

HP ProLiant G6 – die neuen Server der Modellreihen ML, DL & BL



Flexible storage

- More servers with choice of LFF or SFF drives
- Choice of SSD support



Common power slot

- Reduces # of spares needed
- Simplifies Ordering



Flexible Smart Array Portfolio

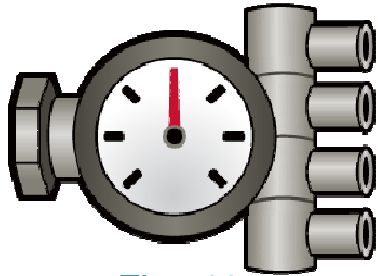
- Mix and match cache with batteries for performance and availability

Flexible I/O

- More Slots / More I/O choice (PCI-E x8,x16 and PCI-X)
- More 10GbE options

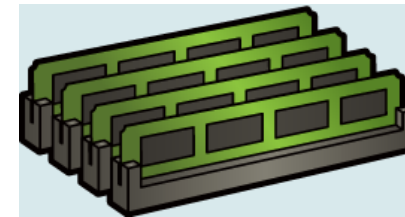
HP BladeSystem and ProLiant G6

Adapt faster and save cost by fine tuning your network



HP Virtual Connect Flex-10

Fit more virtual machines per square foot



50% to 100% more DIMM slots

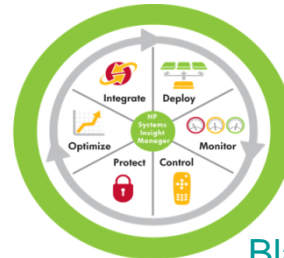
Boost performance with less power



Next-Gen Processors

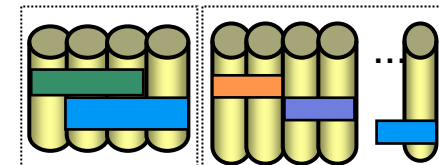
Dynamic Power Capping

Reduce Infrastructure Pain



iLO Advanced for BladeSystem

Gain new storage possibilities



HP BladeSystem Shared SAS Storage



Ideal for Virtualization



- **Increased memory capacity on every platform!**
 - 10 more DIMMs on 4 platforms
 - Average of 6 more DIMMs across all G6 servers
- **Faster processors**
- **Hypervisor SD support**

More performance for your money



- **More performance with less power**
- **Reduce costs through improved asset utilization**

Take advantage of latest technology



- **Quad-core with turbo mode**
- **DDR3 memory**
- **SSD (Solid State Drives)**
- **PCI-E Gen 2**

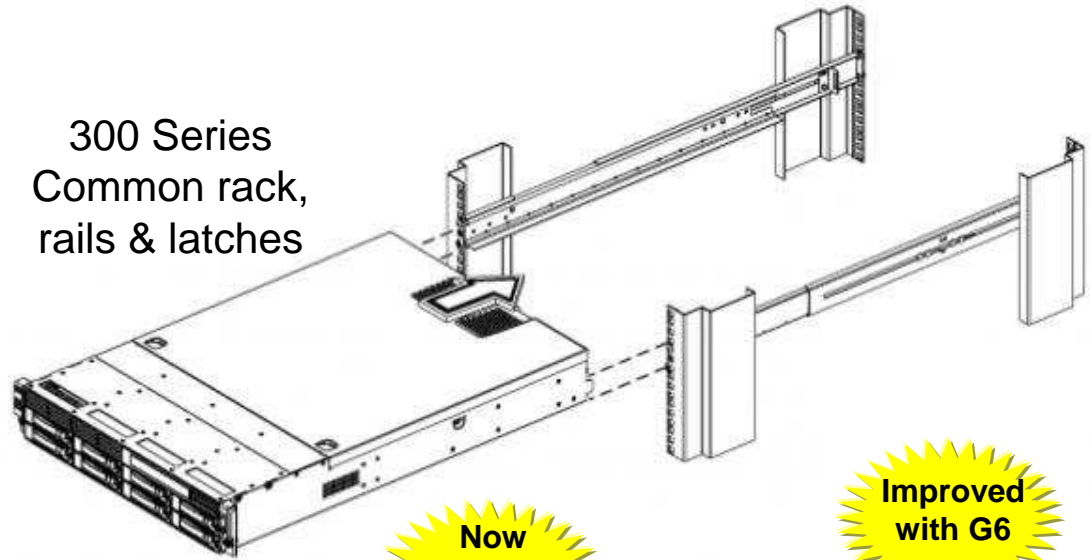


New with G6



Common Power Slot

300 Series
Common rack,
rails & latches

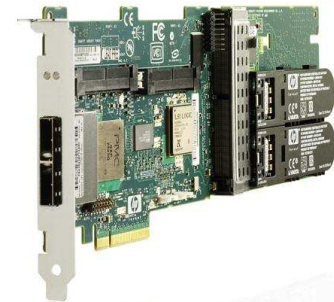


Now includes SSD



Common drives and carriers

Improved with G6



Smart Array controllers



System Insight Display

10+ years of Commonality



QuickPath Architecture

Delivers additional performance, bandwidth, and reliability

Integrated Memory Controller

Each processor now has a dedicated memory controller

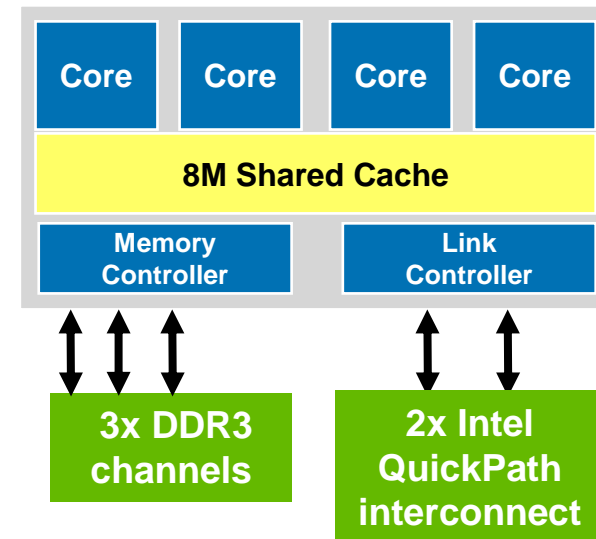
Turbo Mode

Additional processing boost during peak demand periods

Dynamic Power Management

Hyper-Threading Technology

Enhances performance and energy efficiency



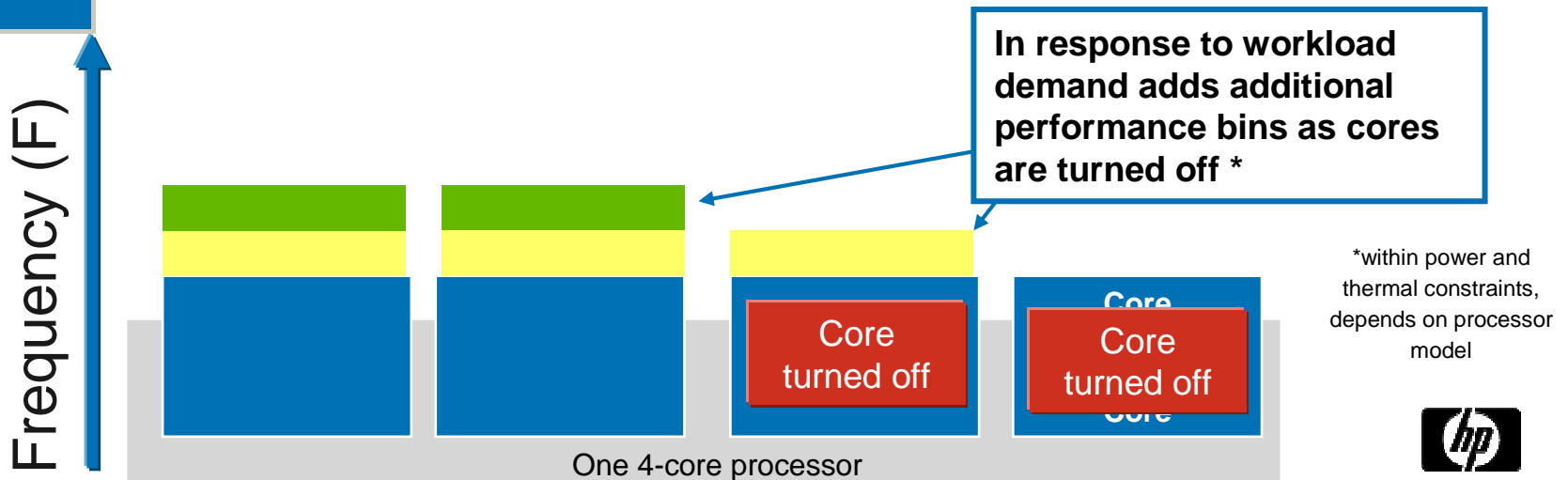
Description

CPU operates at higher-than-stated frequency when operating below power and thermal design points

3 Methods of Control

1. **Off:** CPU operates only at rated frequency
2. **Automatic:** OS requests higher perf state, CPU determines turbo frequency (recommended)
3. **Manual:**
 - User can manually disable cores (reboot required) via BIOS
 - Less cores means more likely turbo will happen

Example



New G6 Solid State Midline Drives

Availability late
1H09



Drop in hard drive replacement

Extreme Ruggedness

High Read Performance
Improved Write performance

Increased Reliability

~2W vs. ~9W SFF SAS and 4W SFF
SATA

Thermal, Size and Acoustic
Advantages

G6 Solid State Drives Specifications*

Form Factor	•SFF Hot Plug and Non-Hot Plug
Capacity	• 60GB and 120GB
Interface	• 1.5Gb/s SATA
Power Consumption	•~2W
Performance	<ul style="list-style-type: none"> •Up to 25x 15K SAS SFF random read performance •Up to 3x 15K SAS SFF random write performance •NCQ •Smart Array support
Target Platforms	ProLiant portfolio ML/DL/BL G6 platforms

* Subject to change

New G6 Solid State Entry Drives



Drop in hard drive replacement

Extreme Ruggedness

High Read Performance
Improved Write performance

Increased Reliability

~2W vs. ~9W SFF SAS

Thermal, Size and Acoustic
Advantages

Availability late
1H09

G6 Solid State Drives Specifications*	
Form Factor	•SFF Non-Hot Plug
Capacity	• 32GB-128GB
Interface	• 3.0 Gb/s SATA
Power Consumption	•~2W
Performance	<ul style="list-style-type: none"> •Up to 250x 5400 SFF SATA random read performance •Up to 150x 7200 LFF SATA random read performance •NCQ
Target Platforms	Select ProLiant BL servers with 7mm height restriction

* Subject to change

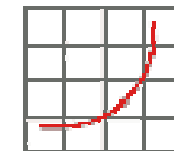
G6 Power Supply, Right-Sizing

Reclaiming wasted power and meeting Energy Star ready needs..

- Select power with just the size power supply you need. Options from 460W, 750W or 1200W depending on your server configuration.
- Use the HP Power Calculator to define right power supply for the need.
- Reclaim wasted or lost power in the rack. Don't waste energy on servers that use 385W by using a 1000W power supply.
- Improved power efficiencies up to 92%, which are targets for Energy Star for Servers Compliance.
- Up to 20% improvements in server performance per watt benchmarks on ProLiant servers.
- Meets requirements for SpecPower leadership, Climate Savers and Energy Star for Servers
- Flexibility to fit the right-size power supply what you need.
- Simplified serviceability – reduces data center spares



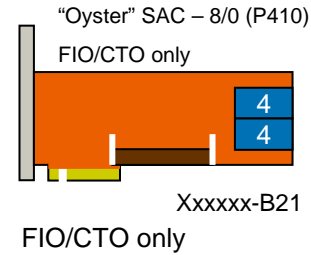
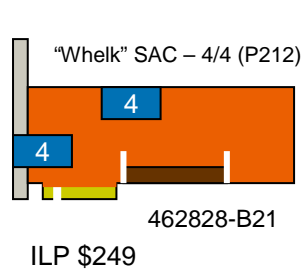
1200W AC up to 90% efficiency
460W AC up to 92% efficiency
750W AC up to 92% efficiency



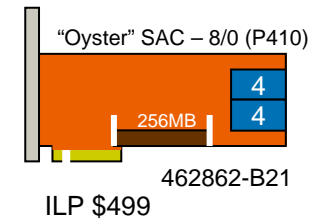
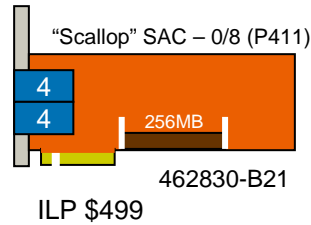
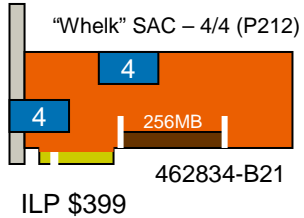
spec



Zero memory

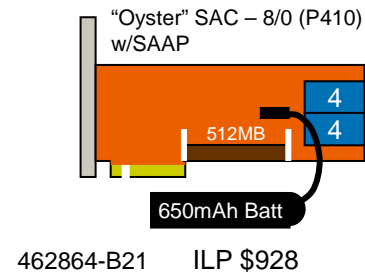
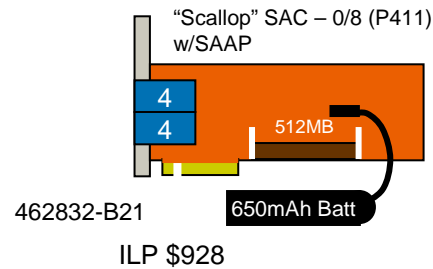


256MB Cache w/o battery



512MB Cache w/BBWC

N/A



Memory/Battery Options

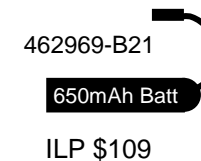
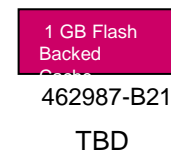
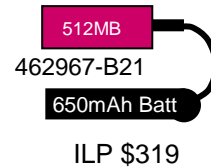
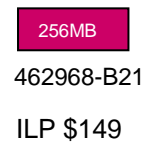
HP SAAP

Cache

Cache w/BBWC

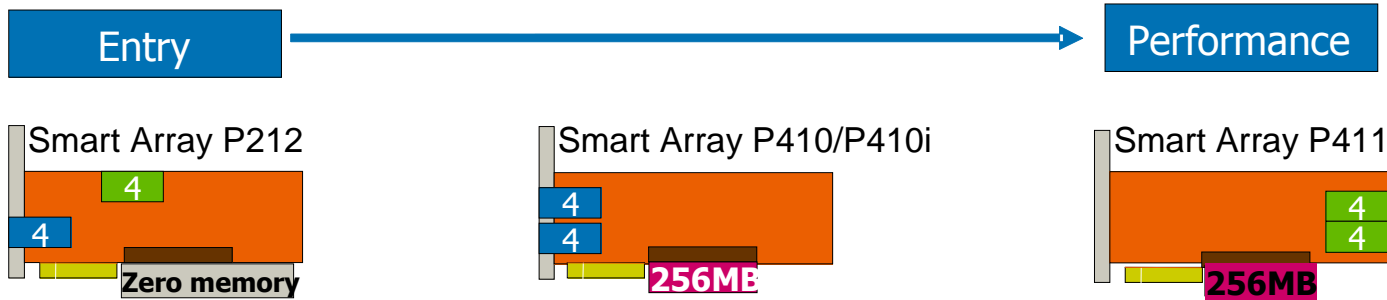
Cache w/FL

Battery kit



New Modular Smart Array Controller Configurations

New Modular solutions
 Common form factor, hardware, and firmware
 Seamless upgradeability from zero memory to 512 BBWC



Features

4 External Connectors 4 Internal Connectors 256MB Supported cache options 512MB Supported cache options BBWC Upgrade

G6 and Insight Software

100 Series



Insight software

- Lights-Out 100 management

300 Series



Insight software

- ICE, new G6 capabilities:
 - iLO2 Advanced
 - Dynamic Power Capping

Blade Servers



Insight software

- ICE, new G6 capabilities:
 - iLO2 Advanced
 - Dynamic Power Capping
- Insight Dynamics–VSE



DL380



Capacity....



ML370



Density...



G6



Expansion...

DL360



ML350



Cost...

DL320



ML330



DL160



Performance...

DL180



Density...

T2



G6



Expansion...

ML150



Cost...

DL120



Heterogeneous Data Center

Enterprise

- BL860/870c
- BL685c
- BL680c

Medium Business

- BL460c
- BL465c
- BL490c

Scale Out

HPC

- BL2x220c
- BL260c
- BL495c

MSO/Web 2.0

- BL2x220c
- BL260c

Small Site

Remote Site

- BL260c
- BL460c

Small Business

- BL260c



Low cost, rack server for the enterprise

	DL320 G5p	DL320 G6
Processor	1P Xeon (Yorkfield/Wolfdale)	1P Xeon (Nehalem)
Memory	4 Sockets, DDR2 800MHz Unbuff ECC	9 Sockets, DDR3 1067/1333 Unbuff and Reg ECC
Drive Bays	4 LFF SATA/SAS HP	4 LFF SATA/SAS HP
Storage Controller	SW RAID embedded; SAS HBA or Controller for SAS	HP SW RAID embedded; SAS HBA or Controller for SAS
Slots	<u>2 Available slots</u> 1 full-length PCI-E x8 1 half length low-profile PCI-E x1 1 optional PCI-X 133 replaces full-length PCI-E	<u>2 Available slots</u> 1 full-length PCI-E gen 2 x8 1 half length low-profile PCI-E gen 2 x8 1 optional PCI-X 133 replaces full-length PCI-E
Networking	Dual-port Gigabit NIC (1 Broadcom 5715)	Dual-port Gigabit NIC (1 Broadcom 5715c)
Ports	USB: 2 front, 1 internal, 2 rear Video, Serial, PS/2	USB: 2 front, 1 internal, 2 rear Video, Serial, PS/2
Management	iLO 2	iLO 2.0e
Security		TPM option
Redundancy	Non-RPS only	Non-RPS standard, optional HP-RPS

HP ProLiant ML350



	ML350 G5	ML350 G6
Processor	Intel Xeon 5000 Sequence	Intel Nehalem - EP
Memory	[8] Sockets, [FBD] 32GB max.	[18] Sockets, [DDR3 800Mhz to 1333MHz] 144GB max.
Drive Bays	8 SFF or 6 LFF SAS/SATA	8 SFF hot plug SAS or SATA standard; or 6 LFF Optional: 8 SFF Hot plug SAS or SATA or 2 LFF (via 2 media bay) 5 removable half height media bay
Storage Controller	P400/E200	P410i
Slots	PCI-E 5 Available slots 3 full-length PCIe x8 (x4 speed) Gen1 1 64bit PCI-X (1-133MHz, 2-100MHz) Option for 2 PCI-X slots replacing a PCIe slot	PCI-E Gen 2 8 Available slots 1 full-length PCIe x16 (x8 speed) Gen2 1 full-length PCIe x8 Gen2 4 full-length PCIe x8 (x4 speed) Gen2 1 full-length PCIe x8 (x4 speed) Gen1 Option for 2 PCI-X slots replacing a PCIe slot (similar to G5)
Networking	NC373i Multifunction (Broadcom)	NC326i (BCM5715C) Dual port Gigabit LAN
Ports	Front: USB (2) Rear: USB (2), Video, NIC Internal: USB (1)	Front: USB (2) Rear: USB (2), Video, NIC (2) Internal: USB (2), SD slot (1)
Management	ILO 2.0	ILO 2.0e
Security		TPM option



HP ProLiant DL380



	DL380 G5	DL380 G6
Processor	Intel Xeon 5000 Sequence	Intel Nehalem - EP
Memory	[8] Sockets, [FBD] 32GB max.	[18] Sockets, [DDR3 800Mhz to 1333MHz] 144GB max.
Drive Bays	[8] [SFF] SAS/SATA	[8] [SFF] SAS/SATA Optional 16 SFF or 6 HP LFF SAS/SATA (Different drive cages for SFF and LFF)
Storage Controller	P400/E200	P410i
Slots	PCI-E Gen 1: Embedded: 2X4 PCI-E Standard Riser: 1X4 and 2 X8 PCI-E Optional Riser: PCI-X/PCI-E (2 PCI-X, 1X8 PCI-E) (Max. PCI-E slots: 4)	PCI-E Gen 2: Standard Riser: 1X8 and 2 X4 PCI-E Optional Risers: X16 PCI-E; PCI-X/PCI-E (2 PCI-X/133, 1X8, 1 X4 PCI-E (Max. PCI-E slots: 6) Optional 4 1G or / 2 10G NetXen Riser with Fenway sideband signal support
Networking	[NC373i Multifunction (Broadcom)	Two BCM5709C with dual port Gigabit
Ports	Front: USB (2), video Rear: USB (2), Video, NIC Internal: USB (1)	Front: USB (2), video Rear: USB (2), Video, NIC Internal: USB (1)/ SD slot (1)
Management	ILO 2.0	ILO 2.0e
Security		TPM option
Redundancy	Fans: Hot plug with optional redundancy Power: 1	Fans: Hot plug with optional redundancy Power: 1



HP ProLiant DL360

	DL360 G5	DL360 G6
Processor	Intel Xeon 5000 Sequence	Intel Nehalem - EP
Memory	[8] Sockets, [FBD] 32GB max.	[18] Sockets, [DDR3 800Mhz to 1333MHz] 144GB max.
Drive Bays	[6] [SFF] SAS/SATA	[8] [SFF] SAS/SATA
Storage Controller	P400i/E200i	P410i
Slots	<u>2 Available Slots</u> -1 full length x16 PCI-e -1 low profile PCI-e x8 -1 optional PCI-x 133 replace full length PCI-e	<u>2 Available Slots</u> -1 full length x16 PCI-e Gen2 -1 low profile x8 PCI-e Gen2 -1 optional PCI-x 133 replace full length PCI-e
Networking	[NC373i Multifunction (Broadcom)	Single BCM5709C with dual port Gigabit
Ports	Front: USB (1), video Rear: USB (2), Video, NIC Internal: USB (1)	Front: USB (1), video Rear: USB (2), Video, NIC Internal: USB (1)/ SD slot (1)
Management	ILO 2.0	ILO 2.0e
Security		TPM option
Redundancy	Fan: N+1 Power: 1	Fan: N+1 Power: 1



HP ProLiant ML/DL370



	ML370 G5	ML370 G6
Processor	Intel Xeon 5000 Sequence	Intel Nehalem - EP
Memory	[8] Sockets Standard, [16] max; [FBD] 64GB	[18] Sockets, [DDR3 800MHz to 1333MHz] 144GB max.
Drive Bays	8 SFF hot plug SAS or SATA standard 16 SFF Hot plug SAS or SATA optional 2 Media Bays (2 half height) standard	8 SFF hot plug SAS or SATA standard; or 6 LFF 24 SFF Hot plug SAS or SATA optional; or 14 LFF 3 Media Bays (2 half height, 1 slim line) standard
Storage Controller	P400/E200	P410i
Slots	PCI-e Gen 1 9 slots 8 available: (6) PCI-E x4 (2) PCI-X 64-Bit/133MHz	PCI-e Gen 2 9 slots (2x16, 2x8, 5x4) Accelerators 300 watt in x16 slots 2 PCI-x slots optional (replacing PCI-e slots)
Networking	NC373i Multifunction (Broadcom)	Single NetXen with quad port Gigabit (10G optional) (standup card)
Ports	Front: USB (2), video / Rear: USN (2), Video, NIC Internal: USB (2)	Front: USB (2), video / Rear: USN (2), Video, NIC Internal: USB (2)/ SD slot (1)
Management	ILO 2.0	ILO 2.0e
Security		TPM option
Redundancy	Fan: RPS:	Fan: RPS:
Form Factor	5U	4U

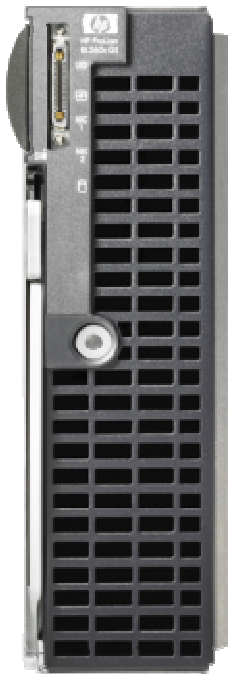


High capacity, highly efficient compute for scale-out environments



	DL180 G5	DL180 G6
Processor	Xeon Quad/Dual Core	2P Xeon (Nehalem EP)
Memory	6 Sockets, DDR2 667 FBD	12 Sockets , DDR3 1067/1333
Drive Bays	4/8/12 LFF SATA/SAS	4/8/12/ 14 LFF/SFF SATA/SAS (4/8/12 standard +2 rear upgrade)
Storage Controller	SATA RAID embedded with entry models; SA E200 or P400 on other models;	HP SATA RAID with entry models (ICH-9); P212 and P410 on other models
Slots	<u>3 Available slots</u> 2 full-length PCI-e x4 1 low-profile PCI-e x8 2 optional PCI-X 133 replaces full-length PCI-E slots	<u>3 Available slots</u> 2 full-length PCI-E x8 Gen 2 1 low-profile PCI-E x8 Gen 2 2 optional PCI-X 133 replaces full-length PCI-E OR 1 optional PCI-E x16 Gen 2
Networking	1 Gigabit NIC	2 Gigabit NICs
Ports	USB: 2 front, 1 internal, 2 rear Video, Serial, PS/2	USB: 2 front, 1 internal, 2 rear Video, Serial, PS/2
Management	LO100	LO100; System setup and update, health agents, SIM support (Polaris & Lighthouse)
Security		TPM option
Redundancy	HP RPS	HP RPS





HP ProLiant BL260c G6

Processor

Intel Nehalem-EP Series (dual and quad-core)

Memory

- 12 Sockets
- DDR3 Registered or Unbuffered / 96GB max.

Storage

- HP Embedded SATA RAID controller*
 - 2 SFF non hot-plug SATA, SSD, or SAS drives
 - Shared Storage connect option
- * Software/chipset SATA RAID

Networking

- 2 embedded Gigabit Ethernet adaptors

Mezzanine Slots

- 2 mezzanine slots
 - x8 PCIe Type-1 Mezzanine expansion slot
 - x8 PCIe Type-2 Mezzanine expansion slot

Management

- Integrated Lights Out 2e (iLO 2e) Standard Blade Edition
- Power Meter, Power Regulator, Power Capping

Density

- 16 server blades in 10U enclosure
- 8 server blades in 6U enclosure



BL460c G6

Processor

Up to two dual- or quad-core Intel Nehalem-EP Series processors

Memory

- Registered or Unbuffered DDR3
- 12 DIMM Sockets
- 96 GB max

Internal Storage

- 2 Hot Plug SFF SAS or SATA HDDs
- Smart Array P410i RAID controller with optional cache & BBWC; RAID 0/1 support

Networking

- 2 integrated Multifunction 10Gb ports with Flex-10 support

Mezzanine Slots

- 2 PCIe x8 mezzanine expansion slots

Additional Features

- Internal USB 2.0 connector
- Internal SD Card slot
- TPM support

Management

- Integrated Lights Out 2 Standard Blade Edition
- Power Meter, Power Regulator, Power Capping

Density

- 16 server blades in 10U enclosure
- 8 server blades in 6U enclosure



BL490c G6

Processor

Up to two quad-core Intel Nehalem-EP Series processors

Memory

- Registered or Unbuffered DDR3
- 18 DIMM Sockets
- 144 GB max

Internal Storage

- 2 Non-Hot Plug SSDs
- HP Embedded SATA Controller

Networking

2 integrated Multifunction 10Gb ports with Flex-10 support

Mezzanine Slots

2 PCIe x8 mezzanine expansion slots

Additional Features

- Internal USB 2.0 connector
- Internal SD Card slot
- TPM support

Management

- Integrated Lights Out 2 Standard Blade Edition
- Power Meter, Power Regulator, Power Capping

Density

- 16 server blades in 10U enclosure
- 8 server blades in 6U enclosure



	HP ProLiant BL260c G5	HP ProLiant BL260c G6
Processors	Two quad-, dual-, or single-core Intel® Xeon®, Core™2 Duo or Celeron® processors	Two dual- or quad-core Intel® Nehalem-EP Series
Memory	48GB 6 Sockets DDR2 533/667MHz	96GB 12 Sockets Registered or Unbuffered DDR3
Internal Storage	SATA 2 x 2.5" non-hot plug bays HP Embedded SATA RAID Controller*	SATA, SAS, SSD 2 x 2.5" non-hot plug HP Embedded SATA RAID Controller*
Network Ports	Two 1Gb Ethernet ports	Two 1Gb Ethernet ports
I/O Slots	One PCI Express mezzanine slot	Two PCI Express mezzanine slots
Integrated Management	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition
Additional Features	Internal USB port	Internal USB port Internal SD card slot TPM support
Density	16 blades in 10U; 8 blades in 6U	16 blades in 10U; 8 blades in 6U



* Software/chipset SATA RAID





	HP ProLiant BL460c G5	HP ProLiant BL460c G6
Processors	Two dual- or quad-core Intel® Xeon®	Two dual- or quad-core Intel® Nehalem-EP Series
Memory	64GB 8 Sockets Fully-Buffered DDR2 667MHz	96GB 12 Sockets Registered or Unbuffered DDR3
Internal Storage	SATA, SAS 2 x 2.5" hot plug bays Smart Array E200i Optional 128MB battery-backed write cache RAID 0,1	SATA, SAS 2 x 2.5" hot plug (SATA/SAS) Smart Array P410i Optional cache and battery-backed write cache RAID 0,1
Network Ports	Two multifunction 1Gb Ethernet ports	2 integrated Multifunction 10Gb ports with Flex-10 support
I/O Slots	Two PCI Express mezzanine slots	Two PCI Express mezzanine slots
Integrated Management	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition
Additional Features	Internal USB port	Internal USB port Internal SD card slot TPM support
Density	16 blades in 10U; 8 blades in 6U	16 blades in 10U; 8 blades in 6U





	HP ProLiant BL480c	HP ProLiant BL490c G6
Processors	Two dual- or quad-core Intel® Xeon®	Two quad-core Intel® Nehalem-EP Series
Memory	48GB 12 Sockets Fully-Buffered DDR2 667MHz	144GB 18 Sockets Registered or Unbuffered DDR3
Internal Storage	SATA, SAS 4 x 2.5" hot plug bays Smart Array P400i Optional 512MB battery-backed write cache RAID 0,1	SSD 2 x non-hot plug (SSD) HP Embedded SATA Controller
Network Ports	Two multifunction 1Gb Ethernet ports Two 1Gb Ethernet ports	2 integrated Multifunction 10Gb ports with Flex-10 support
I/O Slots	Three PCI Express mezzanine slots	Two PCI Express mezzanine slots
Integrated Management	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition
Additional Features	Internal USB port	Internal USB port Internal SD card slot TPM support
Density	8 blades in 10U; 4 blades in 6U	16 blades in 10U; 8 blades in 6U





BL685c G6

Processor

Up to four Quad-Core AMD Opteron™ processors (Shanghai)

Memory

- PC2-6400 Registered DDR2 (800 MHz)
- 32 DIMM Sockets
- 256GB max (with 667 MHz 8GB DIMMs)

Internal Storage

- 2 Hot Plug SFF SAS or SATA HDDs
- 2 Non-Hot Plug SSDs
- Smart Array P400i controller (512MB cache) with optional BBWC
- RAID 0/1 support

Networking

4 integrated Multifunction 10Gb ports with Flex-10 support

Mezzanine Slots

3 PCIe x8 mezzanine expansion slots

Additional Features

- Internal USB 2.0 connector
- Internal SD Card slot
- TPM support

Management

- Integrated Lights Out 2 Standard Blade Edition
- Power Meter, Power Regulator, Power Capping

Density

- 8 server blades in 10U enclosure
- 4 server blades in 6U enclosure



	HP ProLiant BL685c G5	HP ProLiant BL685c G6
Processors	Four Quad-Core AMD Opteron™ 8300 Series	Four Quad-Core AMD Opteron™ 8300 Series; support for future processors
Memory	128GB 16 Sockets DDR2 667MHz	256GB 32 Sockets DDR2 800MHz
Internal Storage	SATA, SAS 2 x 2.5" hot plug bays Smart Array E200i Optional 128MB battery-backed write cache RAID 0,1	SATA, SAS, SSD 2 x 2.5" hot plug (SATA/SAS) 2 x non-hot plug (SSD) Smart Array P400i Optional 512MB battery-backed write cache RAID 0,1
Network Ports	Two multifunction 1Gb Ethernet ports Two 1Gb Ethernet ports	Four multifunction 10Gb Ethernet ports with Flex-10 support
I/O Slots	Three PCI Express mezzanine slots PCI expansion blade option	Three PCI Express mezzanine slots PCI expansion blade option
Integrated Management	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition
Additional Features	Internal USB port	Internal USB port Internal SD card slot TPM support
Density	8 blades in 10U; 4 blades in 6U	8 blades in 10U; 4 blades in 6U

