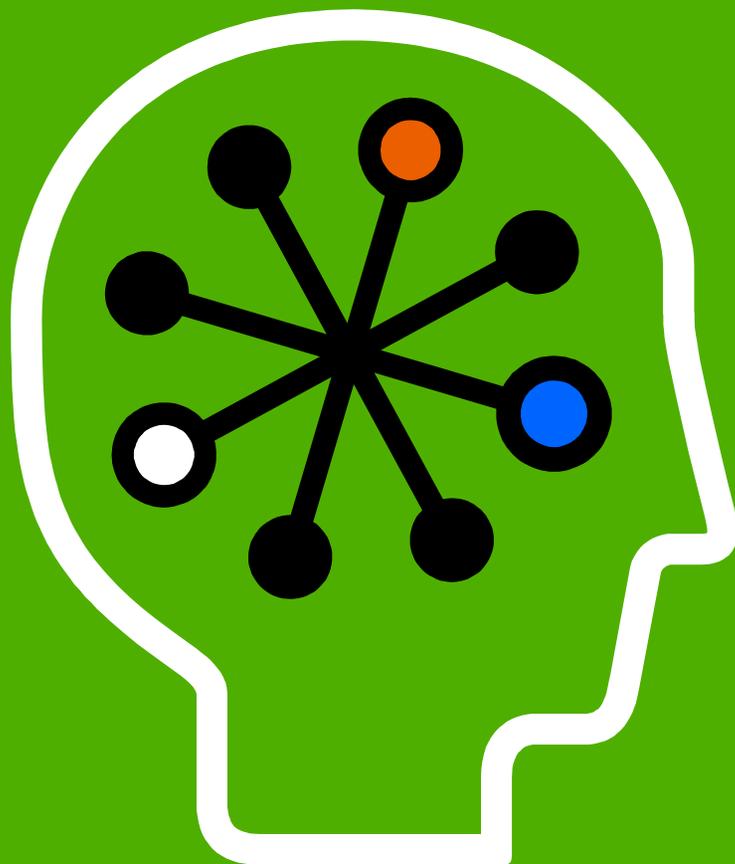




”Mutatis Mutandis” Konszolidációs lehetőségek a HP új generációs adatközpont architektúrájával

Varsányi András
technikai konzultáns
HP Magyarország



Technology for better business outcomes

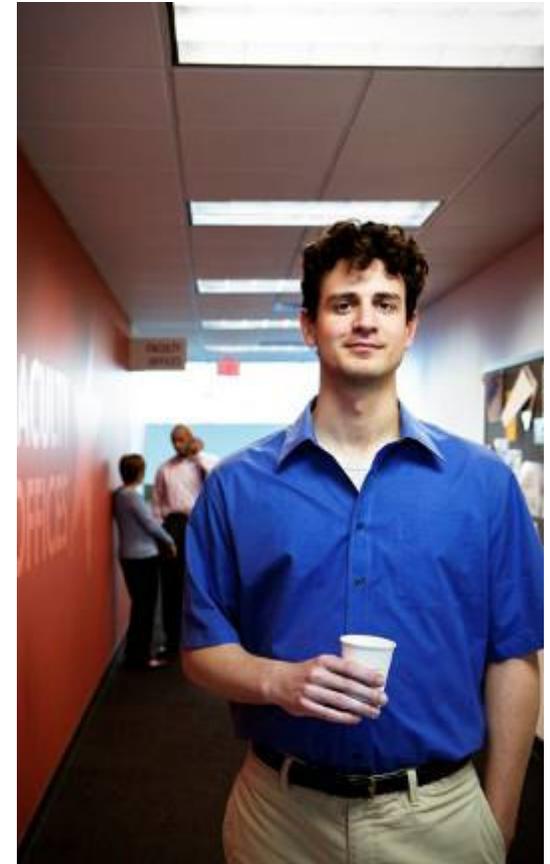
Tervezett tartalom

- "Labor, difficultas" - Mitől fáj az üzemeltető feje? A problémák (szerversűrűség, energiaellátás & hűtés, erőforrás kihasználtság, stb.) azonosítása
- "Ex malis eligere minima oportet" - Lehetséges válaszok, avagy a HP BladeSystem adatközpont architektúráról dióhéjban
- "Exercitatio artem parat" - Hogyan ültessük át mindezt gyorsan és hatékonyan a gyakorlatba?
- "Virtus unita fortior" - Néhány szó a HP és a felsőoktatási intézmények közötti együttműködési lehetőségekről

”Joe” has a new challenge every day

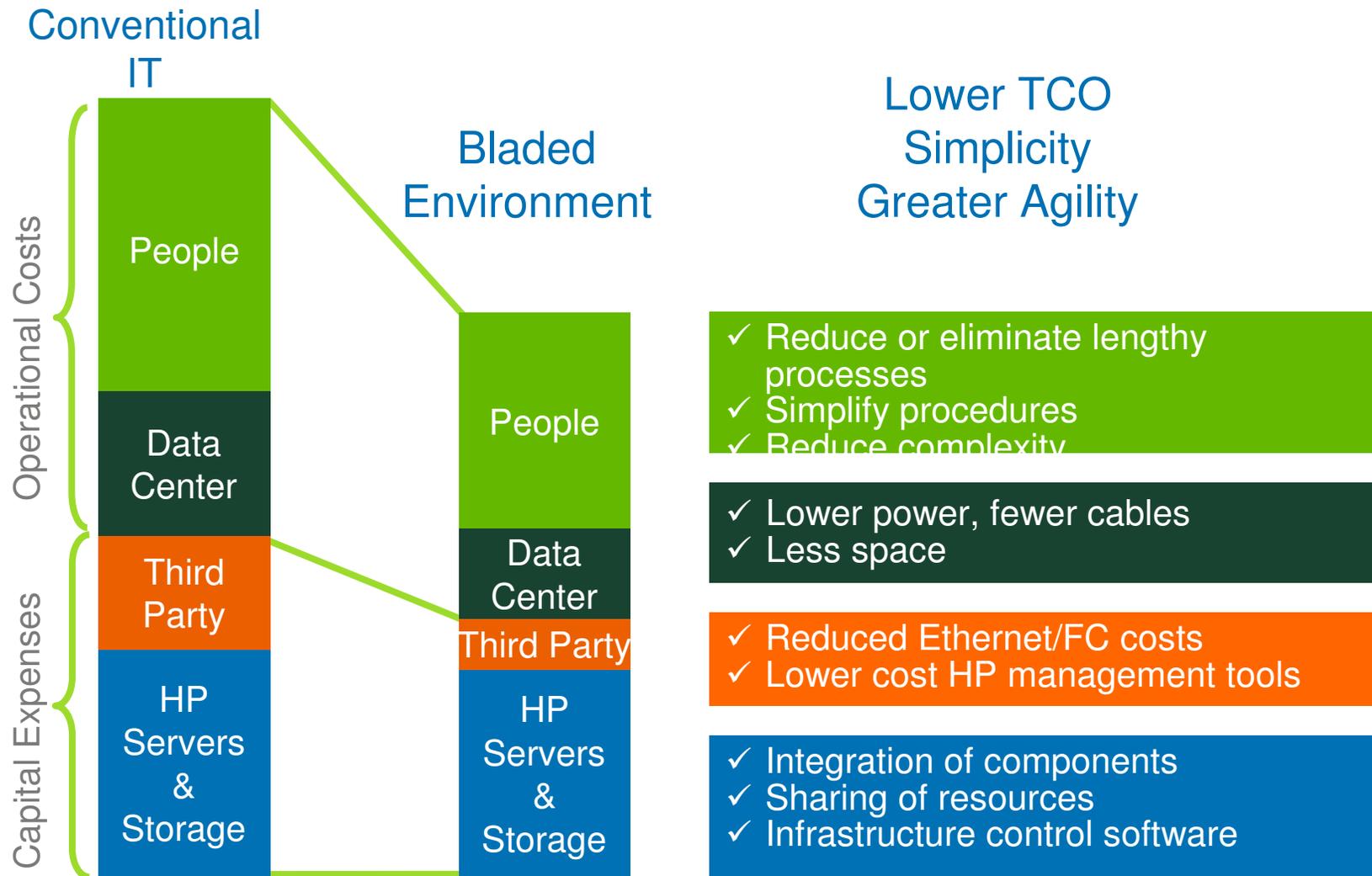
- Management needs to reduce costs
- They ask Joe to see where he can:
 - Consolidate systems
 - Reduce the IT footprint and licensing costs
 - Increase resource utilization
 - Optimize power utilization
 - Improve efficiency
 - Networking I/O in the environment
 - Virtualizing storage systems
 - Respond quickly to changes in demand
 - Automatically adjust for changing workload (end-of-month processing)

More requests are coming...

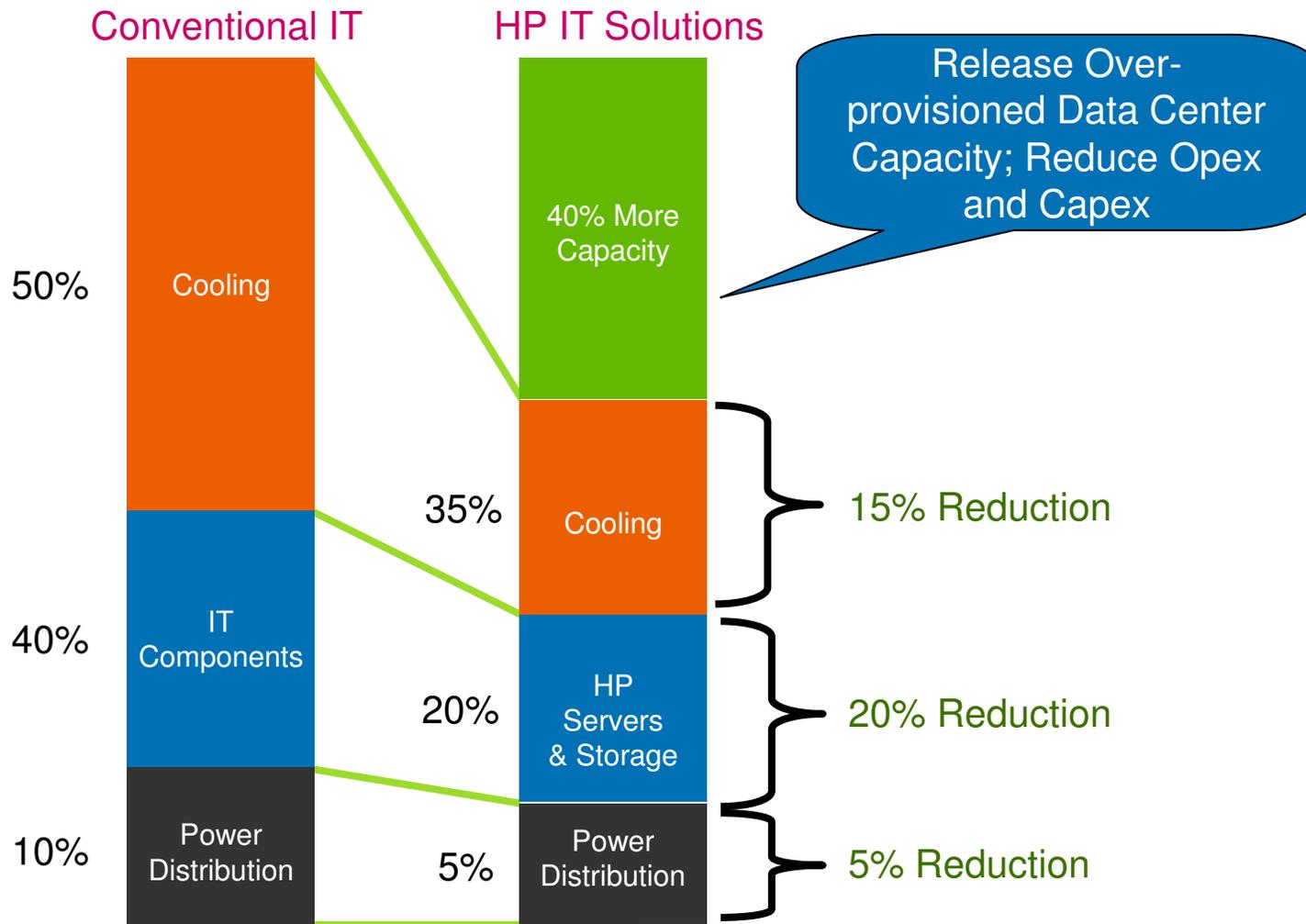


BladeSystem c-Class

Delivering tangible savings for business



Extend Your Data Center Investment Gain Control and Fit More



HP Restricted. May not be shared externally.

Laying the foundation for agility across the adaptive infrastructure

2006

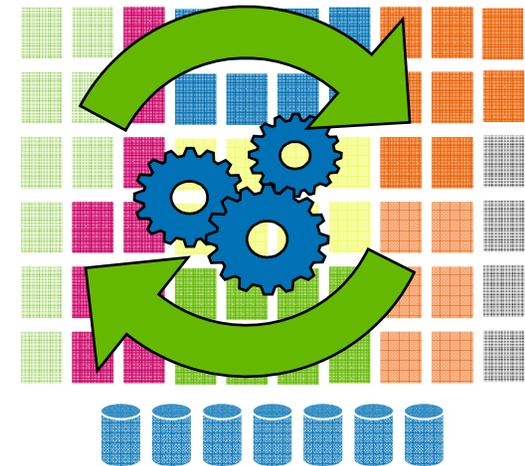
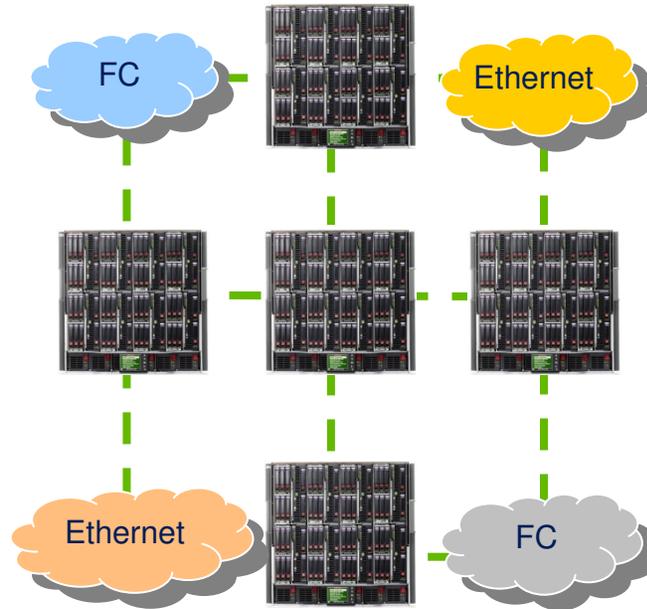
AI in a 17" box
Virtual Connect
Thermal Logic
Insight Control

2007

Blade Everything
Extend blade value
across the datacenter
Blades to the
un-datacenter

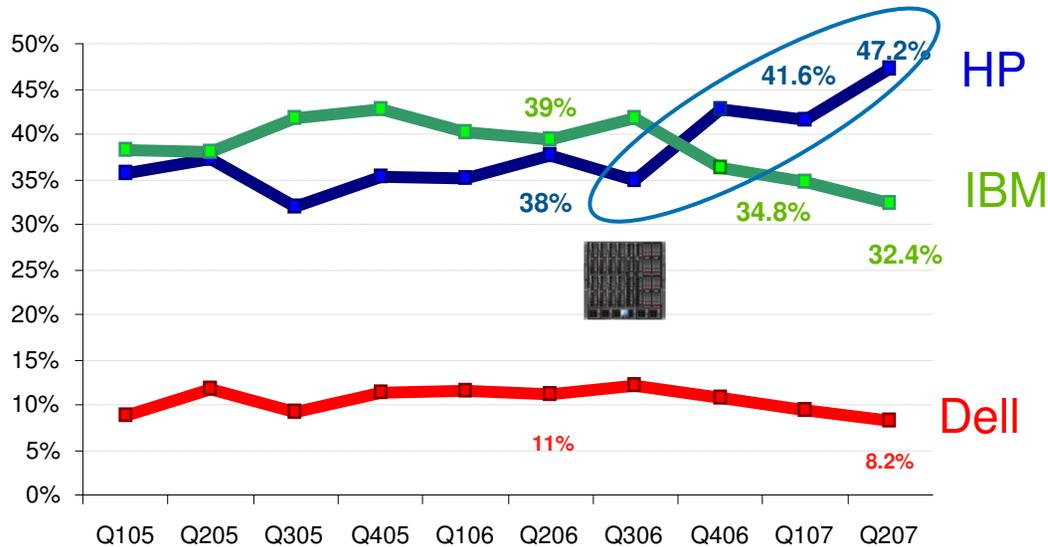
2008+

Redefine blades
Virtualize everything
Automate everything
Built on c-Class



BladeSystem c-Class has been embraced in the marketplace

78% year over year BladeSystem growth



151 of the top 500 supercomputers in the world run on c-Class

C-Class solution also #4 & #5 fastest supercomputers in world



Tech Innovator of the Year award in the Server Hardware category for the second year in a row.



3rd "Best in Show" in a row as voted by attending CIO's of midmarket companies



The value of BladeSystem



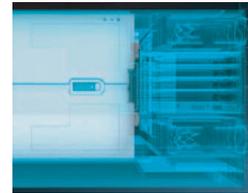
BladeSystem c-Class

- Up to 41% lower acquisition costs than traditional IT infrastructure
- Up to 65% savings on SAN connections



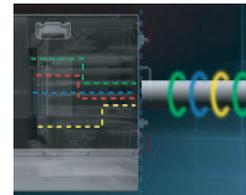
Insight Control

- Simple setup/config in 5 minutes
- \$35,000 per 100 users over 3 years due to time saving, loss avoidance, and improved productivity (IDC)



Thermal Logic

- Up to 47% less power than traditional 1U servers
- 60% more servers in the same space, power, and cooling



Virtual Connect

- Change server connections to datacenter LAN/SAN in minutes, not days or weeks
- Make changes with one person rather than three

From rack-mount to blade



Example
configuration:
256-node cluster
w/ InfiniBand

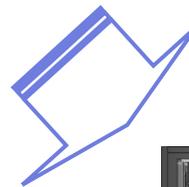
BladeSystem Advantage

Power: *32% saving*

Floor space: *from 8 racks to 5 racks*

Network cables: *up to 78% less*

And excellent manageability!



The HP blade everything strategy

- Extend the BladeSystem value to more products

Energy-thrifty Change-ready Time-Smart Cost-savvy



- Deliver value beyond the box to the entire datacenter



IT in a box



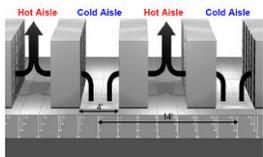
Consolidation



Virtualization



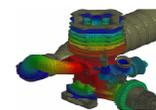
SAN deployment



Datacenter power and cooling efficiency



Virtual desktops



High performance computing clusters



Optimizing for the Undatacenter

From Global 1000 to Global 500,000



Meet the new HP BladeSystem c3000

The go anywhere, run anything infrastructure for small sites with big computing and storage needs.



+138,000 ways to mix & match, with one solution just right for you

Data Protection/Compliance
HP SB600c AiO

Security
ISA, Forefront, Exchange 07 Edge
Network Services, Collaboration,
Management (HP and/or MS)



CRM
MS Dynamics
Database required for CRM
Database
MS SQL 2005
MS Exchange

Small Site in a box



0.8Tflop 64 node
personal
supercomputer



Store in a box



HP BladeSystem c-Class Portfolio

Enclosures



A Full Range of 2P and 4P Blades



Unified Management



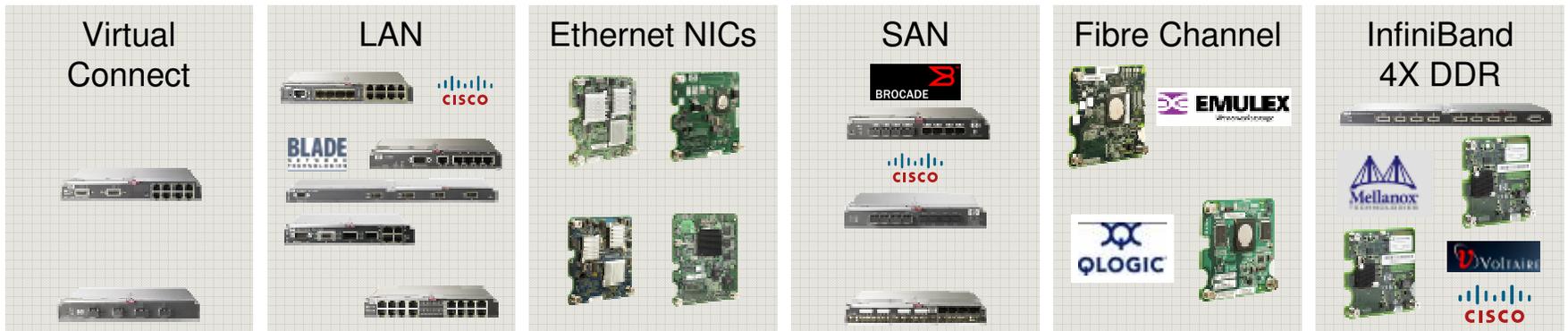
Choice of Power



Services

Assessment
Implementation
Support

Interconnect choices for LAN, SAN, and Scale-Out Clusters



c7000 Enclosure

An adaptive infrastructure in a 17" box

Front View

Blades install in seconds

Integrated platform eliminates unnecessary components



8-16 blades
Shared (3+3) power increases efficiency

Onboard Administrator
• Quick setup and troubleshooting

Rear View

New fan design saves power, airflow

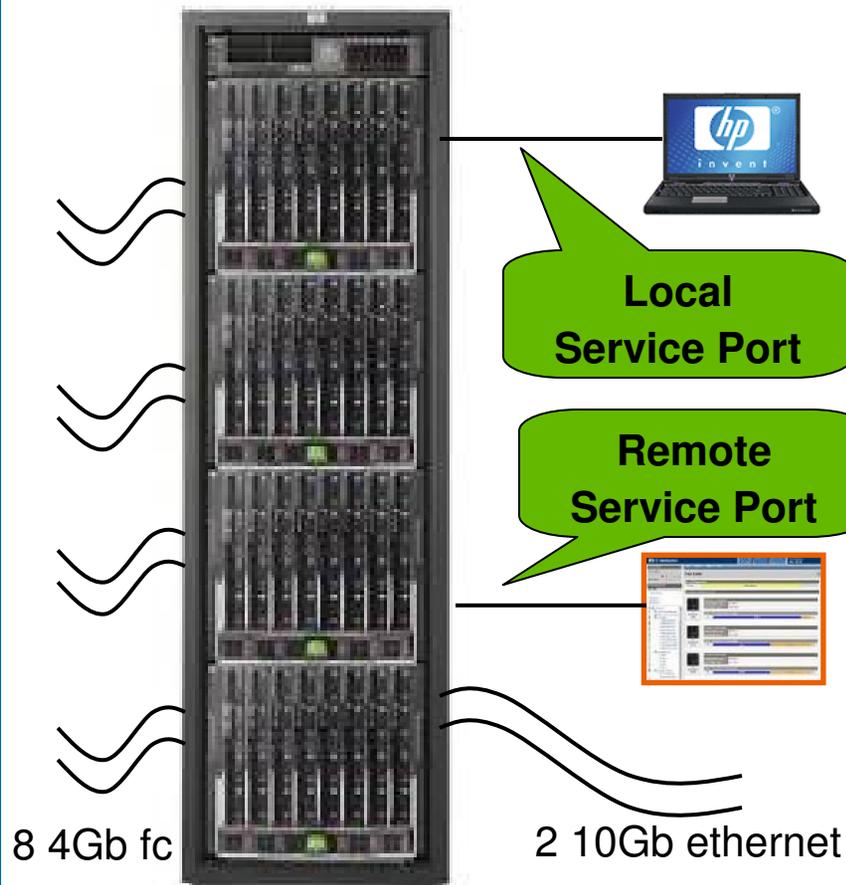


Flexible Data center connectivity



Simple, efficient power connections

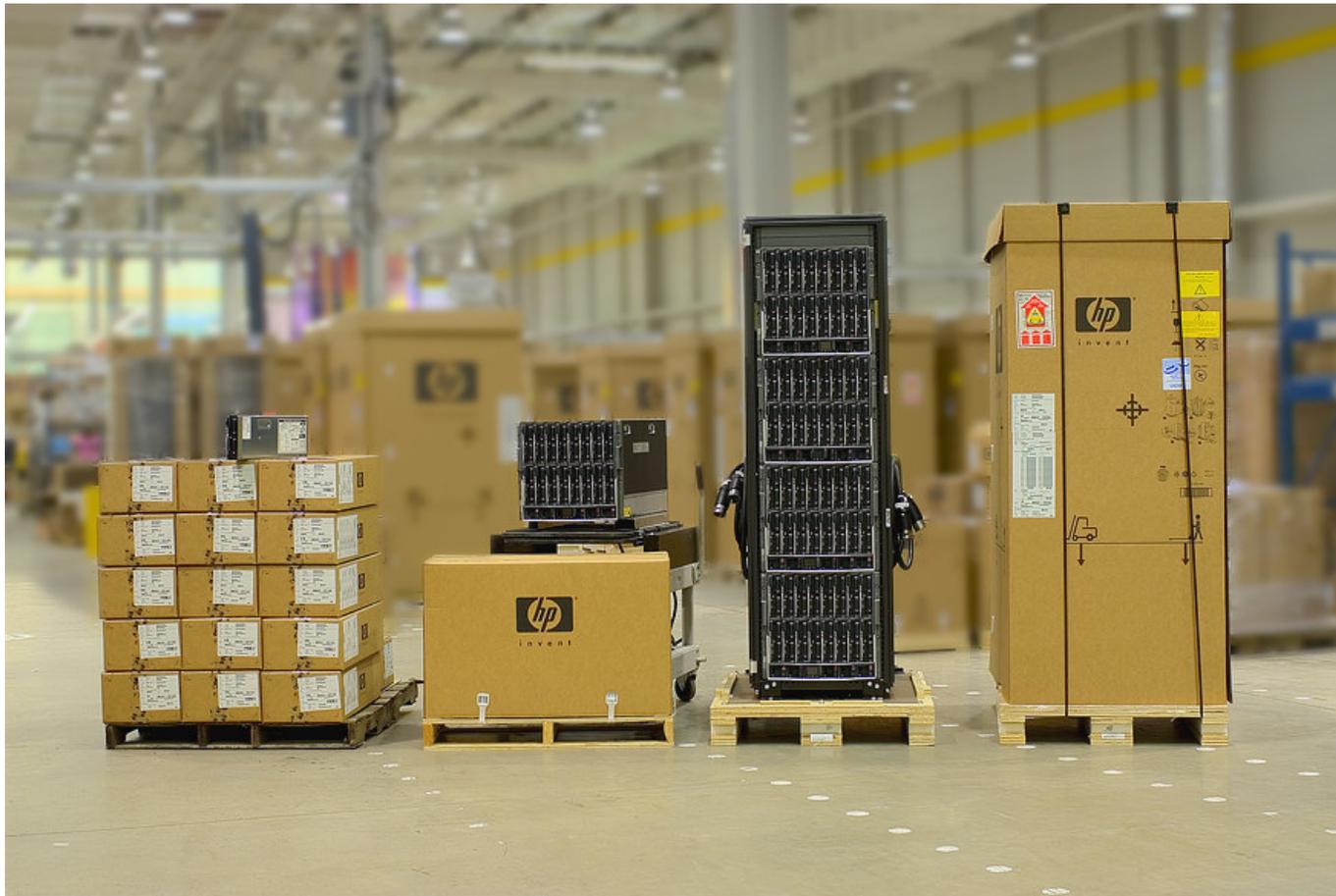
THE RACK CAN BECOME THE BUILDING block rack-level integration



- Manage a full rack (up to 64 servers) from a single Onboard Administrator
- Real-time rack topology
- Rack-level cable consolidation
 - 2 10Gb ethernet cables*
 - 8 4Gb fibre channel cables
 - 1 management cable
- Rack-level factory integration and shipping available

Factory Express – more options

From a single server to a complete plug-and-play rack



Reduce parts, downtime and service events

Fewer Moving Parts to fail and to service

Comparison of 16 servers, common failing components

Component	Typical 1U server	BladeSystem (today)	BladeSystem (future)	Future savings
Power supplies	32	6	4	87%
Fans	128	10	8	94%
Ethernet, FC Cables	80	5	3	96%
Drives	32	32	6	82%

NonStop midplane

- No active components
- Redundant signal paths



BladeSystem is built with industry leading servers

- ProLiant servers
 - #1 server¹ >11 million sold
 - #1 hardware reliability²
 - Gartner magic quadrant leader³
- Common embedded technologies: DL/BL
 - Flexible capacity, simplified management, secured availability
 - Enhanced memory protection
 - Superior floating point performance



iLO



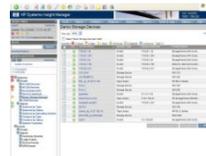
integrated hypervisors



Hot-plug drives
SmartArray



High efficiency
power supplies



Consistent
BladeSystem
Management

• Common OS support



¹ IDC server tracker, since inception

² TBR Corporate IT Buying Behavior & Customer Satisfaction Study x86-Based Servers 3Q 2006 Published February 6, 2007

³ Gartner, Infrastructure servers, September 2006

HP BladeSystem c-Class server blades



Model	BL460c	BL465c	BL480c	BL685c	BL860c
Processors	2-socket dual- or quad-core Intel Xeon	2-socket dual-core AMD Opteron 2000 Series	2-socket dual- or quad-core Intel Xeon	4-socket dual-core AMD Opteron 8000 Series	2-socket Intel Itanium2
Memory	FBDimm 667MHz (8) DIMMs / 64GB	DDR2 667MHz (8) DIMMs / 64GB	FBDimm 667MHz (12) DIMMs / 48GB	DDR2 667MHz (16) DIMMs/128GB	DDR2 533MHz (12) DIMMs/48GB
Remote Management	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition
Internal HP Storage	(2) SFF SAS/SATA bays	(2) SFF SAS/SATA bays	(4) SFF SAS/SATA bays	(2) SFF SAS/SATA bays	(2) SFF SAS bays
RAID	RAID 0/1 controller w/ BBWC option	RAID 0/1 controller w/ BBWC option	RAID 0/1/5 controller w/ BBWC option	RAID 0/1 controller w/ BBWC option	RAID 0/1 controller
NICs	(2) GbE/2.5GbE mfNICs	(2) GbE mfNICs	(2) GbE/2.5GbE mfNICs (2) GbE NICs	(2) GbE/2.5GbE mfNICs (2) GbE NICs	(4) GbE NICs
Mezzanine slots	2	2	3	3	3

Extending the server portfolio



Model	BL260c	BL495c	BL2x220c	BL680c	BL870c
Processors	2-socket dual or quad core	2-socket dual or quad-core	2x 2-socket dual- or quad-core	4-socket Intel XEON Series	4-socket dual-core Intel Itanium2
Memory	(6) DIMMs / 48GB	(16) DIMMs / 128GB	2x DDR2 667MHz (4) DIMMs / 16GB	DDR2 667MHz (16) DIMMs/128GB	DDR2 (24) DIMMs/96GB
Remote Management	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition	iLO 2 Standard Blade Edition
Internal HP Storage	(2) SFF NHP SATA bays	2 NHP SATA SSD	2x(1) SFF NHP SATA bays or SSD	(2) SFF SAS/SATA bays	(4) SFF SAS bays
RAID	RAID 0/1 controller w/ BBWC option	Optional external storage blade	none	RAID 0/1 controller w/ BBWC option	RAID 0/1 controller
NICs	(2) GbE NICs	(2) 10GbE mfNICs	2x(2) GbE NICs	(2) GbE/2.5GbE mfNICs (2) GbE NICs	(4) GbE NICs
Mezzanine slots	1	2	2x1	3	3

HP ProLiant BL460c



BL460c

Processor

Up to two Dual-Core or Quad-Core Intel® Xeon® processors

Memory

- PC2-5300 Fully-Buffered DDR2 (667 MHz)
- 8 DIMM Sockets
- 32GB max (with 4GB DIMMs)

Internal Storage

- 2 Hot-Plug SFF SAS or SATA HDDs
- SmartArray E200i controller (64MB cache) with optional BBWC
- RAID 0/1 support

Networking

2 integrated Multifunction Gigabit NICs
Additional NICs via mezzanine card

Mezzanine Slots

2 PCIe mezzanine expansion slots

Management

Integrated Lights Out 2
Standard Blade Edition

Density

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



invent

HP ProLiant BL460c

Internal View

Embedded Smart Array E200i

Controller integrated on drive backplane

Two hot-plug
SAS/SATA
drives

Two Mezzanine Slots

- One x4
- One x8

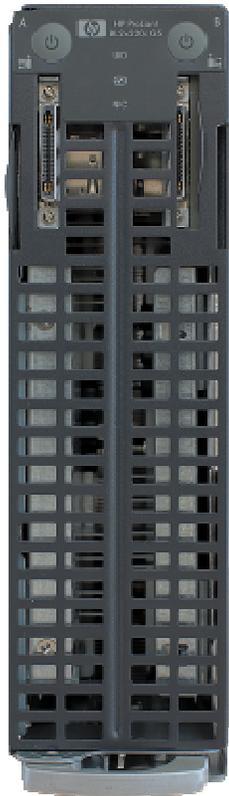
8 DIMM Slots

Fully-Buffered DIMMs
DDR2 667MHz

Two Embedded Multifunction Gigabit Ethernet
Adapters



HP ProLiant BL2x220c G5



BL2x220c G5

Processor

Up to two Dual or Quad-Core
Intel® Xeon® processors per board

Memory

- Registered DDR2 (533/667 MHz)
- 4 DIMM Sockets per board
- 16GB max (with 4GB DIMMs)

Internal Storage

1 Non Hot-Plug SFF SATA HDD per board

Networking

2 integrated Gigabit NICs per board

Mezzanine Slots

1 PCIe mezzanine expansion slot (x8, Type I) per board

Management

Integrated Lights Out 2
Standard Blade Edition

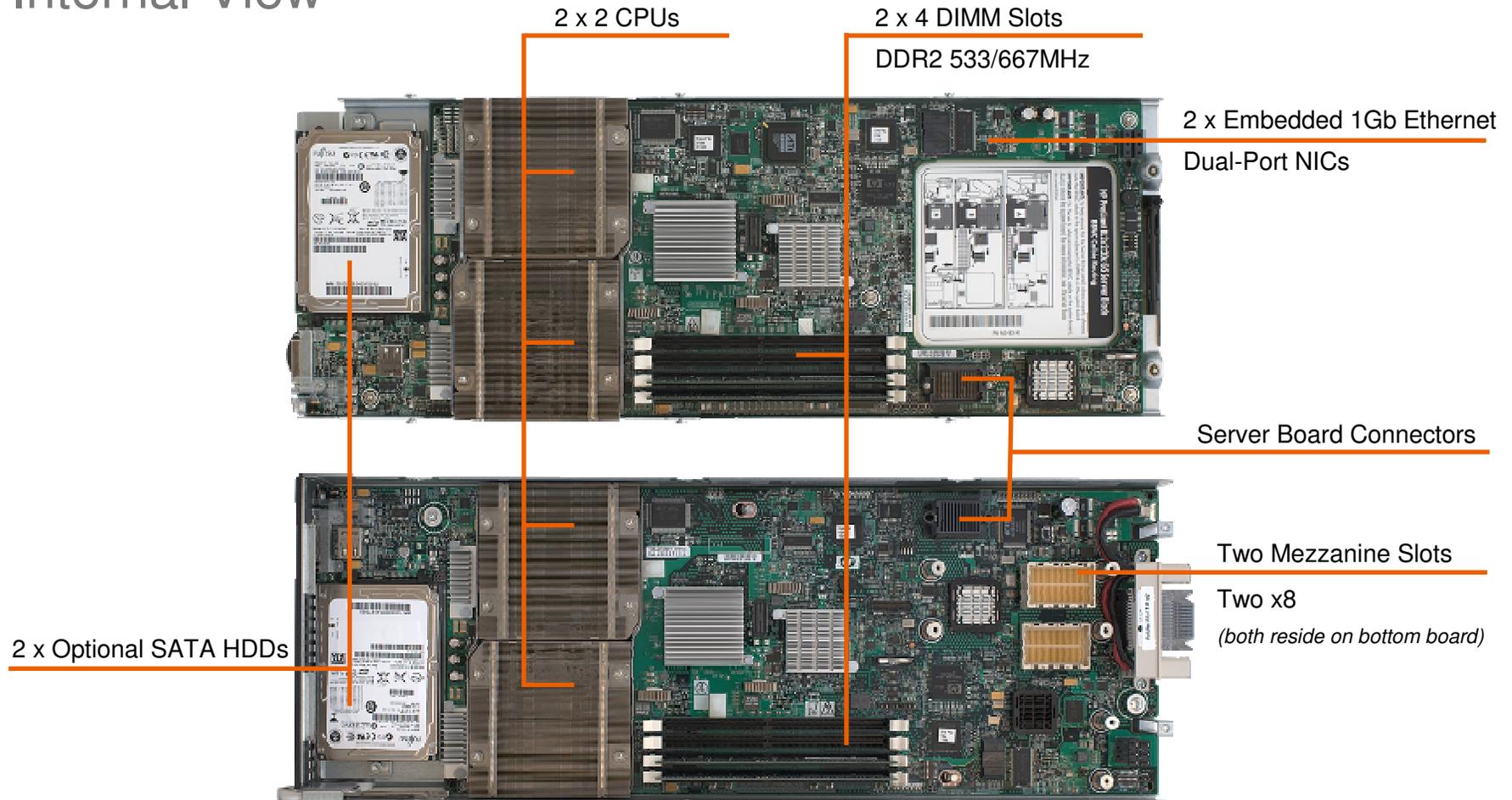
Density

32 server blades in 10U enclosure
16 server blades in 6U enclosure

**2 blades per HH enclosure bay*

HP ProLiant BL2x220c G5

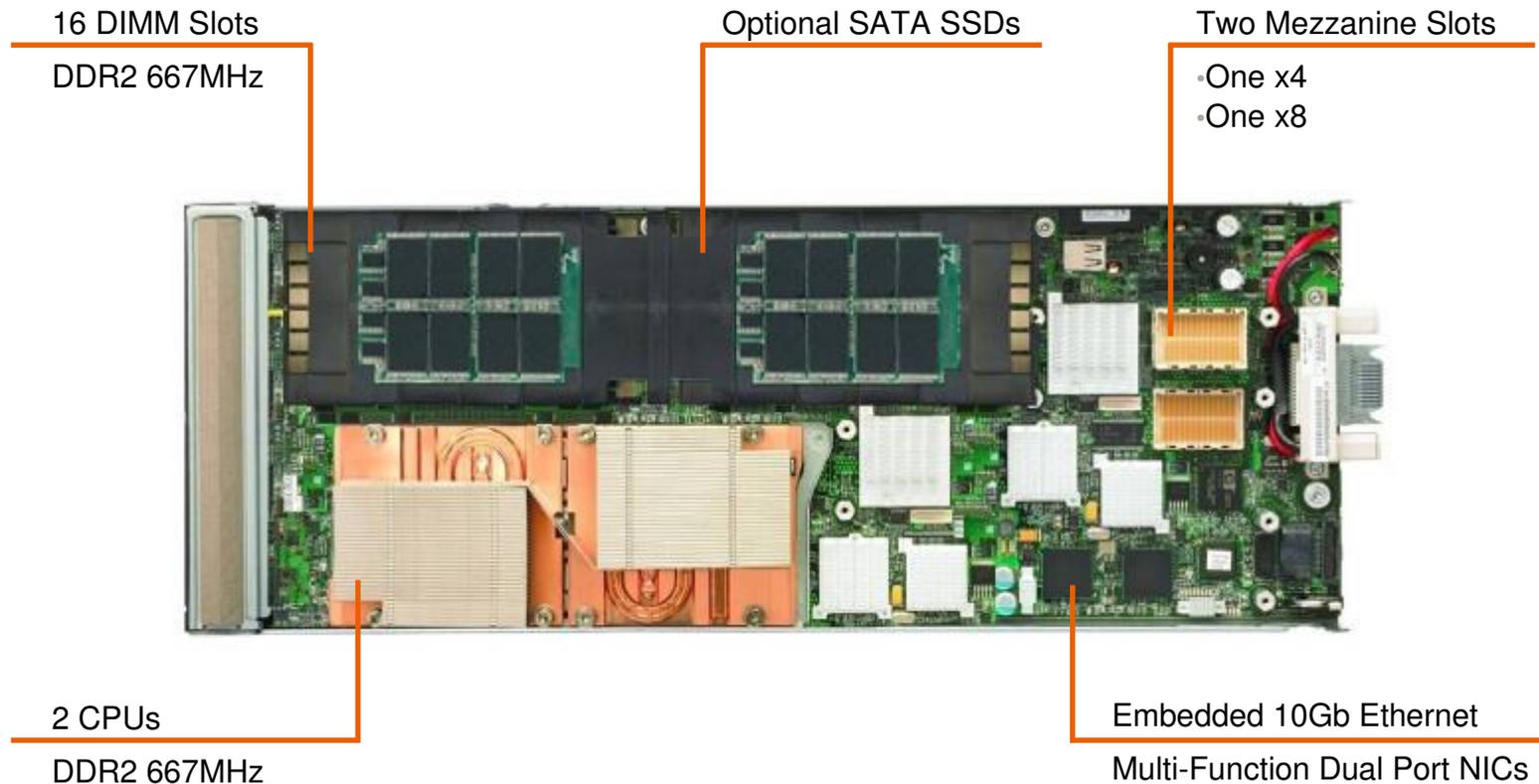
Internal View



Top and bottom PCA, side by side

HP ProLiant BL495c G5

Internal View



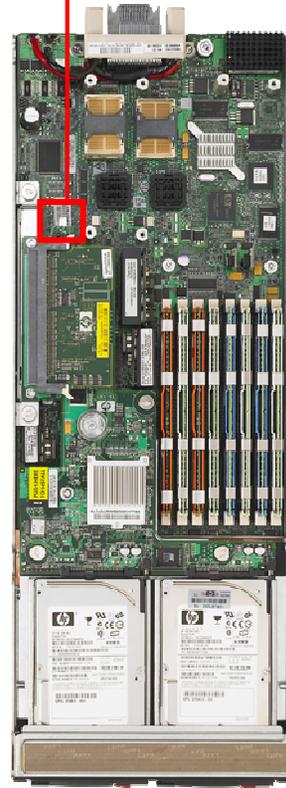
Integrated Hypervisors enabling pervasive virtualization

Citrix XenServer from HP

- Benefits
 - Simplified setup and VM management
 - Improved economics
- Platform integration
 - HP iLO Virtual KVM
 - HP-designed wizard based setup with default options
 - Local (1:1) console- or iLO-based management
 - Integration with HP tools
 - HP System Update Manager
 - HP Systems Insight Manager



Internal
USB Port



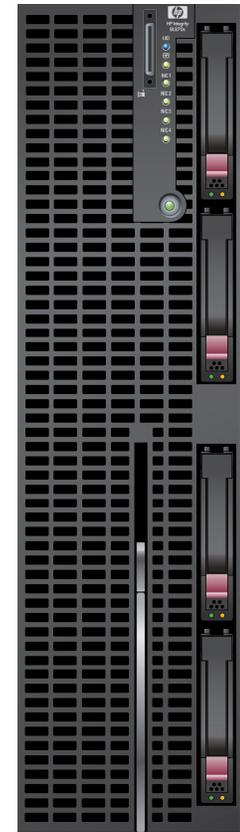
ESX Server 3i from HP

- Benefits
 - Ready to run
 - Console-less: smaller footprint with reduced security risk
- Platform integration
 - Broad range of HP servers
 - Integration with HP tools
 - HP System Update Manager
 - HP Systems Insight Manager
 - CTO and reseller-installable

Integrity BL870c Server Blade

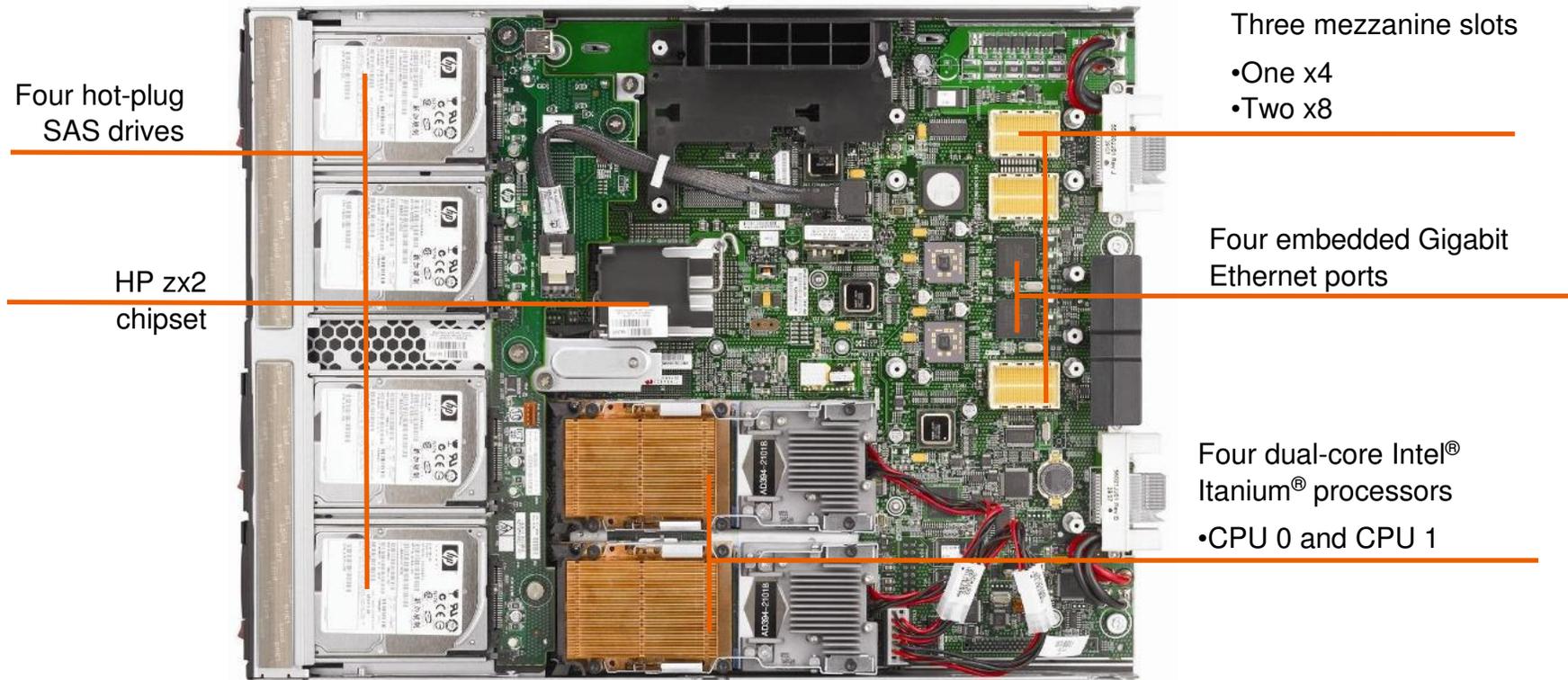
- BL870c Server Blade joins the BL860c to bring HP Integrity to BladeSystem c-Class family
 - HP-UX 11i v3 and v2 operating environments
 - True enterprise class operating environments for mission critical applications
 - Superior virtualization via Integrity Virtual Machine
 - Support for Red Hat and SUSE Linux, OpenVMS and Integrity Windows
 - Superior floating point performance for HPC environments
- 4-socket, full-height BladeSystem c-Class server
 - Choice of up to four latest Intel® Itanium® 9100 series processors
 - 1.6GHz/24MB; 1.6GHz/18MB; and 1.4GHz/12MB
 - Support for up to 96GB memory with 24 DIMM slots
 - 4 Gbit Ethernet channels standard
 - 3 optional Mezzanine I/O slots
 - Support for additional GbE NICs; Fibre Channel; Infiniband
 - 4 Hot-Plug SAS SFF HDD
 - 36GB, 72GB, and 146GB; both 10k and 15k

HP-ux11i



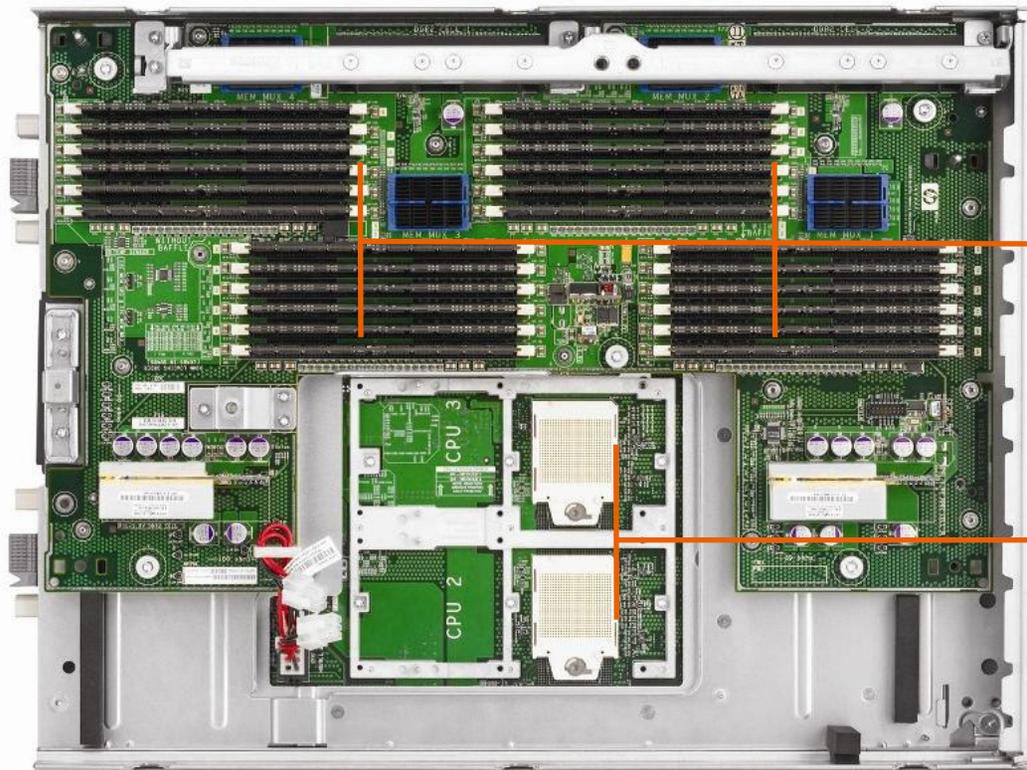
HP Integrity BL870c

Internal View - Top



HP Integrity BL870c

Internal View - Bottom



24 DIMM Slots
•PC2-4200 DDR-SDRAM (533 MHz)

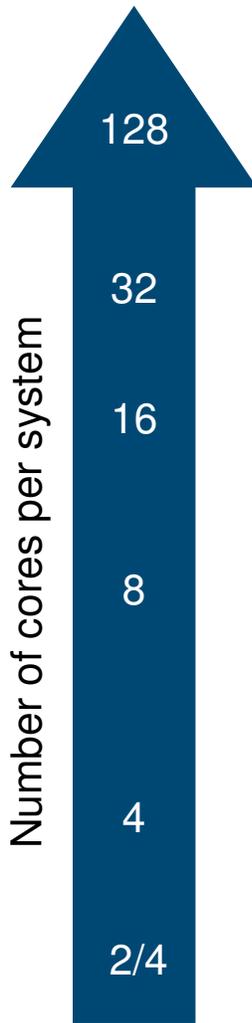
Four dual-core Intel® Itanium® processors
•CPU 2 and CPU 3

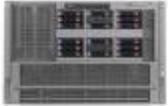
BL870c Applications and Target Markets

- Application environments
 - Application consolidation
 - SAP implementations
 - Data base tier of smaller applications
 - Application tier of larger applications
 - BI in data mart settings
 - Test and development
 - High performance environments requiring superior floating point performance
- Vertical markets utilizing distributed and replicated environments
 - Retail
 - Distribution
 - Manufacturing
 - Telco
 - Financial services

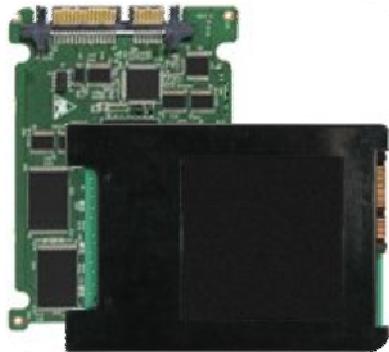


HP Integrity



HP Integrity Superdome Server	sx2000 chipset		Up to 64p/128c scalability and hard-partitioning capability for leading consolidation
HP Integrity rx8640 Server with Server Expansion Unit 2 (SEU2)			16p/32c scalability and hard-partitioning capability for consolidation
HP Integrity rx7640 Server			8p/16c flexibility with high-performance, density, and hard-partitioning capabilities
HP Integrity rx6600 Server	zx2 chipset		4p/8c highly expandable entry-class platform for workload consolidation and virtualization
HP Integrity rx4640 Server			4p/8c versatile application and database server
HP Integrity rx3600 Server			2p/4c powerful entry-class workhorse for database & application environments
HP Integrity rx2660 Server			2p/4c high-performance, server for multi-purpose entry-level computing
HP Integrity Blades BL860c and BL870c			1, 2 and 4-core Itanium 2 based blade

Solid state drive technology



- Substantially less power than SFF SAS drives (1W vs. 9W)
- Fast read performance
- Write performance lower than SFF SAS
- Cost premium per GB 4x SFF SAS
- Wear-leveling to best align endurance with duty cycle requirements

•SSD applicability

- Applications dependent on increased read performance
- Small boot-drive volumes
- Examples: hardened Linux image, integrated hypervisor

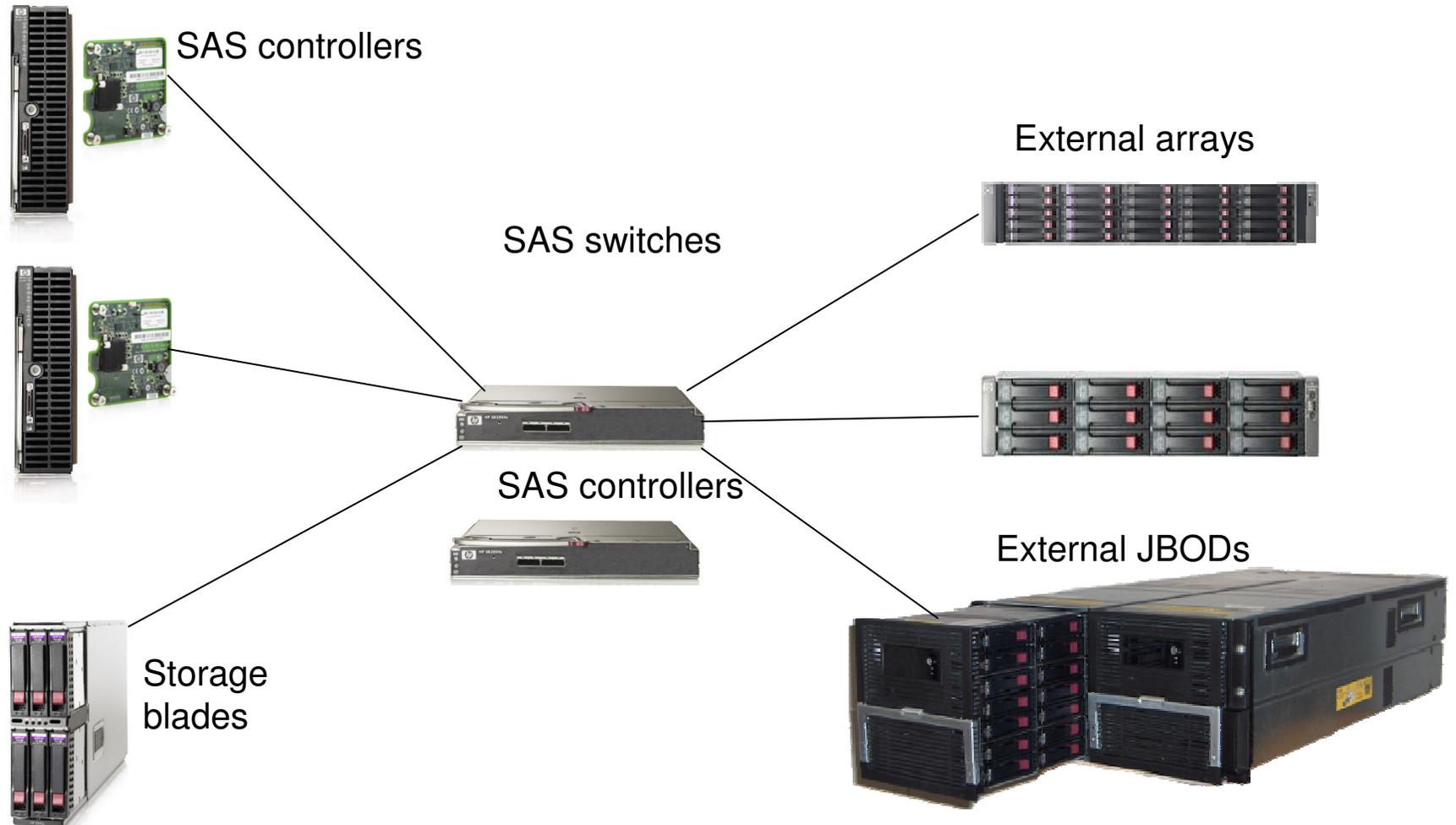
•SFF drives applicability

- Large volume storage applications
- Large boot volumes
- Write intensive applications

•SATA drives applicability

- Applications requiring large amounts of read-only data and low write requirements.

New shared storage blades a new idea for storage



Blade Storage Portfolio slide

Consolidation and Performance

DAS Storage and Tape Blades



- Simple DAS & data protection
- 1 to 1 DAS
 - 876MB

AiO SB600c



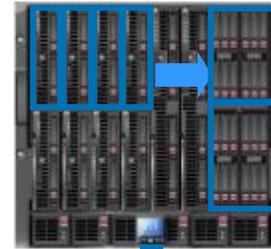
- iSCSI NAS shared storage
- Up to 6 hosts
 - ≤ 1.1TB
 - 1 Gb/s iSCSI

Shared SAS Blade Storage Blade



- External shared SAS storage Array support
- 3 Gb/s SAS
- Up to 19 TB TB capacity

Shared SAS Blade Storage : Internal and External (Future)



- External shared SAS storage Array and JBOD support
- Internal SAS Storage Blade support
- 3 Gb/s SAS
- Up to XXX drives

External FC / iSCSI Expansion



- FC / iSCSI SANs
- MSA, EVA, XP
- Disk/Tape/D2D

Capacity and scalability



HP BladeSystem + Storage Shared SAS Storage Blade Solution

Today



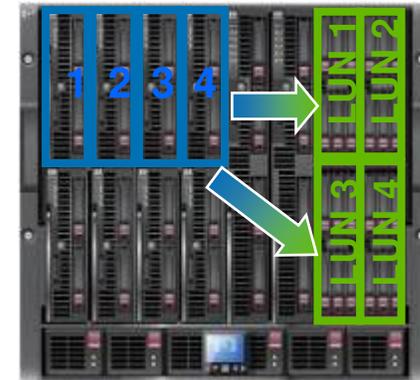
HP StorageWorks SB40c (*)

- Up to 6 hot-plug SAS or SATA drives for adjacent blade up to 876GB
- (1:1 ratio of server : storage blade)



- Shared storage – multiple servers blades access assigned LUNs inside shared storage blades in the c-Class enclosure
- Enterprise and SMB customers
- Highly available (controller failover, RAID across enclosures)
- Leverages c-Class Blade System

Coming Soon....



Shared storage blades

- Up to 15 servers access assigned LUNs on
- up to 4 shared storage blades in the c-Class Blade enclosure

2HCY08

HP StorageWorks external SAS Array

- External SAS Array
- High Availability with two controllers and Dual domain architecture
- Active/ Active with path failover
 - Up to 19TB SAS or 36TB SATA capacity
 - 2 SAS ports per controller
 - 1 GB Cache
 - Up to 256 LUNs
 - Support s > 2TB LUNs
 - Supports Dual-ported SAS drives : 146 GB, 300GB and 400 GB
 - Snapshot and clone: up to 64 Snaps and up to 128 clones
 - Managed through Storage Management Utility

Zoned vs. Shared Storage

Shared Storage

- Multiple servers share the storage on an array
- Requires the RAID controller to be on the storage array.
- The RAID controller identifies all drives and combines them into a RAID set.
- Management software is used to setup and configure the storage.
- Subsets of the RAID capacity (LUNs) are presented to individual servers
- Each server requires a SAS HBA to provides the path to the storage controller.

Zoned/ Pooled Storage

- Multiple servers have a path to the storage enclosures
- Requires the RAID controller to be on the server.
- Management software is used to assign a subset of drives on the storage enclosure, to each server by setting up zones. This is referred to as “zoning.”
- Once drives are zoned to a particular server, the RAID card in the server is then used to set the RAID levels for those drives.

HP BladeSystem + Storage

Coming in '08: BladeSystem Scalable Storage Array 70 (SSA70)

Scalable Smart Array Definition

- Permits SAS connectivity of low-cost, external JBODs to HP BladeSystem c-Class (Need for high capacity DAS storage)
- Drive types can be SAS or SATA
- Drives can be dynamically remapped to any server blade in chassis
- Allows for flexible # of drives / processor
- 5U Enclosure is segmented into two 35 drive JBOD's
 - 630 spindles in a 47U rack
- Each half of enclosure has multiple paths

Front View



Rear View



HP BladeSystem + Storage

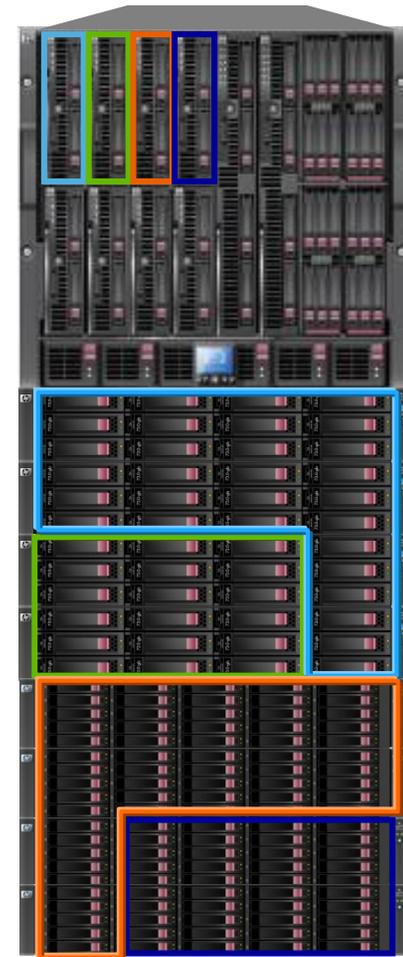
Coming in '08: Scalable Smart Array

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- Drive types can be SAS or SATA
- Drives can be dynamically remapped to any server blade in chassis
- Allows for flexible # of drives / processor

Target Market

- c-Class customers who require inexpensive DAS connectivity
- ASPs with Scale-out DAS application
- Enterprise customers with applications that utilize replication for high availability
- Applications (ex. HPC) requiring cheap, high sequential throughput



HP StorageWorks EVA4400

Highly scalable enterprise-class array—with virtualization at an affordable price

- Increased business agility
 - Ease of installation and configuration
 - Easy array management
- High-availability, continuous access features that reflect the value of data to your business
 - Robust local and remote replication capabilities
 - Support for instant recovery of data by keeping byte for byte copies
- Data protection
 - Keep applications online during backup
 - Consolidate backups by replicating data from multiple sites to one site



Accelerating to 10Gb Ethernet increased bandwidth and fabric consolidation

- Enable broad choice of vendors
- 10Gb KR on motherboards starting in July 2008
- Multiple Ethernet network consolidation with Virtual Connect



10Gb Ethernet Options

- 1Gb/10Gb interconnects

- Virtual Connect
- BNT
- Cisco (March 2008)



- 10Gb KR

mezz

- NetXen (3Q08)
- Broadcom (3Q08)



interconnect:

- Virtual Connect (3Q08)

- 10Gb KX4
mezz:

- NetXen
- Chelsio* (1Q08)
- NetEffect* (1Q08)
- ServerEngines* (1Q08)
- Teak – Neterion* (1Q08)
- Teak – NetEffect* (2Q08)



interconnect (double-wide module):

- BNT
- Teak* (2Q08)

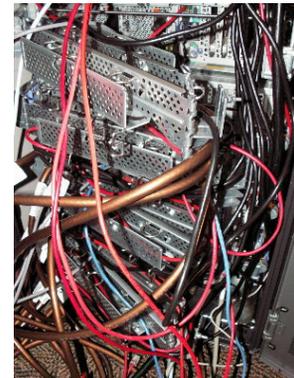
Virtual Connect

The simpler, more powerful way to connect

- Simplify networks

Reduce up to 94% of cables without adding switches to manage

Add up to 16 times more servers per SAN fabric

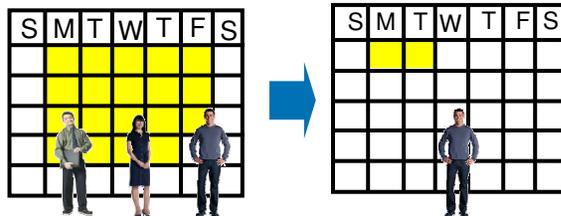
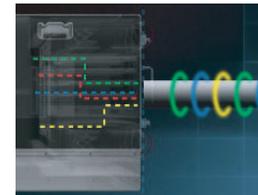


- Reduce Acquisition costs

Up to 38% savings in LAN connectivity costs vs. direct connections

- Simplify server connections

Cleanly separate server management from LAN & SAN management



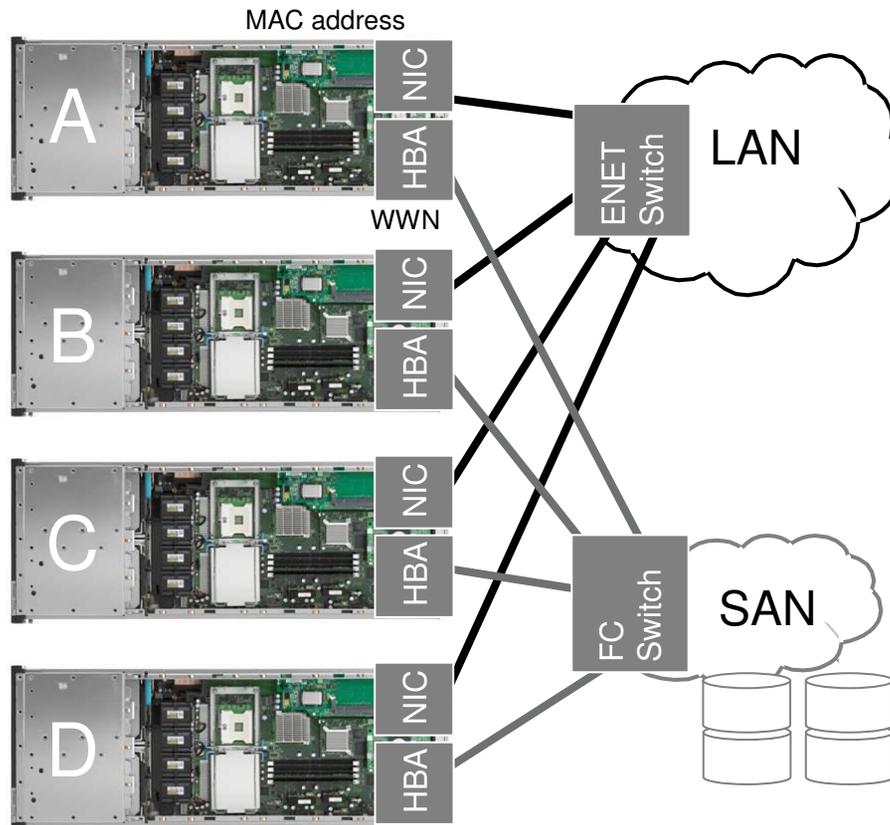
- Change server connections in minutes, not days or weeks

Add, move and replace servers fast—without affecting LANs or SANs

Server admin is self-sufficient

Everyone must follow the moving server

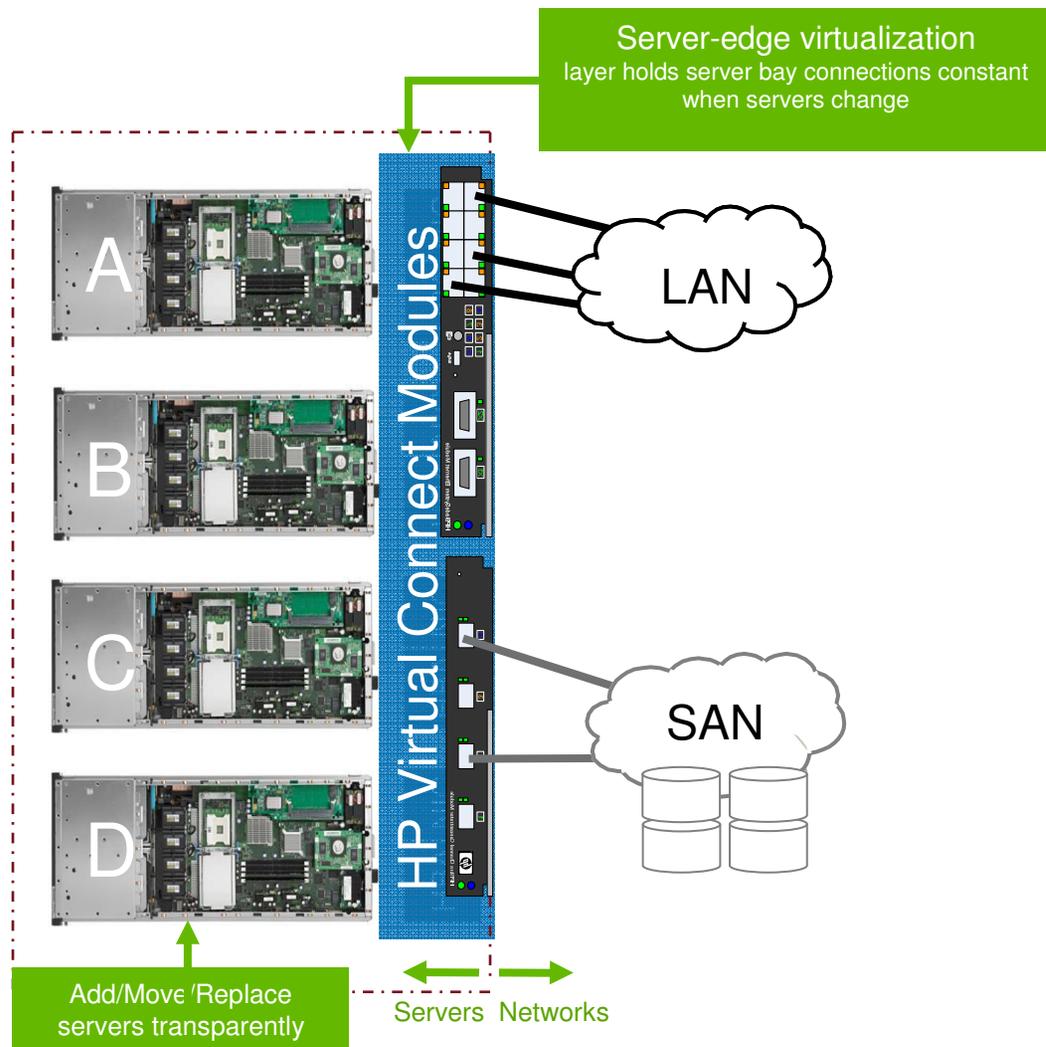
Traditional blade servers



- LANs talk to MAC addresses and SANs talk to World Wide Names
- When Server/NIC/MAC moves, LAN needs updating
- When Server/HBA/WWN moves, SAN needs updating
- Server maintenance demands coordination of server, LAN and SAN
- LAN and SAN admins must react to server movements, schedule actions

Process speed often depends on how many people touch it
a 30 minute task isn't done in 30 minutes, if 3 people and 3 days are needed to schedule it

Virtual Connect makes IT change-ready



Change servers when your business needs it, don't wait to fit it into everyone's calendar

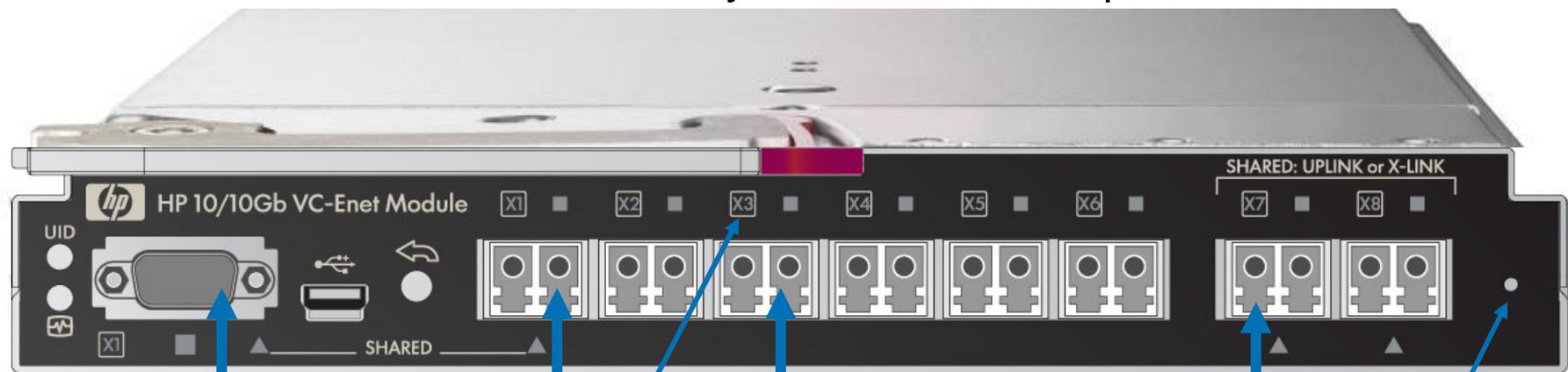
Pre-provision server connections to LAN and SAN an enclosure at a time. Provision server in minutes as they arrive.

Server admin performs add/move/change in minutes without LAN or SAN intervention, saving hours, days, or weeks

Server admin switches between test and production networks in minutes without LAN or SAN intervention.

Virtual Connect goes 10Gb

- An enabler for IT consolidation solutions
 - Consolidate multiple 1Gb fabrics into one Virtual Connect 10Gb
 - End to end iSCSI solutions
 - Virtual Machine scalability and bandwidth optimization



1x 10GBASE-CX5 Ethernet or
1x SFP+ module (X1)

5x SFP+ modules (X2-6)
(1GbE or 10GbE)

2x Crosslinks (midplane) or
2x SFP+ module (X7-8)

Port Number & Status Indicators

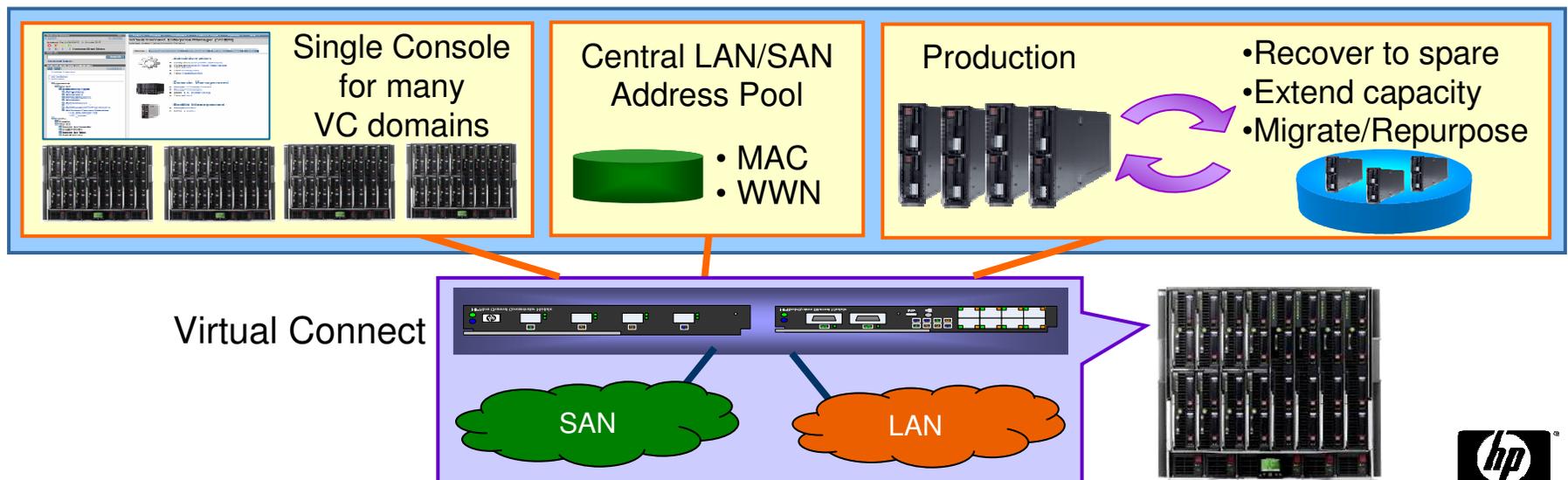
Indicates whether a data center link (green),
stacking link (amber), or highlighted port (blue).

Recessed
module reset
button



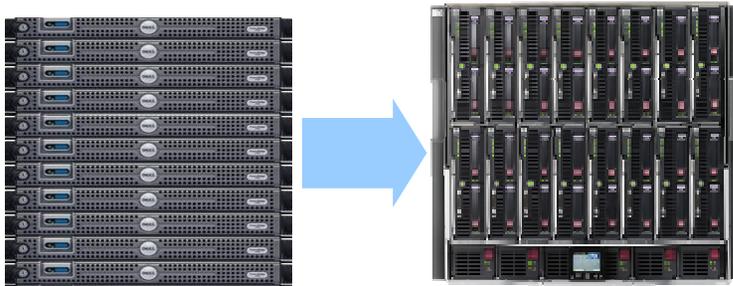
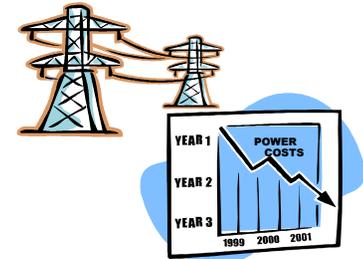
Virtual Connect Enterprise Manager

- Builds on and extends Virtual Connect technology and value
- Simplifies management of multiple Virtual Connect server environments
 - Central administration console and LAN/SAN address pool
 - Virtual Connect domain grouping
 - Rapid server movement between enclosures without impacting LAN/SAN



Thermal Logic Technology

- Reduce energy consumption up to 47% vs. traditional 1U servers – and CRAC power an additional 23%

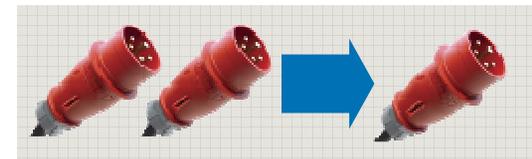


10 1U rack servers

16 blades servers

- Extend the life of the datacenter: up to 60% more servers in the same space, power, and cooling.

- Reduce datacenter power delivery capital expenses up to 89%
 - more servers per 3 phase circuit, rack



Thermal Logic Technologies

Energy Thrifty savings

Thermal Logic delivers savings to the bottom line

Customers win with HP Thermal Logic

36%

less power per sever

60%

less cooling

35%

quieter



16 1U servers

422 VA per server

(Intel 5140 dual-core)



Power:

6752 VA
@100% CPU Util.

Cooling:

768 CFM

Acoustics:

8.1 bels

16 HP c-Class servers

269 VA per server

HP BL460c

(Intel 5140 dual-core)



Power:

4304 VA
@100% CPU Util.

Cooling:

304 CFM

Acoustics:

7.4 bels

Assumptions:

- Same load/same configuration (2 x 5140 CPU w/4 DIMMs each running Prime95 @100%)
- CFM (Cubic feet per minute) of air (costs to run datacenter equipment for cooling are significant)

47. dia

GWT16

need to get latest slide with 47% savings

Gary Thome, 26/11/2007

Thermal Logic Innovations making every watt count

2006



Active Cool Fans

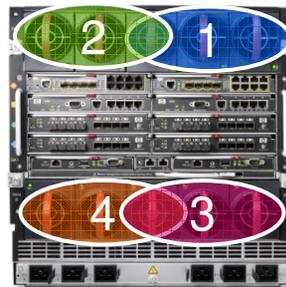
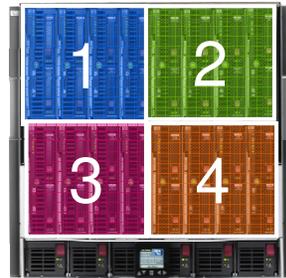
- 66% less power consumption than traditional fans
- 50% less data center AC required



3+3 Power Supplies

- High efficient 3 phase power delivery
- Dynamic Power Saver – shut off power supplies dynamically

1H2007

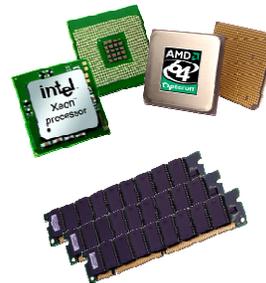


PARSEC cooling

- Zoned airflow and variable speed - minimizes power and airflow required

Cooling algorithm improvements

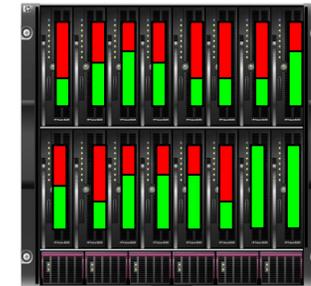
2H2007



Low power components

- DIMMs: ~25% savings
- CPUs

2008



Dynamic Power Capping

- Maximum power threshold set for enclosure; servers dynamically throttled to maintain peak
- Based on GWLM technology from Superdome

Fan efficiency improvements

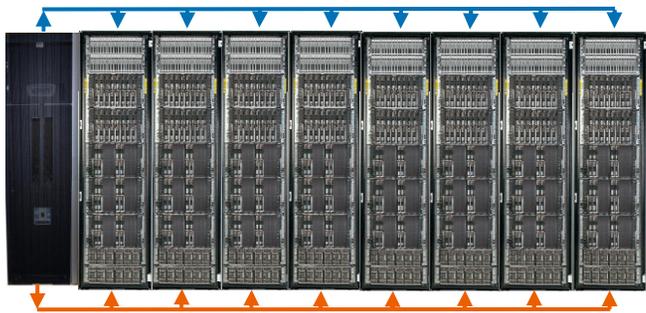
-48V DC Power Support

Power supply efficiency improvements



Thermal Logic technology extended to datacenter power distribution

HP Power Distribution Rack



HP Rackmountable Parallel 3 Phase UPS



More efficient power distribution across a row of server racks

- Connect to 3 phase power once and adapt power distribution as needs change
- More flexibility to assign and distribute power and reduce deployment time and labor cost
- Improve air flow with less cable clutter

Protect more servers for the same amount of power

- 97% efficient/50% less heat saving up to \$6000 per year over competition
- Stackable to support up to 60KVA

Flexible, modular, efficient means to power distribution

- Flexible approach to adding power distribution capacity when it is needed
- Enable adding capacity to otherwise full data centers
- High energy efficiency

Insight Control

Time-smart infrastructure management



Integrated Lights-Out (iLO 2)



Insight Display

Onboard Administrator



Systems Insight Manager and Essentials Software

Total Control

- Management control points at server, enclosure, and data center
- Physical and virtual, server and storage

Most Flexibility

- Manage and control from anywhere
- Monitor health, performance, power, version
- Point and click provisioning and deployment



Tangible Time and Cost Saving

- Simple setup and configuration in 5 minutes
- \$35,000 per 100 users over 3 years due to time saving, loss avoidance, and improved productivity (IDC)

Onboard Administrator built-in time-smart management

Simple setup of enclosure in 5 minutes or less

- Simple configuration wizard



Quick troubleshooting and repair

- Local and remote alerting
- Words and pictures isolate problems and recommend mitigation in seconds

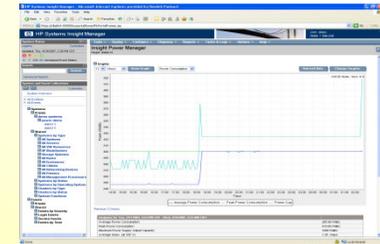
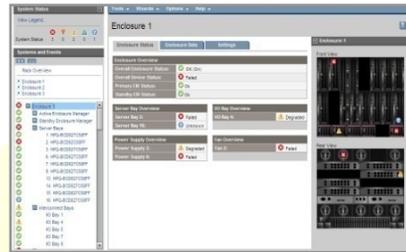
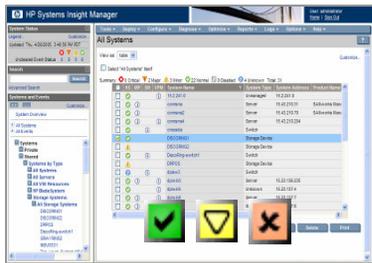
Robust remote virtual presence

- Remote graphical view of enclosures
- Continuous monitoring of enclosure status
- Graphical port-mapping visualization
- Role-based access



Insight Control Environment

Integrated Tools for Time-Smart Management

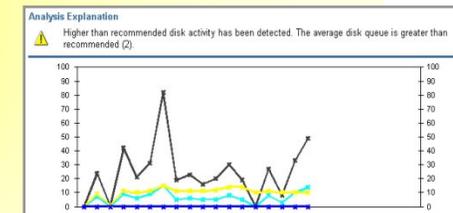
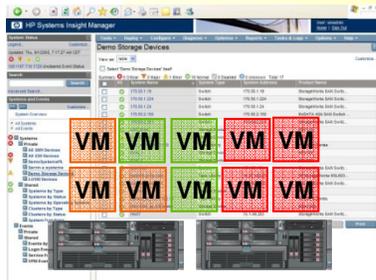


Graphical BladeSystem
Discovery, Monitoring
and Administration

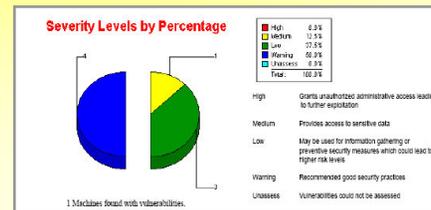
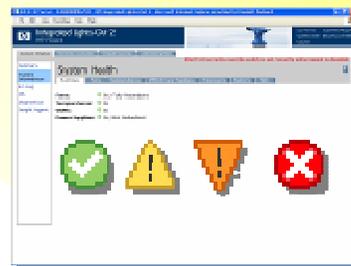
Remote Server and
OS Deployment

Power Management
and control

HP Systems Insight Manager
• Central management services



Unified Physical and
Virtual Management



Performance Management
and Bottleneck Analysis

Integrated Lights Out

Consolidated Vulnerability
and Patch Management

Building on the Adaptive Intrastructure *the intersection of key BladeSystem initiatives*

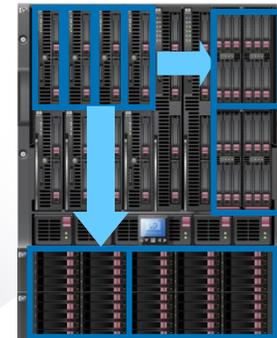
Server Blades



New diskless blades

Power & Cooling

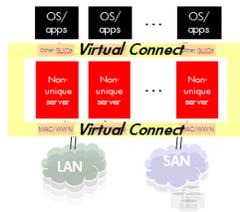
Blade Storage



Virtual Connect

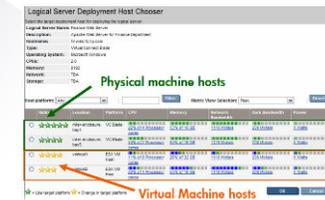
Virtual Connect enhancements

Server identities are completely fluid



**Integrated
by design**

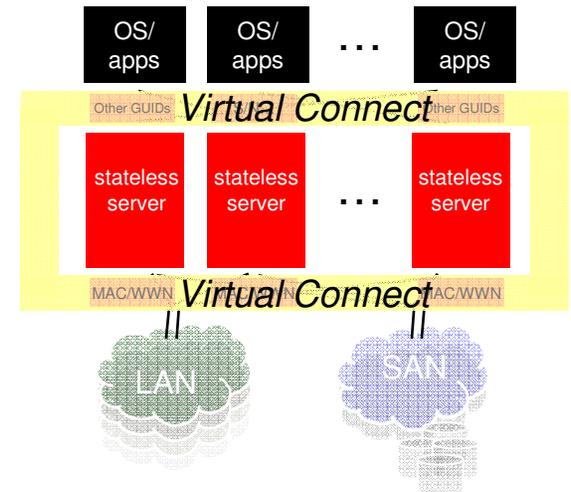
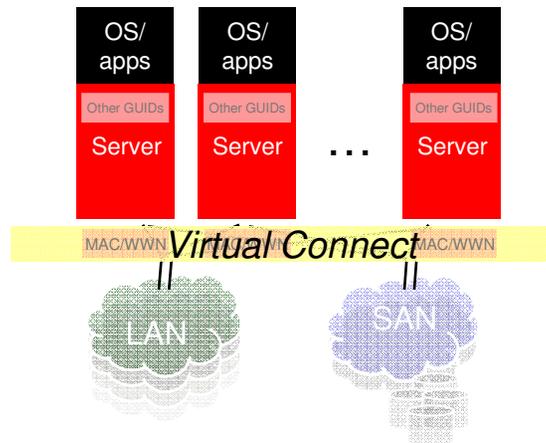
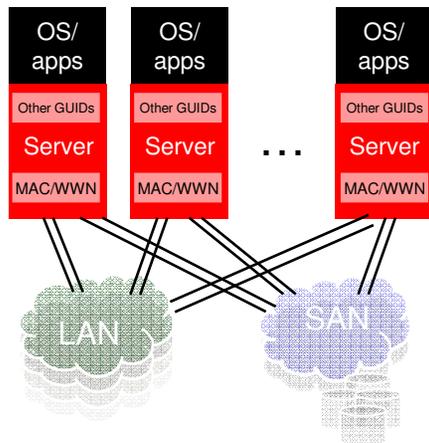
Management *Insight Control, SMP Virtual Server Environment*



Automation

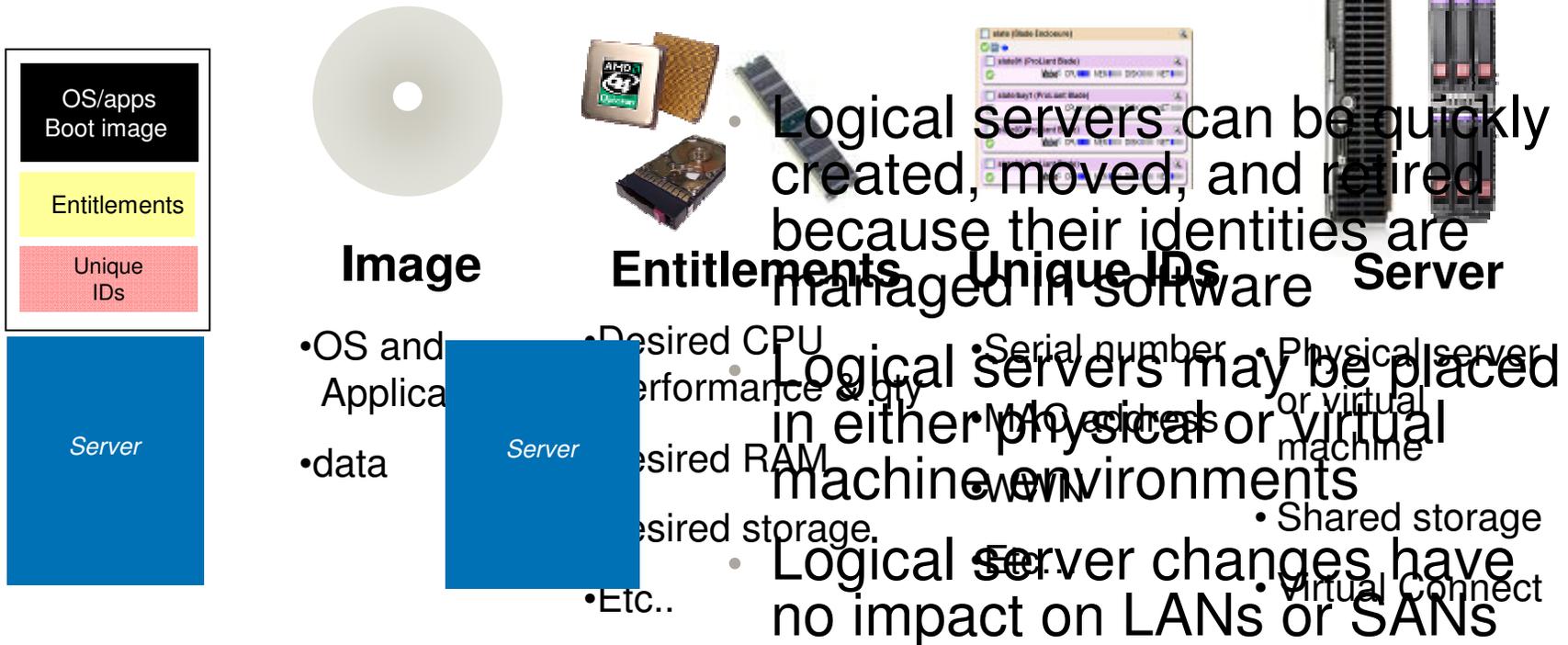
Future Opware integration

A logical progression, built-in



Introducing Logical Servers

HP logical server capability enables physical and virtual server identities to be easily provisioned and freely moved.



Logical Server
Live Logical Server
Reshape

Logical Server
Move



We will continue to optimize the BladeSystem infrastructure to improve these universal pain points



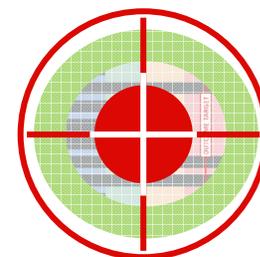
Time



Energy



Change



Cost



With ongoing focus on:
Thermal Logic
Virtual Connect
Insight Control

And continue to blade more IT infrastructure

A configuration for every organization

Whether your current virtualization needs are small, medium or large, we have a right-fit configuration built just for you

As your needs grow, you can seamlessly upgrade your solution however you prefer



HP BladeSystem Virtualization Solution Block

Sample small configuration

Storage

HP StorageWorks MSA2000sa

Applications

HP ProLiant BL495c Server Blades

- Messaging, enterprise resource planning (ERP), customer relationship management (CRM), etc.

• VMware Integrated Hypervisor

Core services

HP ProLiant BL495c Server Blades

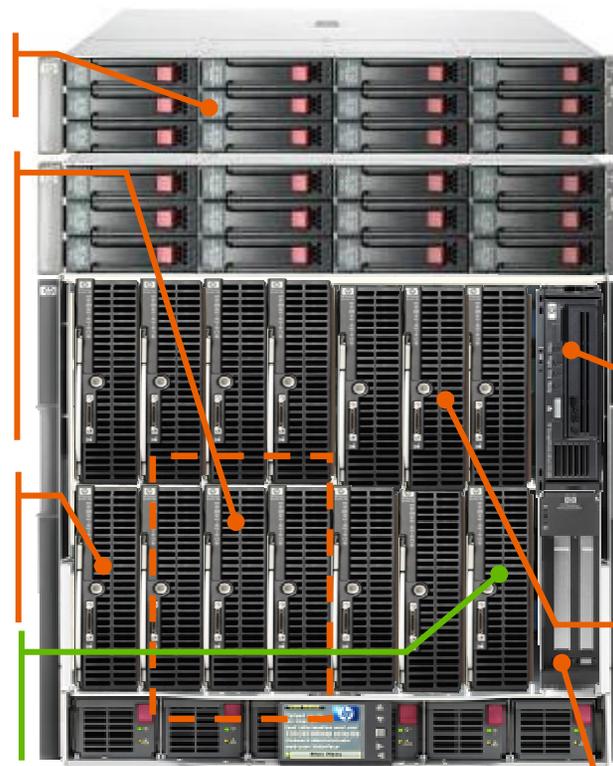
- Directory services, DNS, DHCP

Optional Servers

HP ProLiant server blade

- Additional applications

HP StorageWorks 3Gb SAS BL Switch



HP Virtual Connect (VC)

VC modules

- 2 or 4 VC 10 Gb Ethernet Module with Flex-10
- 2 or 4 VC 2 Gb Fibre Channel Module with HP Server Side NPIV

Business continuity

HP Ultrium tape blade

- HP Data Protector Express Software
- HP StorageWorks Storage Mirroring Software

Management

- HP Insight Control Environment (ICE-BL)
- HP Virtual Connect Manager
- HP PCI Expansion Blade

HP BladeSystem Virtualization Solution Block

Sample medium configuration

Applications

- HP ProLiant BL495c Server Blade
- Messaging, ERP, CRM, etc
- VMware integrated hypervisor

Core services

- HP ProLiant BL495c Server Blade
- Directory services, DNS, DHCP

Optional Servers

- HP ProLiant server blade
- Additional applications

Storage

- HP StorageWorks EVA4400

Management

- HP ProLiant BL495c Server Blade
- HP Insight Dynamics-VSE
- HP Virtual Connect Manager
- HP Insight Control Environment (ICE-BL)

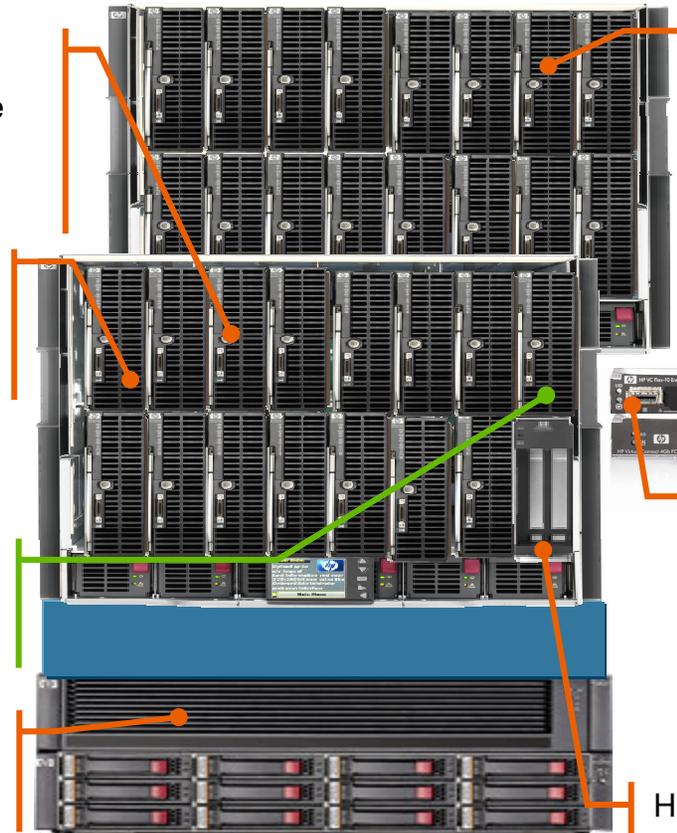
HP Virtual Connect

VC modules

- 2 or 4 VC 10 Gb Ethernet Module with Flex-10
- 2 or 4 VC 2 Gb Fibre Channel Module with HP Server Side NPIV

HP PCI Expansion Blade

For connection to HP MSL2024 1 LTO-3 Ultrium 920 SCSI Tape Library



Note: 2nd enclosure in separate domain

HP BladeSystem Virtualization Solution Block

Sample large configuration

Core services

HP ProLiant BL495c Server Blade

- Directory services, DNS, DHCP

Applications

HP ProLiant BL495c Server Blade

- Messaging, ERP, CRM, etc.
- VMware Integrated Hypervisor

Storage

HP StorageWorks EVA4400

Optional servers

HP ProLiant server blade

- Additional applications

Management

HP ProLiant BL495c server blade

- HP Insight Dynamics-VSE
- HP Virtual Connect Enterprise Manager
- HP Insight Control Environment (ICE-BL)

HP Virtual Connect

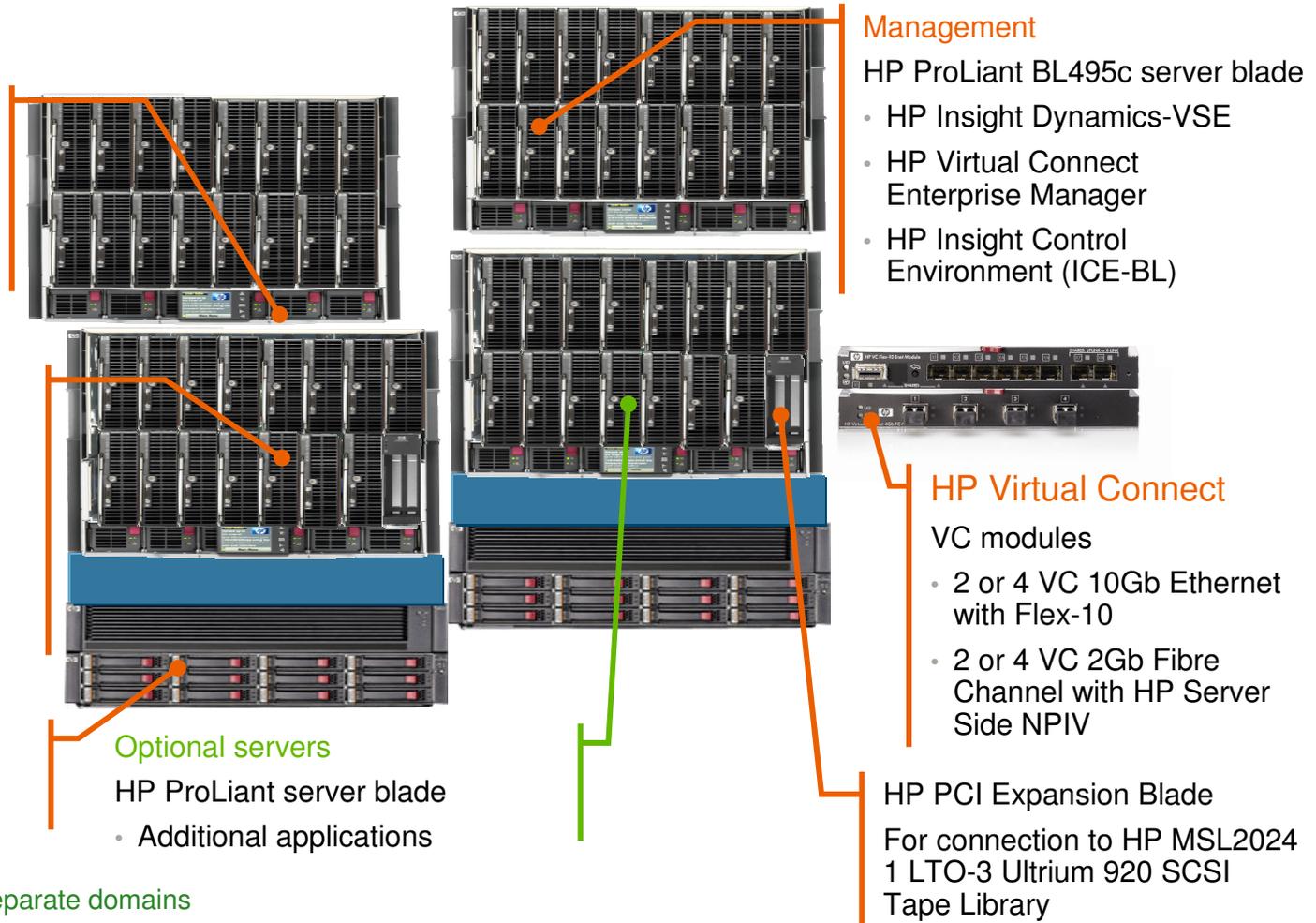
VC modules

- 2 or 4 VC 10Gb Ethernet with Flex-10
- 2 or 4 VC 2Gb Fibre Channel with HP Server Side NPIV

HP PCI Expansion Blade

For connection to HP MSL2024 1 LTO-3 Ultrium 920 SCSI Tape Library

Note: Enclosures in separate domains



Néhány szó az együttműködési lehetőségekről

- Online és offline tudásbázisok
- Tervezés, konzultáció, integráció, támogatás
- Speciális kedvezmények (pl. Blade Booster)
- Demo (meghatározott időtartamra és feltételek mellett, akár hosszabb távra is)
- Fejlesztői platform (ideiglenesen vagy véglegesen)
- Hozzájárulás az intézmény működéséhez

Köszönjük szépen!

