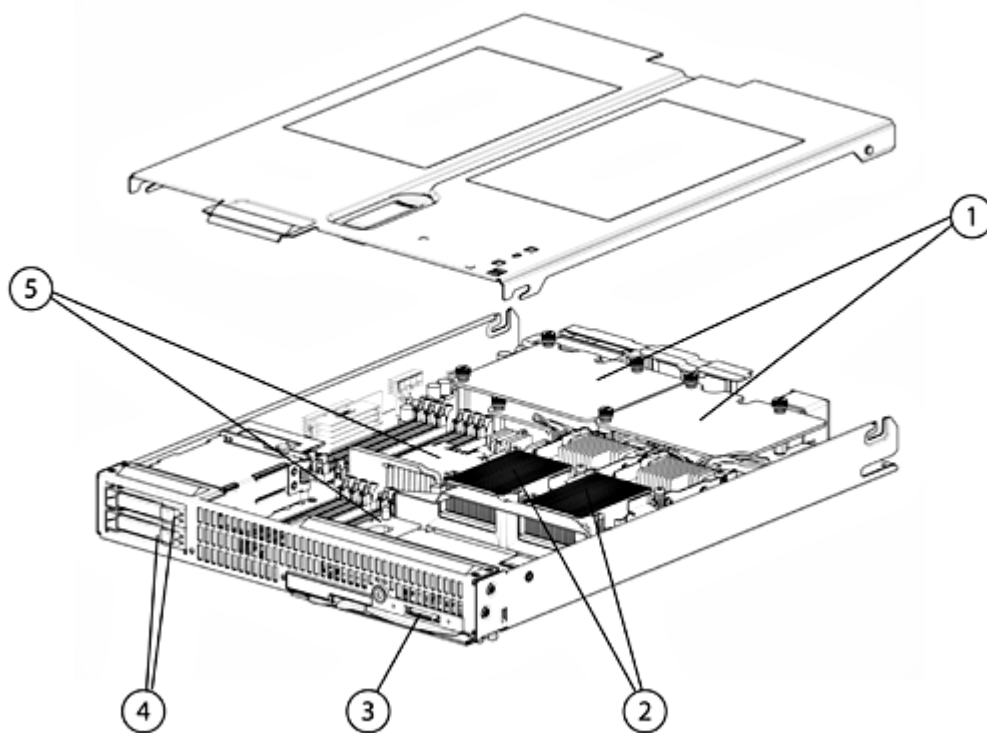


Overview



1. Three Mezzanine slots

2. Up to two Intel® Itanium® 9000 and 9100 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)

What's New

- Support for Intel® Itanium® 9100 series processors
- HP-UX 11i v3 supported now with new HP Integrity iLO Power Regulator for HP-UX 11i v3
- Support for OpenVMS v8.3 or OpenVMS v8.3-1H1
- Support for the HP NC364m Quad Port 1GbE BL-c Adapter allowing up to sixteen Gigabit Ethernet ports per server

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

Overview

The HP Integrity BL860c 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.

- **Processor:**
 - Up to two Intel® Itanium® 9100 or 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:**
 - Supports up to (2) two small form factor (SFF) SAS hot plug hard drives
- **Network Controller:**
 - Four (4) Embedded Standard Gigabit Network Adapter ports
 - 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 NC364m Quad Port 1GbE BL-c Adapter allowing up to sixteen Gigabit Ethernet ports per server
 - 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:**
 - HP Integrity Server Blades Management Software
 - Integrity Integrated Lights Out 2 (iLO 2) management processor
 - HP Integrity Integrated Light Out 2 (iLO 2) with Advanced Pack,(factory integrated - standard with all BL860c models)
 - 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**

Overview

- 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:**
 - HP Integrity BL860c server blade is a full-height, BladeSystem c-Class form factor. The BL860c server blade plugs into the BladeSystem enclosure. In the 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. In the c3000 enclosure, 4 server blades are supported per 6U enclosure.
- **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 (Server Blade)

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: <http://h71028.www7.hp.com/ERC/downloads/4AA1-0071ENW.pdf>

Processor Intel® Itanium® Single-Core Processors Model 9110N (1.6 GHz, 12MB L3 cache, FSB533)
Intel® Itanium® Dual-Core Processors Model 9140M (1.66 GHz, 18MB L3 cache, FSB667)
Intel® Itanium® Dual-Core Processors Model 9120N (1.42 GHz, 12MB L3 cache, FSB533)
Intel® Itanium® Dual-Core Processor Model 9040 (1.6 GHz, 18MB L3 cache, FSB533)
Intel® Itanium® Dual-Core Processor Model 9015 (1.4 GHz, 12MB L3 cache, FSB400)
Intel® Itanium® 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 HP zx2

Memory Type PC2-4200 DDR2 DIMMs (DDR2-533)
Minimum 2 GB (2 x 1 GB)
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
Up to twelve additional Gigabit Ethernet ports via the NC364m Quad-port mezzanine adapter

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 2 SAS Channels (one to each HDD)
Supports RAID 1

Standard Features (Server Blade)

Maximum Internal Storage	Hot Plug Serial Attach SCSI (SAS)	292GB SAS	2 x 146GB Serial Attached SCSI
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Graphics	Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR memory)
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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
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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

Integrity Server Blades Management Software and HP Integrity Essentials Software Plugins

HP-UX 11i Management Software for HP Integrity BL860c 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 BL860c)
 - HP Integrity iLO Power Regulator 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
- **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 Blade

*NOTE: 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.

Microsoft ®Windows for Integrity Management Software for HP Integrity BL860c Server Blade and

- **Get Started**
 - HP Systems Insight Manager
 - HP Integrity Essentials for Windows
 - HP BladeSystem Integrated Manager in HP Systems Insight

Standard Features

HP BladeSystem

- 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**
 - Integrity Essentials Foundation Pack for Windows
 - Smart Setup CD
 - Smart Setup Scripting Toolkit
 - Rapid Deployment Pack
- **Monitor**
 - HP Systems Insight Manager
 - HP System Management Homepage
 - GlancePlus Pak
 - Performance Manager and Agent
 - Version Control
 - Repository Manager
 - NIC Configuration Utility
 - Performance Management Pack
- **Control**
 - HP Integrity Integrated Lights Out (iLO) 2 (Advanced Pack factory integrated with BL860c)
- **Protect**
 - Data Protector Software
- **Optimize**
 - HP Integrity Essentials Capacity Advisor
 - HP Integrity Essentials Virtualization Manager
 - HP Insight Power Manager
- **Integrate**
 - HP Business Technology Optimization
 - IT Management Software
 - SMS Inventory Tool for HP ProLiant and Integrity Update
 - HP Management Packs for Microsoft Operations Manager 2005
 - HP Management Packs for Microsoft Operations Manager 2007
- **Learn More**
 - Windows for Integrity
- **Get Started**
 - HP Systems Insight Manager
 - HP Integrity Essentials for Linux
 - HP BladeSystem Integrated Manager in HP Systems 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 Integrity Essentials Foundation Pack for Linux
 - Rapid Deployment Pack
- **Monitor**
 - HP Systems Insight Manager

Linux for Integrity
Management Software for
HP Integrity BL860c Server
Blade and HP BladeSystem

Standard Features

OpenVMS Management Software for HP Integrity BL860c Server Blade and HP BladeSystem

- HP System Management Homepage
- GlancePlus Pak
- Performance Manager and Agent
- HP Serviceguard Manager
- **Control**
 - HP Integrity Integrated Lights Out (iLO) 2 (Advanced Pack factory integrated with BL860c)
- **Protect**
 - Data Protector Software
- **Optimize**
 - HP Integrity Essentials Capacity Advisor
 - HP Integrity Essentials Virtualization Manager
 - HP Insight Power Manager
- **Integrate**
 - HP Business Technology Optimization
 - IT Management Software
- **Learn More**
 - Linux for Integrity
- **Get Started**
 - HP Systems Insight Manager
 - HP Integrity Essentials for OpenVMS
 - HP BladeSystem Integrated Manager in HP Systems 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**
 - PCSI and Secure Delivery
- **Monitor**
 - HP Systems Insight Manager
 - HP System Management Homepage
 - GlancePlus Pak
 - Performance Manager and Agent
 - Availability Manager
- **Control**
 - HP Integrity Integrated Lights Out (iLO) 2 (Advanced Pack factory integrated with BL860c)
- **Protect**
 - Data Protector Software
- **Optimize**
 - HP Integrity Essentials Capacity Advisor
 - HP Integrity Essentials Virtualization Manager
 - HP Insight Power Manager
- **Integrate**
 - HP Business Technology Optimization
 - IT Management Software
- **Learn More**
 - OpenVMS for Integrity

Standard Features

Server Blades Management Software Product Description

Manager in HP Systems Insight Manager	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 and HP OpenView Performance Agent. 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.

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).

Standard Features

- 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 BL860c) HP Integrity Integrated Lights Out (iLO) management processors make it simpler, faster, and less costly to remotely manage your Integrity servers. HP Integrity iLO 2, the next generation of iLO management processors, is available in the newest Integrity entry-class 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).
- HP Onboard Administrator The Onboard Administrator for the HP BladeSystem 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 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

Standard Features

	<p>System Management Homepage can also be used to access the HP Lights-Out Management processor on ProLiant and Integrity servers.</p>
HP Virtual Server Environment for HP Integrity	<p>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.</p>
HP-UX Software Assistant (SWA)	<p>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 as of January 2007, 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.</p>
HP-UX Workload Manager	<p>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.</p>
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> <p>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.</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>

Standard Features

- 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) Performance Management Pack detects, analyzes, and explains hardware bottlenecks on HP Integrity servers running Windows.
- ProLiant Essentials Rapid Deployment Pack (designed for Windows and Linux for HP Integrity Server Blades only) 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.
- Secure Resource Partitions 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.
- Software Distributor-UX 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.

Standard Features

OS Support

HP-UX 11i v3 Mission Critical Operating Environment
HP-UX 11i v3 Enterprise Operating Environment
HP-UX 11i v3 Foundation Operating Environment
HP-UX 11i v3 Technical Computing Operating Environment
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
Microsoft Windows Server 2003, Enterprise and Datacenter Editions 64-bit)
OpenVMS v8.3 I64 Foundation Operating Environment for Itanium Servers
OpenVMS v8.3 I64 Enterprise Operating Environment for Itanium Servers
OpenVMS v8.3 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/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>

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 Regulator for HP-UX 11i v3
HP Insight Power Manager
GlancePlus Pak
Performance Manager and Agent

Standard Features

Intelligent Manageability HP Integrity Integrated Lights-Out 2 (iLO 2) Advanced Pack (factory integrated 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

Integrated Remote Console (virtual KVM) for Windows environments

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 and browser accessible Virtual Media are included with the HP Integrity BL860c server blade.

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

Standard Features

Industry Standard Compliance

- ACPI 2.0 Compliant
- PCI 2.2 Compliant
- WOL Support
- Microsoft® Logo certifications
- USB 2.0 Support

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

Function

Encrypted volume and file system (EVFS)

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

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.

Standard Features

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.
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.

Standard Features

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.
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.

Standard Features

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	PAM Kerberos provides transparent Kerberos login support for HP-UX.
Kerberos Client	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 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 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.

Care Pack services provide a range of life cycle support options that let you choose the service levels that

Standard Features

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

**HP Integrity BL860c 9010 Processor(s)
SC (2P)** [One of the following
depending on model](#)
AD323A Opt #001

Two (2) Intel® Itanium® Single-Core Processors Model 9010 (1.6 GHz, 6MB L3 cache)

Two (2) Intel® Itanium® Dual-Core Processors Model 9015 (1.4 GHz, 12MB L3 cache)

Two (2) Intel® Itanium® Dual-Core Processors Model 9040 (1.6 GHz, 18MB L3 cache)

HP Integrity BL860c 9015 DC (2P)
AD323A Opt #002

Cache Memory

1.2MB per Core Level 2 cache memory

HP Integrity BL860c 9040 Memory
DC (2P)
AD323A Opt #003

Network Adapter

No memory included (PC2-4200, DDR2-533)

4 Embedded NIC ports 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; (2) SFF SAS drive bays

Internal Storage

292GB SAS

Optical Drive

None

Form Factor

Up to 8 supported in HP BladeSystem c7000 Enclosure

Up to 4 supported in HP BladeSystem c3000 Enclosure

HP Integrity BL860c 9110N SC (2P) [One of the following
depending on model](#)
AD323A Opt #004

Two (2) Intel® Itanium® Single-Core Processors Model 9110N (1.6 GHz, 12MB L3 cache)

Two (2) Intel® Itanium® Dual-Core Processors Model 9120N (1.42 GHz, 12MB L3 cache)

Two (2) Intel® Itanium® Dual-Core Processors Model 9140M (1.66 GHz, 18MB L3 cache)

HP Integrity BL860c 9120N DC (2P)
AD323A Opt #005

Cache Memory

1.2 MB per Core Level 2 cache memory

HP Integrity BL860c 9140M DC (2P)
AD323A Opt #006

Memory

No memory included (PC2-4200, DDR2-533)

Network Adapter

4 Embedded NIC ports, Dual Broadcom 5704 Gigabit NICs plus (1) additional 10/100 NIC dedicated to Integrity iLO2 Management

Storage Controller

LSI1068 SAS Controller

Hard Drives

No drives included; (2) SFF SAS drive bays

Internal Storage

292GB SAS

Optical Drive

None

Form Factor

Up to 8 supported in HP BladeSystem c7000 Enclosure

Up to 4 supported in HP BladeSystem c3000 Enclosure

Models

One (1) Processor Base Models

HP Integrity BL860c 9010 Processor(s) SC (1P)
 AD217A Opt #001 [One of the following depending on model](#)

One (1) Intel® Itanium® Single-Core Processors Model 9010 (1.6 GHz, 6MB L3 cache)

One (1) Intel® Itanium® Dual-Core Processors Model 9015 (1.4 GHz, 12MB L3 cache)

One (1) Intel® Itanium® Dual-Core Processors Model 9040 (1.6 GHz, 18MB L3 cache)

HP Integrity BL860c 9015 (1P)
 AD217A Opt #002

Cache Memory

1.2MB per Core Level cache memory

HP Integrity BL860c 9040 Memory

No memory included (PC2-4200, DDR2-533)

DC (1P)

Network Adapter

4 Embedded NIC ports: Dual Broadcom 5704 Gigabit NICs plus (1) additional 10/100 NIC dedicated to Integrity iLO 2 Management

AD217A Opt #003

Storage Controller

LSI 1068 SAS Controller

Hard Drives

No drives included; (2) SFF SAS drive bays

Internal Storage

292GB SAS

Optical Drive

None

Form Factor

Up to 8 supported in HP BladeSystem c7000 Enclosure

Up to 4 supported in HP BladeSystem c3000 Enclosure

HP Integrity BL860c 9110N SC (1P)
 AD217A Opt #004

Processor(s)
[One of the following depending on model](#)

One (1) Intel® Itanium® Single-Core Processors Model 9110N (1.6 GHz, 12 MB L3 cache)

One (1) Intel® Itanium® Dual-Core Processors Model 9120N (1.42 GHz, 12 MB L3 cache)

One (1) Intel® Itanium® Dual-Core Processors Model 9140M (1.66 GHz, 18 MB L3 cache)

HP Integrity BL860c 9120N SC (1P)
 AD217A Opt #005

Cache Memory

1.2 MB per Core Level cache memory

HP Integrity BL860c 9140M SC (1P)
 AD217A Opt #006

Memory

No memory included (PC2-4200, DDR2-533)

Network Adapter

4 Embedded NIC ports: 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; (2) SFF SAS drive bays

Internal Storage

292GB SAS

Optical Drive

None

Form Factor

Up to 8 supported in HP BladeSystem c7000 Enclosure

Up to 4 supported in HP BladeSystem c3000 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 Chassis.

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	HP 2GB PC4200 DDR-SDRAM(2x1GB DIMMs)	AD343A
	HP 4GB PC4200 DDR-SDRAM(2x2GB DIMMs)	AD344A
	HP 8GB PC4200 DDR-SDRAM(2x4GB DIMMs)	AD345A
	NOTE: Memory Modules consist of pairs of DIMMs	
	NOTE: DIMMs must be installed in pairs	
RAID 1 Configuration Upgrade Option	Factory configured hardware RAID 1	AD248A #106
	NOTE: Requires two (2) SAS Hard Drives identical in speed and capacity	
	NOTE: Ordering AD242A#106 provides factory configuration of the embedded LSI 1068 SAS controller to RAID1.	

Configuration Information - Factory Integrated Models

Step 3: Choose Additional Options for Factory Integration

Fibre Channel Mezzanine Options	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem NOTE: BL860c supports HP Virtual Connect Fibre Channel Interconnect Modules. See http://www.hp.com/go/bladepystem/virtualconnect for complete details	403619-B21
Hard Drives	Serial Attached SCSI (SAS) SFF Hot Plug HP 72GB 3G SAS 15K SFF SP HDD HP 36GB 3G SAS 15K SFF SP HDD HP 146GB 3G SAS 10K SFF HDD HP 72GB 3G SAS 10K SFF SP HDD	431935-B21 431933-B21 431958-B21 375861-B21
Fibre Channel Mezzanine Options	HP Dual Port 4Gbps QLogic FC HBA (Type I Mezz) NOTE: BL860c supports HP Virtual Connect Fibre Channel Interconnect Modules. See http://www.hp.com/go/bladepystem/virtualconnect for complete details	403619-B21
c-Class Mezzanines	HP BLc SB40c PCIe Mezzanine Pass Thru Option Kit NOTE: Needed to support the SB40c storage blade with HP c-Class BladeSystem full-height server blades. NOTE: Adding option "0D1" to these options indicates factory integration of that product.	431643-B21
Ethernet Mezzanine Options	HP NC364m Quad Port 1GbE BL-c Adapter NOTE: Provides four additional Gigabit Ethernet ports per I/O expansion slot. NOTE: BL860c supports HP Virtual Connect Ethernet Interconnect Modules. See http://www.hp.com/go/bladepystem/virtualconnect for complete details	409377-B21

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 Model 9040 (1.6 GHz, 18MB L3 cache, FSB533)	AD270A
	Intel® Itanium® Dual-Core Model 9015 (1.4 GHz, 12MB L3 cache, FSB400)	AD271A
	Intel® Itanium® Single-Core Model 9010 (1.6 GHz, 6MB L3 cache, FSB533)	AD272A
	Intel® Itanium® Single-Core Processors Model 9110N (1.6 GHz, 12MB L3 cache)	AD395A
	Intel® Itanium® Dual-Core Processors Model 9120N (1.42 GHz, 12MB L3 cache)	AD394A
	Intel® Itanium® Dual-Core Processors Model 9140M (1.66 GHz, 18MB L3 cache)	AD396A

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 2GB PC4200 DDR-SDRAM(2x1GB DIMMs)	AD343A
	HP 4GB PC4200 DDR-SDRAM(2x2GB DIMMs)	AD344A
	HP 8GB PC4200 DDR-SDRAM(2x4GB DIMMs)	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

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 Thru Option Kit	431643-B21
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NOTE: Required to support the SB40c storage blade (P/N 411243-B21) or PCI-Express Expansion Blade (P/N 448018-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

Options

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>

Ethernet Mezzanine Options	HP NC364m Quad Port 1GbE BL-c Adapter	447883-B21
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NOTE: Provides four additional Gigabit Ethernet ports per each I/O expansion slot.

HP StorageWorks SB40c Storage Blade	HP StorageWorks SB40c Storage Blade	411243-B21
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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

USB Options	HP Multi Bay II cradle (to hold DVD Drives below)	PA509A
	HP Multi Bay II DVD+/-RW Drive	PA851A

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.

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
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Options

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

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

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 2GB PC4200 DDR-SDRAM(2x1GB DIMMs)

AD343A

HP 4GB PC4200 DDR-SDRAM(2x2GB DIMMs)

AD344A

HP 8GB PC4200 DDR-SDRAM(2x4GB DIMMs)

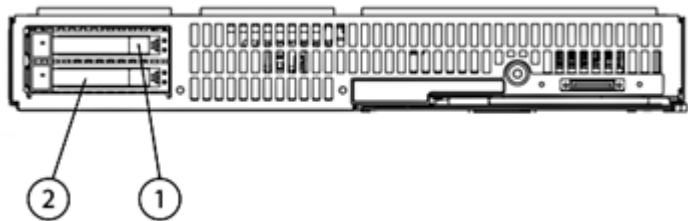
AD345A

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	2	1-2	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>

Technical Specifications

System Unit	Dimensions	Height	14.42 in (36.63 cm)
		Depth	20.02 in (50.85 cm)
		Width	2.03 in (5.16 cm)
Shipping Dimensions	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	22.8 lbs (10.3 kg)	
Temperature Range*	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**	Relative Humidity**	Operating	10% to 90%
		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)

Environment-friendly Products and Approach	End-of-life Management and Recycling	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.
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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.

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