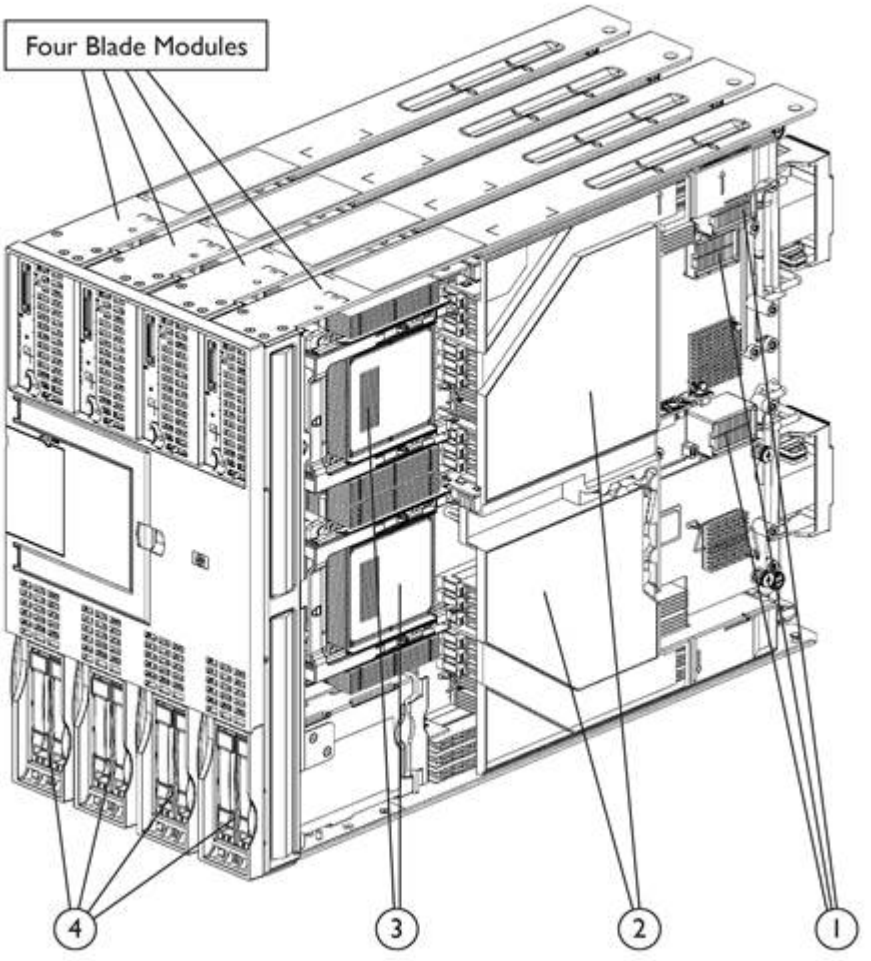
Overview



HP Integrity BL890c i2 Server Blade

1. 12 x PCIe mezzanine slots (per BL890c i2)
2. 96 x DDR3 DIMM slots (per BL890c i2)
3. 8 x Intel® Itanium® processor 9300 series sockets (per BL890c i2)
4. 8 x SFF SAS HDDs, hot-swap bays (per BL890c i2)

What's New

- Support for HP-UX Virtual Partitions (vPars) v6.0
- Support for HP 300GB 6G SAS 15K SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive
- Support for HP NC553m Dual Port 10Gb FlexFabric Adapter (Ethernet and FCoE)
- Support for HP Smart Array P711m 6G SAS Controller

At A Glance

This document covers the HP Integrity BL890c i2 server blade only. For more information on HP BladeSystem c-Class Enclosure and HP BladeSystem c-Class Interconnect and Mezzanine Components, please see the following QuickSpecs:

- HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
- HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
- HP BladeSystem c-Class Interconnect and Mezzanine Components: http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html

Overview

http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

The HP Integrity BL890c i2 delivers the performance, reliability, and availability on 64-bit operating systems (HP-UX 11i v3, Microsoft Windows® Server 2008 for Itanium-based systems and OpenVMS v8.4) for the ultimate in scalability and flexibility in deployment. To further enrich your cost-efficient, consolidated Integrity blade infrastructure, HP Insight Dynamics - VSE for HP Integrity Servers can help with solution components such as HP-UX Virtual Partitions (vPars) v6.0, HP Integrity Virtual Machines, HP Integrity Essentials Capacity Advisor and Virtualization Manager, HP Global Workload Manager and HP-UX Workload Manager, HP Insight Dynamics infrastructure orchestration HP Dynamics - VSE Reference Architectures, and HP Serviceguard.

HP Integrity BL890c i2 server blade includes:

- **Processor**:
  - Up to eight Intel® Itanium® 9300 Series processors
- **Memory**:
  - Up to 1.5 TB of memory. Supporting (96) DDR3 registered memory modules (R-DIMMs)
- **Storage Controller**:
  - Four (4) Embedded HP p410i SAS RAID Controllers integrated on system board
  - RAID 1 and RAID 0, and HBA mode configuration options
- **Internal Drive Support**:
  - Supports up to (8) eight small form factor (SFF) SAS hot plug hard drives
- **Network Controller**:
  - Sixteen (16) NIC ports via eight (8) embeddedNC532i Dual Port Flex-10 Multifunction Server Adapters
    NOTE: Flex-10 capability requires OS drivers and the use of an HP Virtual Connect Flex-10 10GbE Ethernet module. Learn more at: www.hp.com/go/virtualconnect
    NOTE: BL8x0c i2 server blades require Virtual Connect 3.00 or later when used in Virtual Connect configurations
    NOTE: Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components
  - Plus one (1) additional 10/100 NIC dedicated to Integrity iLO 3 Management
- **Mezzanine Support**:
  - Twelve (12) additional I/O expansion slots via mezzanine cards.
  - Supports up to (12) mezzanine cards
    - HP NC553m Dual Port 10Gb FlexFabric Adapter
      NOTE: A maximum of 8 HP BLc NC553m Dual Port 10Gb Adapters are supported with BL890c i2
    - HP NC551m Dual Port 10Gb FlexFabric Adapter
      NOTE: A maximum of 8 HP BLc NC553m Dual Port 10Gb Adapters are supported with BL890c i2
    - HP NC552m 10Gb 2-port Flex-10 Ethernet Adapter
    - HP NC532m Dual Port Flex-10 10GbE BL-c Adapter
      NOTE: A maximum of 8 HP BLc NC532m Dual Port Flex-10 10Gb Adapters supported with BL890c i2.
    - HP Emulex LPe1205 8Gb FC BL-c HBA (2-port 8Gb Emulex FC HBA)
    - HP QMH 2562 8Gb FC BL-c HBA (2-port 8Gb QLogic FC HBA)
    - HP Smart Array P711m/1G FBWC 6G SAS Controller
    - HP Smart Array P700m/512 Controller
    - HP 4X QDR IB CX-2 Dual Port Mezz HCA for HP BladeSystem c-Class
    - HP NC364m 4-port 1GbE BL-c Adapter
    - HP NC360m 2-port 1GbE BL-c Adapter
- **USB Support**:
  - Four (4) Internal USB ports on the BL890c i2
  - Two (2) External USB ports on the BL890c i2 via SUV cable
- **Management**:
  - HP Integrity Server Blades Management Software
    - Integrity Integrated Lights-Out 3 (iLO 3) management processor
    - HP Insight Control
    - 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 Dynamic Root Disk (DRD)
    - HP BladeSystem Infrastructure Management Software:
        - 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 Insight Dynamics - VSE for HP Integrity servers**, www.hp.com/go/insightdynamics/integrity
    - Advanced Infrastructure Management
        - HP Capacity Advisor
        - HP Virtualization Manager
        - HP Global Workload Manager and HP-UX Workload Manager
        - HP Insight Dynamics infrastructure orchestration
        - HP Systems Insight Manager
    - Partitioning Continuum
        - HP-UX Virtual Partitions (vPars) v6.0
        - 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
    - HP Insight Dynamics - VSE Reference Architectures
- **Form Factor**:
    - HP Integrity BL890c i2 server blade is a full-height, quadruple wide (occupies 4 slots) BladeSystem c-Class form factor. The BL890c i2 server blade plugs into the BladeSystem enclosure. In the c7000 enclosure, 2 server blades are supported per 10U enclosure. 4 enclosures can be configured to a standard 42U rack; 8 BL890c i2 server blades can be configured in a fully populated rack. In the c3000 enclosure, 1 BL890c i2 server blade is supported per 6U enclosure.
- **Enclosures**:
    - HP offers two different c-Class server blade enclosures to meet your individual needs:
        - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to 2 HP Integrity BL890c i2 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 1 HP Integrity BL890c i2 server plugged horizontally. Up to 7 enclosures can be configured to a standard 42U rack
        - 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. For additional enclosure information, please see: http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html.
- **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 One of the following depending on Model	**Quad-Core Processors** Intel® Itanium® 9320 (1.33GHz/4-core/16MB/155W); up to 1.46 GHz with Turbo) Processor Intel® Itanium® 9340 (1.6GHz/4-core//20MB/185W); up to 1.73 GHz with Turbo) Processor Intel® Itanium® 9350 (1.73GHz/4-core/24MB/185W; up to 1.86 GHz with Turbo) Processor **Dual-Core Processor** Intel® Itanium® 9310 (1.6GHz/2-core/10MB/130W) Processor	
Upgradeability	Upgradeable to eight (8) processors **NOTE:** The HP Integrity BL890c i2 supports 4, 5, 6, 7, or 8 processor configurations. Processors mus identical.	
Cache Memory One of the following depending on Model	L2 cache per core; 512KB Instruction, 256KB Data L3 cache; up to 24MB, see processor specifics	
Chipset	Intel Boxboro	
Memory	Type	DDR3 registered memory modules (R-DIMMs)
	Minimum	32 GB (8 x 4 GB DIMMs)
	Maximum	1.5 TB (96 x 16 GB DIMMs)
	NOTE: Memory modules consist of two (2) DIMMs. **NOTE:** Double Chip Spare is enabled in a pairs DIMMs. Double Chip Spare requires identical DIMM ty and capacities **NOTE:** Memory must be loaded in quads (two memory modules, 4 DIMMs)	
Network Adapter	Sixteen (16) NIC ports via (8) NC532i Dual Port Flex-1010GbE Multifunction Server Adapter **NOTE:** Flex-10 capability requires OS drivers and the use of an HP Virtual Connect Flex-10 10GbE Ethernet module. Learn more at: www.hp.com/go/virtualconnect **NOTE:** BL8x0c i2 server blades require Virtual Connect 3.00 or later when used in Virtual Connect configurations **NOTE:** Each part is autosensing 1Gb/10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components. One (1) additional 10/100 NIC dedicated to Integrity iLO 3 Management **NOTE:** Up to thirty-two additional Gigabit Ethernet ports via the NC364m Quad-port mezzanine adapte sixteen additional 10 Gigabit Ethernet ports via the NC532m dual-port mezzanine adapter.	
Expansion Slots	Twelve Mezzanine slots, eight (8) Type II and four (4) Type I, PCIe x8 Gen2	
Integrated Manageability	Integrity Integrated Lights-Out 3 (iLO 3) Factory installed Integrity iLO 3 Advanced Pack License HP BladeSystem c-Class Onboard Administrator HP BladeSystem c-Class Virtual Connect	
Storage Controller	Four (4) HP p410i 3Gb SAS Controller	8 SAS Channels (one to each HDD) Supports RAID 1, RAID 0, and HBA mode options Zero (0) cache, no cache options

Standard Features

Maximum Internal Storage	Hot Plug SAS	7.2TB SAS	8 x 900GB SAS

Graphics

Integrated ATI RN50 1280 x 1024 x 16M color (128 MB DDR memory)

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

FlexFabric Support

Dual (2) ports via HP BLc NC553m Dual Port FlexFabric 10Gb Converged Network Adapter
Dual (2) ports via HP BLc NC551m Dual Port FlexFabric 10Gb Converged Network Adapter

NOTE: BL8x0c i2 server blades require Virtual Connect 3.15 or later
NOTE: Each port supports 10GbE Ethernet or 8Gb FCoE traffic.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information and for HP-support.
HP NC551m: http://h18004.www1.hp.com/products/quickspecs/13649_div/13649_div.html
HP NC553m: http://h18004.www1.hp.com/products/quickspecs/13737_div/13737_div.html

InfiniBand Support

Optional InfiniBand HCAs are supported by the HP Integrity BL860c i2 Server Blade. The mezzanine c board connects directly to the server blade system board.

HP 4X QDR InfiniBand ConnectX-2 Dual Port Mezzanine HCA for c-Class BladeSystem (PN 592519-B

Features:

- Negotiates to DDR/QDR speeds
- Dual ports for redundant path connections
- Support for HP-UX 11i v3
- Supported with HP 4X QDR InfiniBand Switch Module for c-Class BladeSystem (PN 489184-B2
- For details specifications, please visit: http://www.hp.com/products1/serverconnectivity/adapters/infiniband/specifications.html

Fibre Channel Support

Optional Fibre Channel HBAs are supported by the HP Integrity BL890c i2. The mezzanine circuit boa connects directly to the server blade system board.

8Gb Fibre Channel Host Bus Adapters:

- QLogic QMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 451871-
- Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 456972-B

8Gb Fibre Channel HBAs feature:

- 8/4/2/1Gb/s auto negotiating speeds
- Dual ports for redundant path connections
- Optimized for HP Storage and supported by third party SAN vendors
- Support for HP-UX 11i v3, Microsoft® Windows for Integrity (6.2)

Compatible SAN

HP Integrity BL890c i2 server blades are optimized for HP Storage MSA, EVA, and XP products.

Smart Array Controller Support

Optional Smart Array Controller is supported by BL890c i2. The mezzanine circuit board connects dir to the server blade system board, and provides connection to off-blade SAS storage via a SAS

interconnect switch module in the HP BladeSystem enclosure.

HP Smart Array P711m/1G FBWC 4-ports Ext PCIe x8 6G SAS Controller (PN 513778-B21)

- Provides support for HP Zoned Storage for BladeSystem
- Zoned Storage solution requires compatible HP Storage 600 Modular Disk System and HP Stor 3Gb SAS BL Switch
- Supports RAID 6 with Advanced Data Guarding (ADG)
- Provides support for HP P2000 G3 MSA
- Support for HP P2000 G3 MSA requires HP Storage 6Gb SAS BL Switch

NOTE: For additional details please see:
http://www8.hp.com/h20195/v2/GetDocument.aspx?docname=c04111558

HP USB Options

External USB DVD drive with 6 ft USB extension cable is supported with c7000 enclosures.

The solution includes the following components:

- External USB DVD drive with 9-inch USB cable
- Power adaptor, power cable and USB Y-connector
- 6-foot USB extension cable

NOTE: The USB Y-connector goes between the extension cable (SH046AA) and the 9-inch USB cabl fixed with DVD drive.
NOTE: The Y-connector should NOT be placed between the server blade and the 6-foot Extension cab

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

HP-UX 11i Management Software for HP Integrity BL890c i2 Server Blade and HP BladeSystem

- **Getting Started**
  - HP Systems Insight Manager
  - HP Insight Control for HP-UX 11i
  - HP-UX 11i System Management
  - HP BladeSystem Integrated Manager in HP System Insig Manager
  - HP Onboard Administrator
  - HP BladeSystem c-Class Onboard Administrator Firmwar
  - HP BladeSystem c-Class Virtual Connect Firmware
  - HP Insight Control for HP-UX 11i v3 (included in BASE OE
- **Deploy**
  - HP Ignite-UX
  - Software Distributor-UX
  - Software Package Builder
  - Dynamic Root Disk (DRD)
- **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) 3 (standard with BL890c i2 servers)
  - Integrity iLO Advanced 3 Pack License (included with BL8 i2 servers)
- **Protect**
  - HP-UX Bastille
  - Secure Resource Partitions
  - Data Protector Software

- Software Assistant (SWA)

- **Optimize**
  - HP Capacity Advisory
  - HP Virtualization Manager
  - HP-UX Workload Manager
  - HP Global Workload Manager
  - Process Resource Manager
  - HP Insight Power Manager
  - HP-UX 11i v3 power management
- **Integrate**
  - HP Business Technology Optimization
  - IT Management Software
  - HP Insight Dynamics - VSE for HP Integrity server blades
- **Learn More**
  - For additional information on HP Integrity server blade management software please visit: http://h18004.www1.hp.com/products/servers/integrity-bl/c class/860c/compmatrix.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 Syst Insight Manager (SIM) that provides streamlined management for the entire HP BladeSystem product family. The HP BladeSystem Integrat Manager enables users to quickly navigate their HP blade environmer including blade servers, enclosure infrastructures, racks, and integrate switches, via automatically generated blade rack picture views and hierarchical trees. Users are able to conveniently configure, deploy, ar manage individual or groups of blade systems. Additionally, users are 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 blad collections, using tables, trees, and picture views, and it can also be to monitor performance and launch Integrity Essentials. **NOTE:** For more information about Manageability solutions for Integrit Servers go to: http://h20341.www2.hp.com/integrity/w1/en/software/essentials-overview.html.
	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 P 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 hist 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 multiple PA-RISC and/or Integrity servers on a network. It can also be used to create custom install configurations, or golden images, recove systems remotely, create custom recovery media including tape, CD DVD, and manage and monitor multiple client installation sessions.
	HP Capacity Advisor	The capacity planning component of HP Insight Dynamics - VSE, HP Capacity Advisor offers the industry's first lightweight, integrated tool f ongoing capacity planning by simulating the placement of application workloads to help IT administrators improve server utilization. It captur real-world server utilization data to pre-test different scenarios before making changes to critical applications.

Standard Features

HP Virtualization Manager	The configuration management component of HP Insight Dynamics - V HP Virtualization Manager provides a central point of control that allov you to manage all the resources in your environment, providing a powe way to connect IT resources to real business needs. With its easy-to- interface you can see all your available virtual and physicals resource how they are being used.
HP Integrity Integrated Lights-Out (iLO) 3 (factory integrated with BL890c i2)	HP Integrity Integrated Lights-Out (iLO) management processors mak simpler, faster, and less costly to remotely manage your Integrity serv HP Integrity iLO 3, ships with a built in Advanced Pack License. iLO Advanced features enabled in this release: Virtual Media, LDAP direct services, iLO power management, and integration with Insight Power Manager. No additional iLO licensing is required. Note: Please see: www.hp.com/go/integrityilo for more information.
HP Onboard Administrator	The Onboard Administrator for the HP BladeSystem c7000 enclosure the brains of the new c-Class infrastructure. Together with the enclosu HP Insight Display, the Onboard Administrator has been designed for local and remote administration of HP BladeSystem c-Class. This mo 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 infrastruc • Agent-less device health and status • Thermal Logic power and cooling information and control **NOTE:** Please see: http://www.hp.com/go/onbaordadministrator for m information.
HP Serviceguard Manager	HP Serviceguard Manager is a graphical user interface (GUI) that prov configuration, administration, and monitoring capabilities for Servicegu Serviceguard Extension for RAC, Metrocluster, and Continentalcluste Using Serviceguard Manager, operators see color-coded icons that provide a big-picture view of multiple clusters. From this big-picture vie 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 othe 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 systen HP 9000 and HP Integrity servers running HP-UX 11i. By aggregating from HP Insight Management Agents and other management tools, th System Management Homepage provides a secure and intuitive interf to review in-depth hardware configuration and status data, performanc metrics, system thresholds and software version control information. T System Management Homepage can also be used to access the HP Lights-Out Management processor on ProLiant and Integrity servers.
HP Insight Dynamics - VSE for HP Integrity servers	HP Insight Dynamics - VSE is advanced lifecycle management softwa for HP Integrity servers which allows you to instantly adjust to dynami business demands - with the new addition of infrastructure orchestrati not only can you easily plan, configure, and automate your physical a virtual resources in the same way, but now you can also provision and modify a complex infrastructure in minutes.

Standard Features

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 t that provides automatic CPU resource allocation and application performance management based on your service-level objectives (SLO and business priorities. WLM is most effective managing applications are CPU-bound. It automatically adapts system or partition CPU reso (cores) to the demands, SLOs, and priorities of the running applicatio core is the actual data processing engine within a processor, where a single processor can have multiple cores, and a core can support mul execution threads through Hyper-Threading, introduced with HP-UX 11 v3, as discussed below.) It adjusts the CPU allocation of a group of processes known as a workload, basing adjustment on the current ne and performance of the applications in that workload.
HP Global Workload Manager	The workload management capability for HP Integrity servers is provid by the HP Global Workload Manager component of HP Insight Dynam VSE. HP Global Workload Manager (gWLM) is an intelligent policy er that automatically allocates resources among multiple workloads to increase server utilization while meeting service levels for high-priority applications. Designed to work across multiple HP-UX 11i, OpenVMS Linux environments, the workload management features are ideal for large, centralized IT environments that host applications for many departments.
HP Insight Dynamics infrastructure orchestration	HP Insight Dynamics infrastructure orchestration capabilities let you provision infrastructure in minutes to automatically activate physical a virtual servers, storage, and networking from pools of shared resource Whether you need a single virtual machine or infrastructure for a comp three-tier application, Insight Dynamics infrastructure orchestration fin available resources, streamlines the approval process, and automatic provisions and configures what's needed across infrastructure silos. Delivering infrastructure to the business becomes faster, more efficien and more reliable.
Performance Manager and Agent	HP Performance Manager, Agents, and Monitor combine to provide a powerful and flexible distributed management solution. This solution is single interface for centrally monitoring, analyzing, and forecasting resource utilization for distributed multi-vendor environments, enabling to offer the best possible level of service in a cost-effective manner.
Process Resource Manager	HP Process Resource Manager (HP PRM) is a resource managemen used to control the amount of resources that processes use during pe system load. HP PRM can manage allocation of the following resourc • 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; also cap private memory usage. Allows you to allocate an exac amount of shared memory. • Disk bandwidth: Ensures a minimum allocation of disk bandwid
Secure Resource Partitions	One method that HP Insight Dynamics - VSE uses to improve server resource utilization is to consolidate multiple applications within a sin operating system image. Secure Resource Partitions combine kernel

	security and proven resource management to stack multiple applicatic within the same operating system. HP Process Resource Manager ar 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 multiple application instances run securely in a consolidated environm providing the benefits of consolidation while preserving the security of scale out environment. For software licensing purposes, the maximun 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.

Insight Control for BladeSystem Management

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

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

- HP Systems Insight Manager
- Extensions for SIM on Microsoft Windows CMS (to manage HP-UX)
- HP BladeSystem Integrated Manager
- Insight Power Manager

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 enclos with either 8 or16-server licenses, or 8 server evaluation licenses (30-days). For additional information HP BladeSystem c-Class Infrastructure please visit: HP BladeSystem c-Class Infrastructure QuickSp 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 System Insight Manager and Essentials software refer to: http://www.hp.com/servers/proliantessentials.

OS Support

HP-UX 11i v3 Data Center Operating Environment (DC-OE)
HP-UX 11i v3 Virtual Server Environment (VSE-OE)
HP-UX 11i v3 High Availability Environment (HA-OE)
HP-UX 11i v3 Base Operating Environment (BOE)

NOTE: For more complete and up to date information on HP-UX 11i support, please visit the HP-UX 11 website at: http://www.hp.com/go/hpux11iblades.

OpenVMS 8.4 (choice of Mission Critical, Enterprise, or Foundation Operating Environment)
NOTE: For more complete and up to date information on OpenVMS support, please visit the OpenVM website at: www.hp.com/go/openvms

Microsoft Windows Server 2008 for Itanium-based systems
NOTE: For more complete and up to date information on Windows support, please visit the Windows website at: www.hp.com/go/integrity/windows

Supported Software Options

HP Insight Dynamics - VSE for HP Integrity servers (included with both the VSE-OE and DC-OE, whic includes the following capabilities for Integrity blades):

HP-UX Virtual Partitions (vPars) v6.0
HP Integrity Virtual Machines for HP-UX
HP Virtualization Manager

Standard Features

HP Capacity Advisor
HP-UX Workload Manager or HP Global Workload Manager
HP-UX Secure Resource Partitions
HP Online Integrity VM Guest Migration
HP Serviceguard for HP-UX 11i
HP Serviceguard Manager
HP Serviceguard Extensions for SAP
HP Serviceguard Extensions for Faster Failover
HP Insight Control power management
GlancePlus Pak
Performance Manager and Agent

Intelligent Manageability

HP Integrity Integrated Lights-Out (iLO 3)

Virtual serial console (Multiple, mirrored sessions, with previous context and console log buffer)
Virtual Serial Console
Virtual Power Button Control LDAP Directory Services
iLO 3 power management integration with Insight Power Manager

Embedded system health and Integrity fault management Diagnostics and troubleshooting:

- virtual front panel
- log access to Integrity System Event Log
- Forward Progress Log 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: iLO 3 Advanced Pack license is included with every BL890c i2 server blade. iLO 3 Advanced F features enabled in this release are Virtual Media, LDAP Directory Services Integration, iLO power measurement, and integration with Insight power manager.

Availability

Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection
Eight hot-plug SAS hard drive bays and four (4) integrated RAID (HP p410i) controllers on every server blade

Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balan supported on integrated LOMs and with add-in Mezzanine cards.

- ECC protected DDR3 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 Clusters*
- HP Event Monitoring Service
- HA Monitors for HP-UX
- HA Toolkits for HP-UX
- HP Mirrordisk/UX* (Included if purchase HP-UX 11i VSE, DC, or HA OEs)
- Extended Campus Cluster*, HP Metrocluster*, and HP Continentalclusters* for HP UX
- HP System Insight Manager (SIM) for proactive fault management
- HP Serviceguard Storage Management Suites for HP-UX*

Standard Features

NOTE: *Fee based software products

Security

Hardware Security

- Administrator's password
- Integrity iLO 3 access control- 19 customizable local user accounts with assignable rights for p console, configuration, etc.
- OA and Integrity iLO 3 Directory Services Integration (LDAP)
- Integrity iLO 3 access via SSL encryption or SSH
- Integrity iLO 3 access methods via web, SSH, etc. can be disabled
- SSL encryption on web console
- Trusted Platform Module (TPM) option for secure cryptographic key storage, integrates with HP- security features

Platform security fundamentals

For the past 25 years HP has been building one of the most trustworthy and secure UNIX operating systems on the market. Designed for the optimal protection against both external and internal threats UX 11i offers industry-leading breadth and depth of UNIX security features. Focused on comprehensiv security integration aimed at proactively mitigating risk, reducing compliance cost and accelerating ti 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 all these aspects of data, systems, data and identity security. HP-UX independently validates its comprehensive security portfolio through Common Criteria security evaluat For more details, visit www.hp.com/go/hpux11isecurity

Protecting systems:
One critical factor in enterprise security is system minimization and hardening. HP-UX 11i offers a se security features designed to address known and unknown vulnerabilities by running only the services are needed, thus minimizing a potential point of attack. The following security features have built-in mechanisms not only to minimize and harden the system, but also to detect and react to attack in re time:

- Bastille system hardening
- Host Intrusion Detection System
- Secure Resource Partitions
- IPFilter - firewall technology
- Software Assistant (security bulletin currency)
- Install-time Security
- Boot Authentication
- Standard Mode Security Extensions
- Shadow Passwords
- Strong Random Number Generator

Protecting data:
HP-UX 11i offers data protection in many forms: protecting data in transit, in use and at rest. By using security features designed to protect data in its three forms, HP-UX 11i customers can minimize poss breaches not only in terms of data loss, but in customer trust as well. Several security features offer protection capabilities to HP-UX customers:

- Encrypted volume and file system
- Trusted Computing Services
- Security containment
- OpenSSL
- IPSec
- Secure Shell
- MD5sum

Protecting Identity:
In modern day global enterprise companies, managing identity is not an easy task , especially as ide

management requirements grow to include employees, contractors, partners and suppliers across ma countries with various privacy protection laws and regulation. HP-UX 11i dramatically simplifies this cr task by integrating various identity management technologies which offer ease of use and adherence compliance regulation:

- Identity Management Integration
- Select Access for IdMI
- Role-based Access Control
- AAA Server
- HP Directory Server for HP-UX
- LDAP-UX Client
- Kerberos Server
- Kerberos Client Services
- PAM Kerberos

NOTE: HP also offers many additional security features available through open source software for HP UX.

Common Criteria certification

Many enterprise and government customers require this vendor-independent security certification bec it increases confidence in the product's security assurance, functionality, quality and effectiveness. M 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- 11i v3 has been actively evaluated to the Common Criteria (CC) Security standards for many years. A history of our achievements include:

- February 2003: Certification of HP-UX 11i V1 achieves A CC to Evaluation Assurance Level 4
- May 2006: Certification of HP-UX 11i V2 to the current EAL4 Common Criteria
- May 2008: Certification of HP-UX 11iV3 achieved including hard partitions (nPars)
- December 2009: Certification of HP-UX 11iV3 to CCOPP profile including soft partitions (vPars)

Common Criteria certifications continue to be an integral part of our HP-UX comprehensive security portfolio. HP-UX 11i v3 has successfully completed a new Commercial off the Shelf (COTS) Compartmentalized Operations Protection Profile (CCOPP) evaluation. This new CCOPP evaluation encompasses the extensive range of security solution for HP-UX 11i v3 including soft partitioning or V partitions (vPars) as well as the previously certified hard partitions (nPars).

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 servers and storage: HP Integrity, HP ProLiant, HP Integrity Server Blades, HP ProLiant Server Blade BladeSystem, HP 9000 servers as well as the MSA1xxx, VA7xxx, EVA, XP, rackable tape libraries a configurable network switches.

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

HP Simple Configurator

SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use your existing ordering processes. If you require "custom" rack configuration or configuration for produc not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

HP Technology Services for Integrity Servers

HP Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HP to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Protect your business beyond warranty with HP Care Pack Services

HP Care Pack Services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.

Recommended HP Care Pack Services for optimal satisfaction Integrity Servers:

Optimized Care

HP Proactive Care Advanced - 24x7 coverage, three year Care Pack Service
Achieve a higher return on your product investment with the personal attention from a locally assigned Account Support Manager who delivers recommendations designed to improve availability and performance. Leverage your system's ability to connect to HP for automated problem detection and rapid critical event management to increase stability and reduce unplanned downtime. This recommendation provides 24x7 coverage with four-hour response for hardware and two-hour callback for supported software. Collaborative call management comes with Proactive Care Advanced or you may choose full support from HP where we own all cases through to resolution. HP is a leading provider of support services for most operating systems used on HP BladeSystem with long, successful partnerships with vendors such as Microsoft, Red Hat, VMware, SUSE and others. Purchasing software support from HP simplifies troubleshooting and shortens time to resolution with one call for hardware or software questions.
http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA5-3259ENW&cc=us&lc=en

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Basic Care

HP Proactive Care with 24x7 coverage, three year Care Pack Service
HP Proactive Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HP. This Care Pack Service combines three years' proactive reporting and advice with our 24x7 coverage and enhanced escalation management, four hour hardware response time and two hour call back for software questions on leading industry standard software running on your HP ProLiant server.
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf

Related Services

HP Datacenter Care service
HP Datacenter Care helps you improve IT stability and security, increase the value of IT, and enable agility and innovation. It is a structured framework of repeatable, tested, and globally available services "building blocks." You can deploy, operate, and evolve your datacenter wherever you are on your IT journey. With HP Datacenter Care, you benefit from a personalized relationship with HP via a single point of accountability for HP and others' products. For more information, visit
www.hp.com/services/datacentercare

HP ProLiant Server Hardware Installation
Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf

Factory Express 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. 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.

Support Services

Data Privacy Services
Protect your data through better media management. HP Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you to safely retire IT assets and capture any remaining value from the hardware.
www.hp.com/services/dataprivacy

Additional HP Care Pack services can be found at: http://www.hp.com/go/cpc

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eSupport

Get connected to HP to improve your support experience

Prevent problems with innovative, automated monitoring tools and proactive services. Combining Proactive Care Services with our remote support technology such as Insight Online provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit:
www.hp.com/go/proactiveinsightexperience

HP Support Center
Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more
http://www.hp.com/go/hpsc

HP's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.
HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

*HP' Support Center Mobile App is subject to local availability

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Parts and Materials

HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.

Models

Base Models

HP Integrity BL890c i2 Base Unit for c7000 Enclosure AH384A **HP Integrity BL890c i2 Base Unit for c3000 Enclosure** AM330A	**Processor(s)** Supports up to eight (8) processors	Eight (8) processor sockets, processor modules are configured to order
	Cache Memory All processor models	Included with processor
	Memory	Ninety six (96) DIMM sockets; memory DIMMs are configured to order
	Network Adapter	Four (4) NIC ports via (2) NC532i Dual Port Flex-1010GbE Multifunction Server Adapter **NOTE:** Flex-10 capability requires OS drivers and the use of an HP Virtual Connect Flex-10 10GbE Ethernet module. Learn more at: www.hp.com/go/virtualconnect **NOTE:** BL8x0c i2 server blades require Virtual Connect 3.00 or later when used in Virtual Connect configurations **NOTE:** Each part is autosensing 1Gb/10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components. One (1) additional 10/100 NIC dedicated to Integrity iLO 3 Management
	Storage Controller	Integrated HP Smart Array p410i SAS Controller
	Hard Drives	Eight SFF SAS drive bays; hard disk drives are configured to order
	IO expansion	Twelve (12) PCIe Mezzanine card slots (PCIe Gen2 x8 interface); mezzanine cards are configured to order
	Optical Drive	None internal to blade server
	Integrity iLO 3	Integrity iLO 3 and Integrity iLO 3 Advanced Pack license included
	Form Factor	Supports 1 BL890c i2 in HP BladeSystem c3000 Enclosure Supports up to 2 BL890c i2 in HP BladeSystem c7000 Enclosure

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: 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: Choose Required Base Server Blade Configuration

HP Models	HP Integrity BL890c i2 c7000 Server Blade **NOTE:** Choose the base models. **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) **NOTE:** When adding Option code "#0D1," must select whether server blade should be installed in an odd slot of the c7000 enclosure (AH384A#001) or in an even slot (AH384A#002).	AH384A
	HP Integrity BL890c i2 c3000 Server Blade **NOTE:** Choose the base models. **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) **NOTE:** When adding Option code "#0D1," must select whether server blade should be installed in an odd slot of the c3000 enclosure (AM330A#001) or in an even slot (AM330A#002).	AM330A
	Base unit standard features:	
	Sixteen embedded 10 Gigabit Ethernet NIC ports plus (1) additional 10/100 NIC dedicated to Integrity iLO 3iLO 3 Management	
	Four Integrated HP Smart Array p410i SAS Controller for internal HDDs	
	Eight small form factor (SFF) SAS hot plug hard drive bays	
	HP Integrity Integrated Lights-Out 3	

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

HP Processors	**NOTE:** Select minimum four (4) and maximum eight (8) processors.	
	Quad-Core Processors	
	HP BL8x0c i2 Itanium 9320 (1.33GHz/4-core/16MB/155W) Processor Kit	AH386A
	HP BL8x0c i2 Itanium 9340 (1.6GHz/4-core//20MB/185W) Processor Kit	AH387A
	HP BL8x0c i2 Itanium 9350 (1.73GHz/4-core/24MB/185W) Processor Kit	AH388A
	Dual-Core Processor	
	HP BL8x0c i2 Itanium 9310 (1.6GHz/2-core/10MB/130W) Processor Kit	AH385A
HP Memory	**NOTE:** Select minimum four (4) and maximum forty eight (48) memory modules.	
	HP Integrity BL8x0c i2 8GB (2x4GB) PC3-10600 Registered CAS 9 Memory Kit	AM327A
	HP Integrity BL8x0c i2 16GB (2x8GB) PC3-10600 Registered CAS 9 Memory Kit	AM328A
	HP BL8x0c i2 32GB (2x16GB) PC3-10600 Registered CAS-9 Memory Kit	AM363A
	NOTE: Memory Modules consist of two individual DIMMs.	
	NOTE: DIMMs must be installed in quads. Therefore, memory modules must be ordered two (2) at a time, to reach quads (4) to be installed.	

Step 3: Choose Additional Options for Factory Integration

Configuration Information - Factory Integrated Models

HP Hard Drives	**NOTE:** Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
	HP 1.2TB 12G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785079-B21
	HP 900GB 12G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785075-B21
	HP 600GB 12G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785073-B21
	HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581284-B21
	HP 300GB 12G SAS 15K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785099-B21
	HP 450GB 12G SAS 15K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785101-B21
	HP 600GB 12G SAS 15K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785103-B21
	HP 300GB 12G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785071-B21
	HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
	NOTE: Though the disks are 6Gb/12Gb, implementation of the embedded HP SAS RAID controller limits performance of disks.	
	12G SAS Hot Plug Enterprise Performance Solid State Drives	
	HP 200GB 12G SAS Write Intensive SFF 2.5-in 3yr Wty Solid State Drive	802576-B21
	HP 400GB 12G SAS Write Intensive SFF 2.5-in 3yr Wty Solid State Drive	802580-B21
	HP 800GB 12G SAS Write Intensive SFF 2.5-in 3yr Wty Solid State Drive	802584-B21
HP Ethernet Mezzanine Options	HP NC364m Quad Port 1GbE BL-c Adapter	447883-B21
	NOTE: Provides four additional 1GbE ports.	
	HP NC360m Dual Port 1GbE BL-c Adapter	445978-B21
	NOTE: Provides two additional 1GbE ports.	
	HP NC552m 10Gb 2-port Flex-10 Ethernet Adapter	610609-B21
	NOTE: Provides Flex-10 connectivity when used in conjunction with the HP Virtual Connect Flex-10 10Gb Ethernet Module for the c-Class BladeSystem Option (P/N 455880-B21).	
	HP NC532m Dual Port 10GbE Multifunction BL-c Adapter	467799-B21
	NOTE: Maximum of 8 HP BLc NC532m Adapter Opt. Kits supported per BL890c i2. Provides Flex-10 connectivity when used in conjunction with the HP Virtual Connect Flex-10 10Gb Ethernet Module for the c-Class BladeSystem Option (P/N 455880-B21).	
HP FlexFabric Mezzanine Options	HP NC553m 10Gb 2-port FlexFabric Adapter	613431-B21
	NOTE: Provides Ethernet and FCoE connectivity when used in conjunction with HP Virtual Connect FlexFabric 10Gb/24-Port Module (PN 571956-B21).	
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: HP NC551m: http://h18004.www1.hp.com/products/quickspecs/13649_div/13649_div.html HP NC553m: http://h18004.www1.hp.com/products/quickspecs/13737_div/13737_div.html HP Virtual Connect FlexFabric Module http://h18004.www1.hp.com/products/quickspecs/13652_div/13652_div.html	
HP Fibre Channel Mezzanine Options	Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	456972-B21
	QLogic QMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	451871-B21
	NOTE: BL890c i2 supports HP Virtual Connect Fibre Channel Interconnect Modules. See: http://www.hp.com/go/bladesystem/virtualconnect for complete details.	
HP Infiniband Mezzanine Options	HP 4X QDR InfiniBand ConnectX-2 Dual Port Mezzanine HCA for c-Class BladeSystem	592519-B21

	NOTE: Provides DDR/QDR InfiniBand connectivity when used in conjunction with HP BLc 4X QDR IB Switch for HP BladeSystem c-Class (PN 489184-B21). **NOTE:** For more support details, please visit the following web-page: http://www.hp.com/products1/serverconnectivity/adapters/infiniband/specifications.html	
HP Security - TPM	HP Integrity BL8x0c i2 Trusted Platform Module **NOTE:** The TPM must be installed by the factory.	AM331A

Step 4: Choose Additional Options for Field Upgrades

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below. For additional options, including server blade enclosures interconnect, mezzanine options and power subsystem options; please see the Core Options and Additional sections below; or the following:

HP BladeSystem c-Class Enclosures QuickSpecs:
-HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
-HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
-and HP BladeSystem c-Class Interconnect and Mezzanine Components:
http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html
http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

Core Options

HP Ethernet Mezzanine Options	HP NC364m Quad Port 1GbE BL-c Adapter **NOTE:** Provides four additional GbE ports.	447883-B21
	HP NC360m Dual Port 1GbE BL-c Adapter **NOTE:** Provides two additional GbE ports.	445978-B21
	HP NC532m Dual Port 10GbE Multifunction BL-c Adapter **NOTE:** Maximum of 8 HP BLc NC532m Adapter Opt. Kits supported per BL890c i2. Provides Flex-10 connectivity when used in conjunction with the HP Virtual Connect Flex-10 10Gb Ethernet Module for the c-Class BladeSystem Option (P/N 455880-B21).	467799-B21
	HP NC552m 10Gb 2-port Flex-10 Ethernet Adapter **NOTE:** Provides Flex-10 connectivity when used in conjunction with the HP Virtual Connect Flex-10 10Gb Ethernet Module for the c-Class BladeSystem Option (P/N 455880-B21).	610609-B21
HP FlexFabric Mezzanine Options	HP NC553m 10Gb 2-port FlexFabric Adapter **NOTE:** Provides Ethernet and FCoE connectivity when used in conjunction with HP Virtual Connect FlexFabric 10Gb/24-Port Module (PN 571956-B21). **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: HP NC551m: http://h18004.www1.hp.com/products/quickspecs/13649_div/13649_div.html HP NC553m: http://h18004.www1.hp.com/products/quickspecs/13737_div/13737_div.html HP Virtual Connect FlexFabric Module http://h18004.www1.hp.com/products/quickspecs/13652_div/13652_div.html	613431-B21

HP Fibre Channel Mezzanine Options	Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	456972-B21
	QLogic QMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	451871-B21

HP Processors (field upgrade only)	**Quad-Core Processors**	
	HP BL8x0c i2 Itanium 9320 (1.33GHz/4-core/16MB/155W) Processor Kit	AH386A
	HP BL8x0c i2 Itanium 9340 (1.6GHz/4-core//20MB/185W) Processor Kit	AH387A
	HP BL8x0c i2 Itanium 9350 (1.73GHz/4-core/24MB/185W) Processor Kit	AH388A
	Dual-Core Processors	
	HP BL8x0c i2 Itanium 9310 (1.6GHz/2-core/10MB/130W) Processor Kit	AH385A
	NOTE: HP Integrity BL890c i2 processor upgrade kits contain one processor. Processors must be identical. No mixing of processor models is allowed.	
	NOTE: The Integrity BL890c i2 only supports 4, 6, or 8 processor configurations.	

HP Memory	HP Integrity BL8x0c i2 8GB (2x4GB) PC3-10600 Registered CAS 9 Memory Kit	AM327A
	HP Integrity BL8x0c i2 16GB (2x8GB) PC3-10600 Registered CAS 9 Memory Kit	AM328A
	HP BL8x0c i2 32GB (2x16GB) PC3-10600 Registered CAS-9 Memory Kit	AM363A
	NOTE: Memory Modules consist of pairs of DIMMs DIMMS must be installed in quads. Therefore, memory modules must be ordered two (2) at a time, to reach quads (4) to be installed.	
	NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the lowest numbered slots.	

HP Hard Drives	**NOTE:** Hard drives have either a one year or three year warranty; refer to the

specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

HP 1.2TB 12G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785079-B21
HP 900GB 12G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785075-B21
HP 600GB 12G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785073-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581284-B21
HP 300GB 12G SAS 15K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785099-B21
HP 450GB 12G SAS 15K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785101-B21
HP 600GB 12G SAS 15K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785103-B21
HP 300GB 12G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	785071-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21

NOTE: Though the disks are 6Gb/12Gb, implementation of the embedded HP SAS RAID controller limits performance of disks

NOTE: Please see the QuickSpecs for Technical Specifications and additional information related to HDDs: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)

12G SAS Hot Plug Enterprise Performance Solid State Drives

HP 200GB 12G SAS Write Intensive SFF 2.5-in 3yr Wty Solid State Drive	802576-B21
HP 400GB 12G SAS Write Intensive SFF 2.5-in 3yr Wty Solid State Drive	802580-B21
HP 800GB 12G SAS Write Intensive SFF 2.5-in 3yr Wty Solid State Drive	802584-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information related to HDDs: http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_div.html (Worldwide)

Additional Options

HP Integrity Upgrade Kits	HP Integrity BL8x0c i2 Upgrade Blade **NOTE:** At least one (1) processor must be purchased with each upgrade blade; other components may also be ordered. All processors in the upgraded server blade must be of the same type.	AM360A
	HP Integrity BL2 Blade Link Upgrade **NOTE:** Required for BL870c i2 server blade used in odd slot of c7000 or c3000.	AM358A
	HP Integrity BL2-c7E Blade Link Upgrade **NOTE:** Required for BL870c i2 server blade used in even slot of c7000.	AM364A
	HP Integrity BL2-c3E Blade Link Upgrade **NOTE:** Required for BL870c i2 server blade used in even slot of c3000.	AM365A
	HP Integrity BL4 Blade Link Upgrade **NOTE:** Required for BL890c i2 server blade used in c7000.	AM359A
	HP Integrity BL4-c3 Blade Link Upgrade **NOTE:** Required for BL890c i2 server blade used in c3000.	AM366A
HP Smart Array Controller	HP Smart Array P711m/1G 6Gb FBWC 4-ports Ext Mezzanine SAS Controller **NOTE:** The P711M will function as a SAS RAID controller when connected to MDS600 disk subsystem via the HP BLc 6Gb SAS Switch. In the RAID mode, HP-UX 11i v3 is supported. **NOTE:** The P711mM will function as a Pass-Thru when connected to the HP P2000G3 SAS Storage Array via the HP BLc 6Gb SAS Switch. In the Pass-Thru mode, HP-UX 11i v3 is supported. For more details please see QuickSpec: http://h18004.www1.hp.com/products/quickspecs/14035_div/14035_div.html	513778-B21
	Optional Upgrade	
	HP Smart Array P-Series Low Profile Battery **NOTE:** The P700M will function as a SAS RAID controller when connected to MDS600 disk subsystem via the Storage 3Gb SAS Switch. In the RAID mode, HP-UX 11i v3 And Integrity for Windows 6.2 are supported. **NOTE:** The P700M will function as a Pass-Thru when connected to the MSA2300sa SAS Storage Array via the Storage 3Gb SAS Switch. In the Pass-Thru mode, HP-UX 11i v3 and Integrity for Windows 6.2 are supported. **NOTE:** The optional battery is required for Advanced Data Guarding (enabled with SSAP), RAID 6, and is highly recommended for RAID 5 implementations. **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html	452348-B21
HP Infiniband Mezzanine Options	HP 4X QDR InfiniBand ConnectX-2 Dual Port Mezzanine HCA for c-Class BladeSystem **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12586_div/12586_div.html	592519-B21
HP Ethernet Interconnects	HP Virtual Connect FlexFabric 10Gb/24-port Module for c-Class BladeSystem **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13652_div/13652_div.html	571956-B21

Additional Options

HP USB Options	HP Integrity USB External DVD/RW Drive	AT120B
	NOTE: The HP Integrity USB External DVD-RW drive solution includes the External DVD drive (AT120B) with 9 inch USB cable, power adaptor, power cable and Y-connector and 6-foot USB extension cable. **NOTE:** The USB Y-connector goes between the extension cable (SH046AA) and the 9-inch USB cable fixed with DVD drive. **NOTE:** The Y-connector should NOT be placed between the server blade and the 6-foot Extension cable.	
HP Care Pack Services	HP offers a range of support services and additional services. For a complete listing of services, see: HP.com external site: http://www.hp.com/services/bladesystemservices	
	HP Critical Service	
	HP CP 1Y Critical Service	HA112A1
	HP CP 3Y Critical Service	HA112A3
	Installation Services	
	HP CP Installation	HA113A1
	NOTE: For more information: http://www.hp.com/services/bladesystemservices.	

Memory

DIMM installation guidelines:

1. All DIMMs must be DDR3 registered memory modules (R-DIMMs)
2. All four DIMM slots in a memory bank must be populated. For each CPU, the memory blanks are designated as follows: first bank consists of pairs A and B, second bank consists of pairs C and D and the third bank consists of pairs E and F.
3. Banks must be populated in sequential Alphabetic order, starting with bank A and B for CPU0, followed by banks A and B for CPU1, etc.
4. All four DIMMs in a memory bank must be identical. Install identical DIMMs in quads, starting with DIMM pairs A and B CPU0.
5. DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the smallest numbered DIMM slot.

HP Integrity BL890c i2 Server Blade

Standard Memory

16 GB PC3 10600 DDR3 1333MHz ECC DIMMs (4 x 4 GB)
Memory Bus Bandwidth: 4.8GT/s

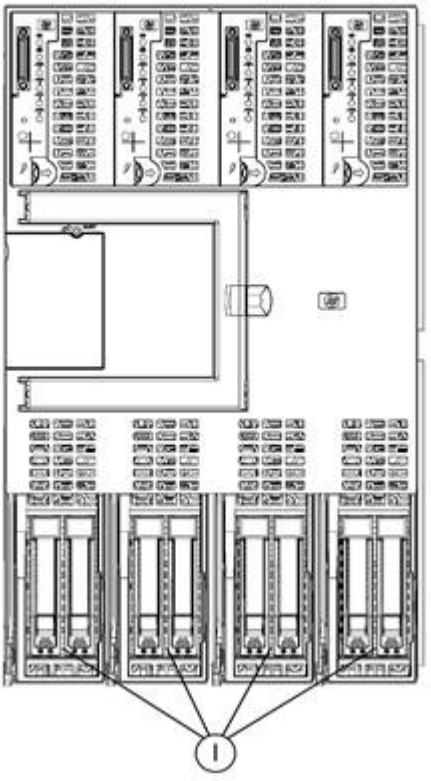
Standard Memory Plus Optional Memory

Up to 1.5 TB of DDR3 registered (R-DIMMs)memory is available.

Following are memory options available from HP:

HP Memory	HP Integrity BL8x0c i2 8GB (2x4GB) PC3-10600 Registered CAS 9 Memory Kit	AM327A
	HP Integrity BL8x0c i2 16GB (2x8GB) PC3-10600 Registered CAS 9 Memory Kit	AM328A
	HP BL8x0c i2 32GB (2x16GB) PC3-10600 Registered CAS-9 Memory Kit	AM363A
	NOTE: Must be installed in quads. Therefore, memory modules must be ordered two (2) at a time, to reach quads (4) to be installed.	
	NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs smallest numbered slot.	

1 8 x SFF SAS Hot Plug Hard Drives



Hard Drives

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
	8	1-8	HP Smart Array p410i Controller
1.2TB 12G 10K SFF			
900GB 12G 10K SFF			
600GB 12G 10K SFF			
450GB 6G 10K SFF			
300GB 12G 10K SFF			
300GB 12G 15K SFF			
450GB 12G 15K SFF			
600GB 12G 15K SFF			
146GB 6G 15K SFF			

6G SAS Hot Plug Enterprise Performance Solid State Drives

	Quantity Supported	Position Supported	Controller
200GB/400GB/8-GB 6G SAS SLC	8	1-8	HP Smart Array p410i Controller

Power Specifications

NOTE: The HP Power Advisor is a tool provided by Hewlett-Packard to assist in the estimation of power consumption and proper selection of components including power supplies at a system, rack, and multi-rack level. A variety of additional features are also provided including a condensed bill of materials, a cost of owner ship calculator, and a power report. For additional information please visit: HP Power Advisor: http://h18004.www1.hp.com/products/solutions/power/index.html

System Unit	**Dimensions**	Height	14.42 in (36.63 cm)
		Depth	20.05 in (50.93 cm)
		Width	8.29 in (20.82 cm)
	Shipping Dimensions	Height	20.28 in (51.51 cm)
		Depth	26.57 in (67.49 cm)
		Width	15.94 in (40.49 cm)
	Weight	Maximum	106lbs. (48.08 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	15% to 80%
		Shipping	10% to 90%
		Storage	10% to 90%

*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 90% 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 HP p410e Controller	**Disk Drive and Enclosure Interface**	3Gb SAS (Serial Attached SCSI)
	SAS Connectors	8 internal (SFF8484) x4 wide port connector
	Cache Memory Speed	DDR2-800 memory provides up to 4.2 GB/s maximum bandwidth
	Server Interface	X1 5.0Gbps PCIe provides 1GB/s maximum bandwidth
	SAS Speed	Eight x 1 3G SAS provides 2400MB/s maximum bandwidth
	Cache Memory	Not supported
	Logical Drives Supported	Up to 32 logical volumes
	Maximum Logical Drive Capacity	Up to 64 logical
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 0 (striping) and 1 (Mirroring), and RAID 0+1 (mirrored and striped) (not supported with BL8x0c i2 blades)
	Upgradeable Firmware	Upgradeable Firmware with Recovery ROM features Online Drive Flash requires 256MB, 512MB, or 1GB cache module

Embedded Dual Broadcom BCM57711E 10 Gigabit NICs with Flex-10 support	**Network Interface**	10000Base-Sx
	Compatibility	IEEE 802.3ib QoS 802.3x flow control, and 802.3ap 10GBase-KR
	Data Transfer Method	PCI Express, four lanes (x4)
	Network Transfer Rate (Theoretical Maximum Values)	1 Dual 10Gb ports offer up to 40Gb/s bidirectional theoretical throughput

Technical Specifications

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. 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.

Summary of Changes

Date	Version History	Action	Description of Change:
01-Jun-2015	From Version 23 to 24	Removed	Skus removed in Configuration Information - Factory Integrated Models and core options 632492-B21 632494-B21
		Added	Skus added in Configuration Information - Factory Integrated Models and Core options 802576-B21 802580-B21 802584-B21
		Changed	Information updated in storage section.
30-Mar-2015	From Version 22to 23	Changed	Configuration Information - Factory integrated models and Storage sections were updated
		Added	Skus Added: 785079-B21 785075-B21 785073-B21 785099-B21 785101-B21 785103-B21 785071-B21
		Removed	Skus deleted: 718160-B21 619291-B21 581286-B21 627117-B21 507127-B21
01-Dec-2014	From Version 21 to 22	Changed	Standard Features, Support Services, Configuration Information - Factory Integrated Models, Core Options and Memory sections were updated
		Added	Technology Services for Integrity Servers and Protect your business beyond warranty with HP Care Pack Services sections were added to Support Services
		Removed	Obsolete skus deleted: 507125-B21 512545-B21 580151-B21 AM346A AM347A AM357A 508226-B21
18-Apr-2014	From Version 20 to 21	Changed	Service and Support and Standard Care were revised.
10-Dec-2013	From Version 19 to 20	Added	HP 1.2TB 6G SAS 10K rpm SFF Dual Port Enterprise 3yr Warranty Hard Drive was added to Hard Drives.
24-Sep-2012	From Version 18 to 19	Changed	Changes made in Standard Features section.
07-May-2012	From Version 17 to 18	Changed	Memory was revised throughout.
10-Feb-2012	From Version 16 to 17	Changed	Changes made to the USB Options sections. And the Support Services section was added.
14-Nov-2011	From Version 15 to 16	Changed	FlexFabric Support, Smart Array Controller Support, Supported Software Options, HP FlexFabric Mezzanine Options and Hard Drives were revised.

Summary of Changes

30-Sep-2011	From Version 14 to 15	Changed	Changes made within the Overview, Standard Features, Configuration Information and Options sections.
02-Aug-2011	From Version 13 to 14	Changed	Hard Drives Descriptions changes made.
20-Jun-2011	From Version 12 to 13	Added	6G SAS Hot Plug Enterprise Performance Solid State Drives were added to Hard Drives.
09-May-2011	From Version 11 to 12	Changed	Processor descriptions were revised Maximum internal storage was increased to 7.2TB HP 900GB 6G SAS 10K rpm SFF Enterprise Drive was added to Hard Drives
15-Apr-2011	From Version 10 to 11	Added	FlexFabric Support and InfiniBand Support were added to Standard Features HP BLc NC551m Dual Port FlexFabric 10Gb Converged Network Adapter was added to HP Ethernet Mezzanine Options HP c-Class Mezzanine Options was added to Step 3 HP Ethernet Interconnects was added to Additional Options
18-Mar-2011	From Version 9 to 10	Changed	Models, Processors, Memory, Hard Drives and Fibre Channel Mezzanine Options product descriptions were revised HP USB Options was added to Standard Features and Additional Options
14-Jan-2011	From Version 8 to 9	Changed	Note for OS Support was revised and HP StorageWorks SB40c Storage Blade was removed from Additional Options.
15-Nov-2010	From Version 7 to 8	Changed	Maximum memory was increased to 1.5 TB, Fibre Channel on the HP Integrity BL890c i2 server blade, Hard Drives, Smart Array Controller and HP Ultrium Tape Blade product descriptions were modified, Intel Itanium Processor 9310 was added, HP BL8x0c i2 32GB (2x16) PC3-10600R-9 Kit was added to Memory and HP Integrity Upgrade Kits was added to Additional Options.
08-Oct-2010	From Version 6 to 7	Changed	Hot Plug SAS Maximum Internal Storage was increased to 4.8TB, Smart Array Controller Support and OS Support were revised and HP 450GB and 600GB 6G SAS 10K rpm SFF Dual Port Enterprise Hard Drives were added to Hard Drives.
20-Aug-2010	From Version 5 to 6	Changed	Note was added to HP Onboard Administrator in Glossary of Integrity Server Blades Management Software Product Description and HP BladeSystem c3000 tower enclosure was removed from At A Glance Enclosure.
09-Aug-2010	From Version 4 to 5	Changed	Revised the images to reflect the correct callout line style.
23-Jul-2010	From Version 3 to 4	Changed	Part number change was made in Step 1 of the Configuration Information section.
19-Jul-2010	From Version 2 to 3	Changed	Maximum memory was increased to 768 GB Power Specifications note was completely revised What's New was added to the Overview OpenVMS 8.4 and Microsoft Windows Server 2008 for Itanium-based systems were added to OS Systems HP BL8x0c i2 16GB Memory was added HP Integrity BL890c i2 Bundles was added to Core Options
07-May-2010	From Version 1 to 2	Changed	Changes made within the Standard Features, Models and Technical Specifications sections.

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Summary of Changes

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