP-UX 11i host by turning off unneeded services, tightening security configuration settings, configuring IPFilter, etc. It accommodates the various degrees of hardening required for web, application and database servers, and can walk a non-security expert through the hardening decisions.
Host IDS	HIDS enhances host-level security with near real-time automatic monitoring of each configured host for signs of potentially damaging intrusions. HIDS is a standard feature of HP-UX 11i, making HP the only systems vendor to offer its own host intrusion detection product. Read more
Secure resource partitions	Secure Resource Partitions combine kernel level security (via Security Containment) and proven resource management to stack multiple applications within the same operating system.
IPFilter	IPFilter is a stateful firewall (filters IP packets to control packet flow in or out of the system; stateful simplifies and increases security of rule definitions by allowing return traffic based on outbound rules without having to define broader inbound rules). HP's unique dynamic connection allocation provides protection from denial-of-service attacks. IPFilter provides increased security defense by minimizing the number of server exposure points.

Standard Features

Software Assistant (SWA)	HP-UX SWA is a command-line tool that consolidates, simplifies and helps automate patch and security bulletin management on HP-UX systems. The SWA tool is the HP-recommended utility to maintain currency with HP-published security bulletins for HP-UX software.
Install-time Security	Install-time Security (ITS) is available to customers running HP-UX 11i v2 or later releases of the operating system, as an install option to lockdown systems during installation. ITS makes HP-UX 11i more secure out-of-the-box when customers select higher security levels. There are four choices, ranging from a highly locked down (DMZ) level with a tightly configured IPFilter firewall blocking most inbound traffic (and many services also disabled or secured) to a maximum compatibility level which installs security tools, but doesn't apply a security level.
Boot Authentication	A site's security policies may require users to authenticate before they can boot the system into single-user mode. Previously, this feature was only available on a system that had been converted to Trusted Mode. This product now provides secure single-user mode with root password protection, but without the overhead of converting the system to trusted mode.
Standard Mode Security Extensions	Enhances the system security of HP-UX 11i v2 and v3. Several security features previously available only in trusted mode are now available on standard mode HP-UX 11i systems. Features include enhanced password and user account security, such as password expiration on inactivity history reuse restrictions, auditing, and much more.
Shadow Passwords	Shadow Passwords enhance system security by hiding user encrypted passwords in a shadow password file. Encrypted passwords previously stored in the publicly readable /etc/passwd file can be optionally moved to the /etc/shadow file, which is accessible only by a privileged user.
Strong Random Number Generator	The Strong Random Number Generator provides a cryptographically strong, non-reproducible source of true random numbers for applications with strong security requirements, such as for generating encryption keys
HP-UX 11i Internet Express	In addition to the fully-supported features listed above, HP packages a number of limited-support open source products that offer additional system security, including: Chkrootkit, PAM_passwdqc, DanteSOCKS, Snort, Nessus, Xinetd.
Identity Management Integration (IdMI)	Providing the most complete and integrated solution for security management, IdMI allows administrators to enforce critical system access and authorizations. In addition to integrated enforcement, with the bundled version of Select Access for IdMI, customers benefit from single-vendor support for this mission critical capability.
Select Access for IdMI	Select Access for IdMI is a follow-up product to the HP-UX Identity Management Integration feature. This version of Select Access supports complete administration of HP-UX security policy for both user authentication and access control privileged functions within the OS. HP-UX security policy can be centrally controlled and managed through Select Access.
Role-based Access Control (RBAC)	HP-UX RBAC (a component of security containment) is an alternative to the traditional "all-or-nothing" root user model, which grants permissions to the root user for all operations, and denies permissions to non-root users for certain operations. HP-UX RBAC allows you to distribute administrative responsibilities by creating roles with appropriate authorizations and assigning them to non-root users and groups.

Standard Features

- AAA Server** HP-UX 11i AAA Server provides authentication, authorization and accounting services using the RADIUS and EAP protocols to authenticate and authorize user access to network devices and software applications. The AAA Server also generates usage logs for accounting, auditing and billing purposes.
- Red Hat Directory Server** Red Hat Directory Server is a Lightweight Directory Access Protocol (LDAP) compliant software server that centralizes user profiles, application settings, group data, policies and access control information into a network-based registry. The server is available on HP-UX 11i and operates on both HP 9000 and HP Integrity 64-bit hardware server platforms.
- LDAP-UX Client** With growth, consolidation and a dynamic environment, enterprises need new technologies to manage and verify security in their IT environments. In a highly distributed environment, local processes, security practices and administration methods are often inconsistent, repetitive and difficult to audit. With LDAP-UX Enterprise IT architects can use LDAP directories as one tool to help unify and simplify many of the above-mentioned practices
- Kerberos Server** Kerberos Server provides key distribution facilities to implement the Kerberos authentication protocol in network-distributed enterprises. It operates with an LDAP directory providing integrated identity management for authentication and access control.
- PAM Kerberos Kerberos Client** PAM Kerberos provides transparent Kerberos login support for HP-UX. HP-UX provides Kerberos Client software including libraries, header files, and utilities for implementing secured client/server applications
- HP-UX 11i Internet Express** In addition to the fully-supported features listed above, HP packages a number of limited-support open source products that offer additional identity management, including: Perl-LDAP, sudo, and OpenSAML.

Common Criteria certification

HP-UX 11i v3, the latest release of HP's strategic UNIX operating environment running on HP Integrity server blades in evaluation for Common Criteria Certification.

Many enterprise and government customers require this vendor-independent security certification because it increases confidence in the product's security assurance, functionality, quality and effectiveness. Many governments, including the United States, require certification for government IT procurement.

Certification evaluations are only conducted by the evaluation agency after release of the product. HP expects the certification for EAL4 Common Criteria (ISO 15408) Assurance Level, augmented by ALC_FLR.3 (flaw remediation), using the Controlled Access (CAPP), Role-Based Access Control (RBACPP) Protection Profiles and nPartitions (nPars) to be completed in the 4th quarter 2007.

[View the in-evaluation statement](#) for more information.

The **HP-UX 11i v2 operating system** running on HP Integrity server blades 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>.

For more details on HP-UX 11i common criteria certification, visit
<http://h20338.www2.hp.com/hpux11i/cache/532758-0-0-0-121.html>

Standard Features

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 BL870c 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 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; 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

Standard Features

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

Base Model

HP Integrity BL870c
Base Unit
AH232A

Processor(s) Supports up to four (4) processors	None included in base unit
Cache Memory All processor models	L2 cache per core; 1MB Instruction, 256KB Data
Memory	None included in base unit
Network Adapter	4 Embedded NICs: Dual Broadcom 5704 Gigabit NICs plus (1) additional 10/100 NIC dedicated to Integrity iLO 2 Management
Storage Controller	LSI 1068 SAS Controller
Hard Drives	No drives included; (4) SFF SAS drive bays
Internal Storage	584GB SAS
Optical Drive	None
Form Factor	Supports up to 2 BL870c in HP BladeSystem c3000 Enclosure Supports up to 4 BL870c in HP BladeSystem c7000 Enclosure

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.

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

NOTE: HP does not allow factory integration of options into standard models listed above.

Configure-to-order servers must start with a CTO Enclosure

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

Step 1: Base Server Blade Configuration

Base Unit	<p>HP Integrity BL870c Server Blade AH232A</p> <p>NOTE: Choose the base models.</p> <p>NOTE: Adding Option code "#0D1" to the Server Blade P/N will integrate the configured blade into the enclosure (which must be on the same order)</p> <p>Base unit standard features:</p> <p>Four embedded Gigabit Ethernet NIC ports plus (1) additional 10/100 NIC dedicated to Integrity iLO 2 Management</p> <p>Integrated LSI 1068 hardware RAID controller</p> <p>Four small form factor (SFF) SAS hot plug hard drive bays</p> <p>HP Integrity Integrated Lights-Out 2 Advanced Pack</p> <p>Support for up to 96GB memory with support for 24 DIMM slots</p> <p>Support for up to three c-Class mezzanine cards</p>
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Step 2: Choose Required Options (one of the following from each list unless otherwise noted):

Processors (Select minimum one (1) and maximum four (4) processors)	<p>Intel® Itanium® Dual-Core Processors Model 9150N (1.6 GHz, 24MB, 533FSB, L3 cache) AH320A</p> <p>Intel® Itanium® Dual-Core Processors Model 9140N (1.6 GHz, 18MB, 533FSB, L3 cache) AH255A</p> <p>Intel® Itanium® Dual-Core Processors Model 9120N (1.42 GHz, 12MB, 533FSB, L3 cache) AH256A</p>
Memory (Select minimum one (1) and maximum six (6) memory modules)	<p>4GB PC2-4200 DDR2-5300 Quad Memory AH252A</p> <p>8GB PC2-4200 DDR2-5300 Quad Memory AH253A</p> <p>16GB PC2-4200 DDR2-5300 Quad Memory AH254A</p> <p>NOTE: Memory Modules consist of four individual DIMMs</p> <p>NOTE: DIMMs must be installed in quads</p>
HP c-Class Enclosures (Select minimum one (1) enclosures)	<p>c7000 BCS c-Class Enclosure, FIO AD361B</p> <p>c3000 BCS c-Class Enclosure, FIO AH257A</p>

Configuration Information - Factory Integrated Models

Step 3: Choose Additional Options for Factory Integration

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
Fibre Channel Mezzanine Options	HP Dual Port 4Gbps QLogic FC HBA (Type I Mezz)	403619-B21
InfiniBand Mezzanine Options	HP 4X DDR IB Mezzanine HCA (no Software)	410533-B21
Ethernet Mezzanine Options	HP NC364m Quad Port 1GbE BL-c Adapter	447883-B21
	NOTE: Provides four additional 1GbE ports. HP NC 364m Quad Port 1GbE BLc Adapter, (p/n 447883-B21) is supported by HP-UX v3 and v2.)	
RAID 1 Configuration Upgrade Option	Factory configured hardware RAID 1	AD248A #106
	NOTE: Ordering AD248A#106 provides factory configuration of the embedded LSI 1068 SAS controller to RAID1.	
	NOTE: Requires two (2) SAS Hard Drives identical in speed and capacity	

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® Dual-Core Processors Model 9150N (1.6 GHz, 24MB, 533FSB, L3 cache)	AH320A
	Intel® Itanium® Dual-Core Processors Model 9140N (1.6 GHz, 18MB, 533FSB, L3 cache)	AH255A
	Intel® Itanium® Dual-Core Processors Model 9120N (1.42 GHz, 12MB, 533FSB, L3 cache)	AH256A
	<p>NOTE: HP Integrity BL870c processor upgrade kits contain one processor. Processors must be identical. No mixing of processor models is allowed.</p> <p>NOTE: The Integrity BL870c only supports 1, 2, 3 or 4 processor configurations.</p>	
Memory	4GB PC2-4200 DDR2-5300 Quad Memory	AH252A
	8GB PC2-4200 DDR2-5300 Quad Memory	AH253A
	16GB PC2-4200 DDR2-5300 Quad Memory	AH254A
	<p>NOTE: Memory Modules consist of quads of DIMMs DIMMS must be installed in quads</p> <p>NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the lowest numbered slots.</p>	
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
<p>NOTE: SAS drives have a 3 year warranty.</p> <p>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_div/12244_div.html (Worldwide)</p>		
Fibre Channel Mezzanine Options	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21
NOTE: Supports HP c-Class BladeSystem server blades		
InfiniBand Mezzanine Options	HP 4X DDR IB Mezzanine HCA (no Software)	410533-B21
	Cisco Software, per node, OFED Flexible Entitle License	450721-B21
	NOTE: Cisco Software Entitle License is a software license and may be ordered for use with HP 4X DDR IB Mezzanine HCA (p/n 410533-B21)	
	Voltaire Software, per node license	450616-B21
<p>NOTE: Voltaire Software is a software license and may be ordered for use with HP 4X DDR IB Mezzanine HCA (p/n 410533-B21).</p> <p>NOTE: For Linux support See the HPC Cluster Platform 6000 at http://www.hp.com/go/hptc</p>		
Ethernet Mezzanine Options	HP NC364m Quad Port 1GbE BL-c Adapter	447883-B21
NOTE: Provides four additional GbE ports. HP NC 364m Quad Port 1GbE BLc Adapter, (p/n 447883-B21) is supported by HP-UX v3 and v2.)		

Options

Service and Support Offerings (HP Care Pack Services)

NOTE: The HP Care Pack service part numbers below for the Integrity BL870 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

Provides for the Installation and Start-up of ProLiant Essentials Rapid Deployment Pack	HA114A1
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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 hours, standard office days.

Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic) (Electronic)	HA114A1
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Provides for the Installation and Start-up of System Insight Manager (Electronic)	HA124A1
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HP Installation & Startup Service for HP BladeSystem Infrastructure

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. All four DIMM slots in a memory bank must be populated.
3. Banks must be populated in sequential numeric order, starting with bank 0.
4. All four DIMMs in a memory bank must be identical. Install identical DIMMs in quads, 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 BL870c Server Blade

Standard Memory

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

Memory Bus Bandwidth:17 GB/s

Standard Memory Plus Optional Memory

Up to 96GB of PC2-4200, DDR2-533 DIMMs memory is available.

Memory		Slot											
Standard	4GB	0A	0B	0C	0D	2A	2B	2C	2D	4A	4B	4C	4D
		1GB	1GB	1GB	1GB	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
		1A	1B	1C	1D	3A	3B	3C	3D	5A	5B	5C	5D
		Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
Maximum	96GB	0A	0B	0C	0D	2A	2B	2C	2D	4A	4B	4C	4D
		4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB
		1A	1B	1C	1D	3A	3B	3C	3D	5A	5B	5C	5D
		4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB

Following are memory options available from HP:

4GB PC2-4200 DDR2-5300 Quad Memory

AH252A

8GB PC2-4200 DDR2-5300 Quad Memory

AH253A

16GB PC2-4200 DDR2-5300 Quad Memory

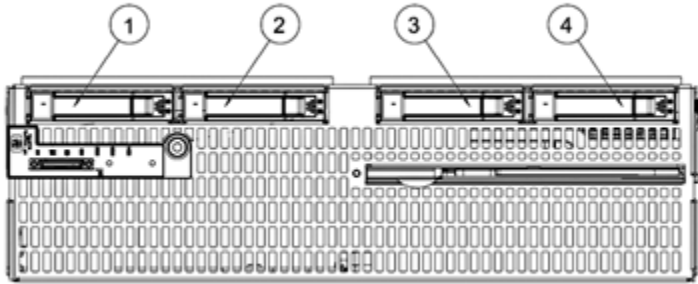
AH254A

NOTE: Must be installed in quads.

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

Storage

1-4 4 x SFF SAS Hot Plug Hard Drives



Hard Drives

SAS Hard Drive

	Quantity Supported	Position Supported	Controller
72GB 15,000 rpm SAS SFF	4	1-4	LSI 1068
36GB 15,000 rpm SAS SFF			
146GB 10,000 rpm SAS SFF			
72GB 10,000 rpm SAS SFF			

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>. Please select CTO under Configuration Type

Technical Specifications

System Unit	Dimensions	Height	14.42 in (36.63 cm)
		Depth	20.05 in (50.93 cm)
		Width	4.10 in (10.41 cm)
	Shipping Dimensions	Height	21.50 in (54.61 cm)
		Depth	23.13 in (58.75 cm)
		Width	9.94 in (25.25 cm)
	Weight	Maximum	38 (17 kg)
	Temperature Range*	Operating	10° to 35° C (50° to 95° F)
		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	10% to 90%
		Shipping	10% to 90%
		Storage	10% to 95%

*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.

**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	1 internal mini-SAS x4 wide port connector
	Server Interface	PCI-X 66MHz 64-bit provides 0.5GB/s maximum bandwidth
	SAS Speed	x4 3G SAS provides 1.2GB/s maximum bandwidth.
	Cache Memory	No cache memory supported
	Logical Drives Supported	Up to 32 logical volumes
	Maximum Logical Drive Capacity	584GB (4 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-X 133/66MHz 64-bit	
	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)

Environment-friendly Products and Approach	End-of-life Management and Recycling	<p>Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>
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The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

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

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