Quantifying the Value Proposition of Blade Systems

2194

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Common Questions?

what are the benefits of blades?

What's the value proposition?

Why do customers buy blades?

Blades vs. standard rack mounted servers? When should I buy one vs. the other?

Agenda

- What are blade systems?

- Why are they being adopted

- Comparing blades to rack-mounted servers

  - (Space, power, cabling, management, etc.)

- Sample Comparisons – blade systems vs. rack-mounted server systems

  - Acquisition costs

  - TCO & ROI – using a customer tailorable model

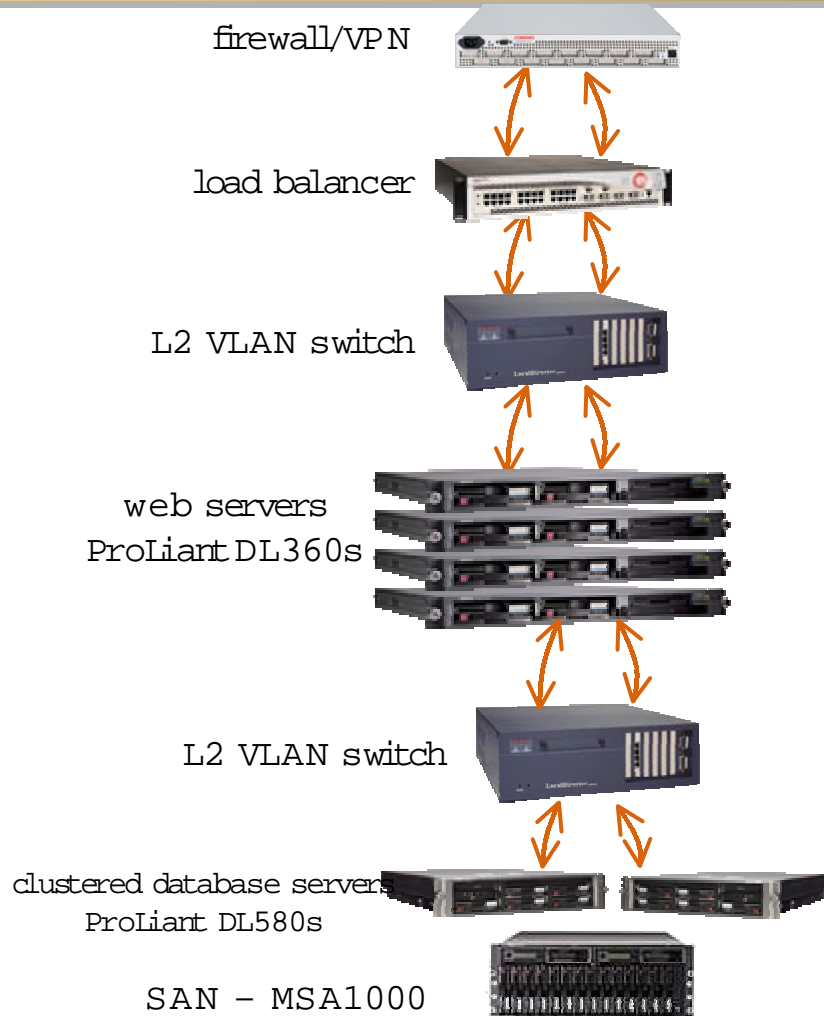- Summary

Blade Applications at HPworld?

- In the HP exhibit area:
  - Microsoft web hosting & automated provisioning using Windows 2003
  - Lotus Notes
  - Sendmail
- In the F5 Networks exhibit area
  - F5 Big-IP Blade Controller software
- In the Microsoft exhibit area:
  - Provisioning blades with Windows tools

- Other sessions & workshops:
  - Quantifying the Value of Blade Systems – 2194
  - Common Blade Solutions for the Adaptive Enterprise - 2195
  - Future Blade System Architectures (NDA) – 2371
  - ProLiant Clusters: deploying Blade Clusters – 2187
  - *Workshop:* Implementing Blade Clusters with MSA1000 – 2274
  - *Workshop:* Blades 101 – HP Blade server planning & deployment - 2275

Customer needs
drive a new server architecture...

- Rapid serviceability and continuous uptime
  - rapid deployment and redeployment tools
  - hardware and software
- Centralized management
  - servers, networking, storage, and applications
  - Centrally manage your data center 1 blade or '000s … anywhere…anytime
- Improve efficiency in datacenter management
  - Move to '000s of devices managed by each administrator
  - Improve server utilization
- **Flexibility & adaptability**
  - Dynamic resource allocation

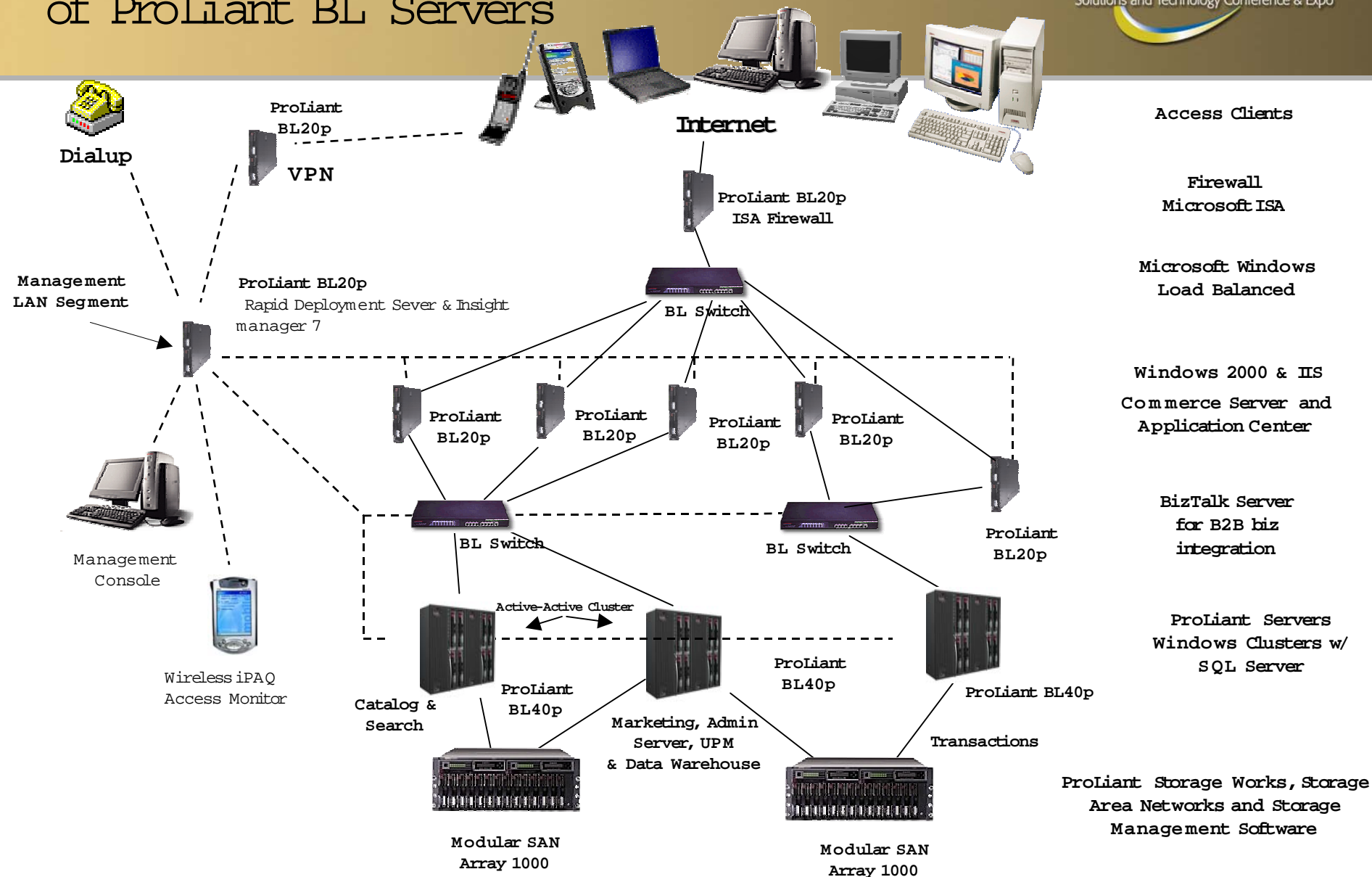# Blade systems: integration of servers, network, and storage

firewall/VPN

load balancer

L2 VLAN switch

web servers
ProLiant DL360s

L2 VLAN switch

clustered database servers
ProLiant DL580s

SAN – MSA1000

ProLiant BL10e

L2 VLAN switch

ProLiant BL20p
ProLiant BL40p

L2 VLAN switch

BL p-Class Power

Management
Servers

SAN MSA1000

rack-mounted server architecture

blade system architecture

E-Commerce Storefront Example Application of ProLiant BL Servers

Dialup

ProLiant BL20p

VPN

Internet

Access Clients

**ProLiant BL20p
ISA Firewall**

**Firewall
Microsoft ISA**

**Management
LAN Segment**

ProLiant BL20p
Rapid Deployment Sever & Insight manager 7

BL Switch

**Microsoft Windows
Load Balanced**

**ProLiant
BL20p**

**ProLiant
BL20p**

**ProLiant
BL20p**

**ProLiant
BL20p**

Windows 2000 & IIS

**Commerce Server and
Application Center**

Management
Console

BL Switch

BL Switch

**ProLiant
BL20p**

**BizTalk Server
for B2B biz
integration**

Wireless iPAQ
Access Monitor

Active-Active Cluster

**ProLiant
BL40p**

ProLiant BL40p

**ProLiant Servers
Windows Clusters w/
SQL Server**

**Catalog &
Search**

**ProLiant
BL40p**

**Marketing, Admin
Server, UPM
& Data Warehouse**

Transactions

**Modular SAN
Array 1000**

**Modular SAN
Array 1000**

**ProLiant Storage Works, Storage
Area Networks and Storage
Management Software**

TCO impacts across the lifecycle

Lifecycle stage	TCO impact of blades
Acquisition	Pay as you go – adding additional blades is less expensive than adding additional rack mounted servers; upgrade and replacement blades are also less costly
Planning	Blades require upfront planning, but pay off quickly in terms of savings for installing and managing new and redeployed blades
Deployment and provisioning	Hardware deployment is simple – plug blades into enclosure; Software deployment can be automated, image or script-based
Maintenance	Fewer service errors due to more streamlined modular architecture; Higher availability due to fewer components per server (i.e. power)
Upgrades and replacements	With software provisioning tools, upgrades and replacements are simply plug and play (no re-cabling)
Re-provisioning	Re-provisioning is a drag-and-drop event – this saves time and resources while maximizing hardware utilization

Blades promote standardization of hardware/software building blocks to lower TCO throughout lifecycle

What are the benefits?

- Saving datacenter space & power
- Lower connectivity costs & simplified cabling
- Fewer spare parts
- Save time in installation, upgrades, and maintenance
- Higher system availability
- Improve datacenter efficiency
  - Remote access for centralized management
  - Automated deployment & provisioning

Space?

- **Saving datacenter space__14% to 24%**

  - Cost per sq. ft of datacenter space - $1000 - $5000+ per year

  - Practical number of servers per rack.:

Blades	48
R-M servers	30 with switches

- **Range of datacenter costs:**

NYC	$5000 per sq.ft.
Houston	$1000 per sq.ft.

Power?

- ProLiant Power Calculators
  - Calculates wattage and BTUs for various ProLiant servers
  - http://h18001.www1.hp.com/partners/microsoft/utilities/power.html

- Example:
  - 8 DL360
  - 8 BL20p G2

8 DL360s	326w per server
8 BL20p & enclosure	307w per blade

- Model also calculates the cost savings in handling the BTUs saved

Cabling & Network connectivity costs?

Lower connectivity costs & simplified cabling

- Up to 25% of system admin's time is spent in cable management & cable failures are a prime cause of downtime – Giga Group
- Blade systems are wired once, and re-configured via VLAN software configuration tools

- Network Connectivity costs:

	8 R-M servers	8 ProLiant BL Blades
	16-32 downlinks cables	2-4 uplink cables
10-100 downlinks	$40-$150 Copper $65-$385 Fiber per port	$80 per switch port Copper or Fiber
GbE downlinks	$180-$1060 per switch port	$281 per switch port

Fewer parts?

Fewer spare parts; simpler daily management

- Blades have fewer options – memory & disks
- Blade architectures are designed for shared storage; i.e., all user changeable data should be on NAS & SANs
- Blade servers run OS & applications only…. facilitates standard server builds/images
- Back-ups are needed for NAS & SANs
- Blade disks are managed by software deployment tools, such as RDP….. Benefits: fewer errors in OS, patch, and application maintenance

Installation & changes?

Save time in installation, upgrades, and maintenance

- Rack & wire once! Re-configure with software tools
- Move from days to minutes to add and re-configure servers, network ports, cables, and disk capacity
- Blade systems are a <u>catalyst</u> to improving datacenter ratios (devices managed per administrator)

Datacenter efficiency?

Blade systems are a <u>catalyst</u> to improving datacenter ratios (devices managed per administrator)

- Reduce the need to touch every device in the datacenter
- Adopt new management tools (configuration, software deployment, automated provisioning, etc.)
- Centralize the management of multiple data centers
- Merge separate management domains (servers, network, storage)

Today 900 devices	15 to 1	$6M per year
Tomorrow	30+ to 1 100 to 1* *-some ISPs are at this ratio*	$3M per year

Availability?

Higher system availability

- Blades are fully redundant
  - Dual VLAN switches per blade enclosure
  - Redundant & shared power systems across all blades in a rack
  - Redundant backplane data paths (Ethernet & FC SAN)
  - Redundant local disks (RAID 1)
  - Redundant fans
  - Rip & replace server maintenance (via enclosure slot & via software deployment tools, like RDP)

TCO Model

Spreadsheet model available from
your HP representative

Blade TCO Tool

The BL20p TCO tool is a spreadsheet based model that creates a 3 year TCO (based on an NPV) for 2P blade servers and a comparative value for 1U rack mounted servers (example: DL360).

The tool uses customer specific data (labor rates, pricing, power costs, etc) combined with rack configuration rules to create a specific answer for each customer. A key benefit of the tool is it's ability to create "what if" scenarios to aid in the decision making process.

The tool is revised monthly as variables change and as additional functionality is added.

- Available from your HP sales representative

Quantifying the Value Proposition
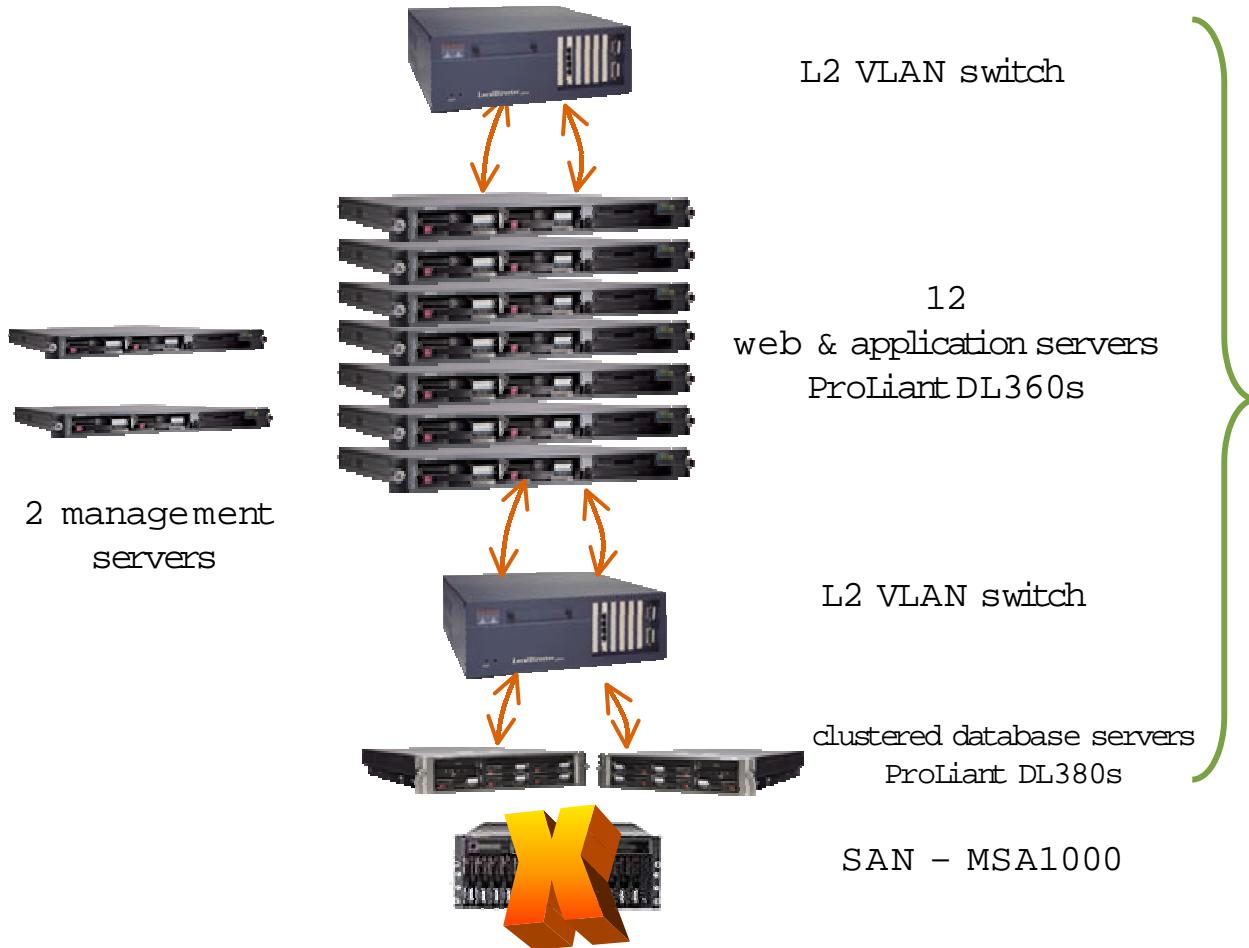
Two modes:

- <u>Acquisition costs</u>
  - Cost of hardware only
- <u>Total Costs of Ownership (NPV)</u>
  - Hard costs: acquisition, space, & power
  - Soft costs: labor savings, efficiency gained, maintenance & upgrades, etc.
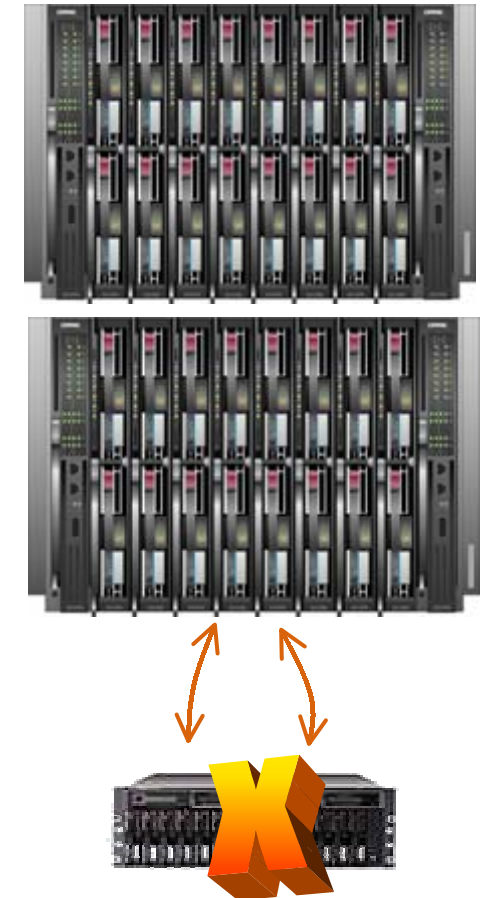
Switch view to the model

During today's presentation, we'll run these model comparisons:

1. 100 servers with SAN connectivity
2. 100 servers without SAN connectivity
3. Let the audience choose a scenario!

Examples – 16-100 2p servers, 4 switches, & SAN

L2 VLAN switch

12
web & application servers
ProLiant DL360s

2 management
servers

L2 VLAN switch

clustered database servers
ProLiant DL380s

SAN – MSA1000

rack-mounted server architecture

blade system architecture

Blade TCO Model

100 server comparison
With SAN

(Switch screen to Spreadsheet model)

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Blade TCO Model

100 server comparison
without SAN

(Switch screen to Spreadsheet model)

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Summary

- Looking only at <u>Acquisition costs</u>:
  - Blades are less costly at 5 or more Servers (with SAN connectivity)
  - Blades are less costly at 22 or more Servers (without SAN connectivity)

- Looking at <u>TCO Comparisons</u>:
  - Blades are an excellent driver of improved datacenter management productivity!
  - Blades should become your organization's catalyst for "improving datacenter efficiency"!

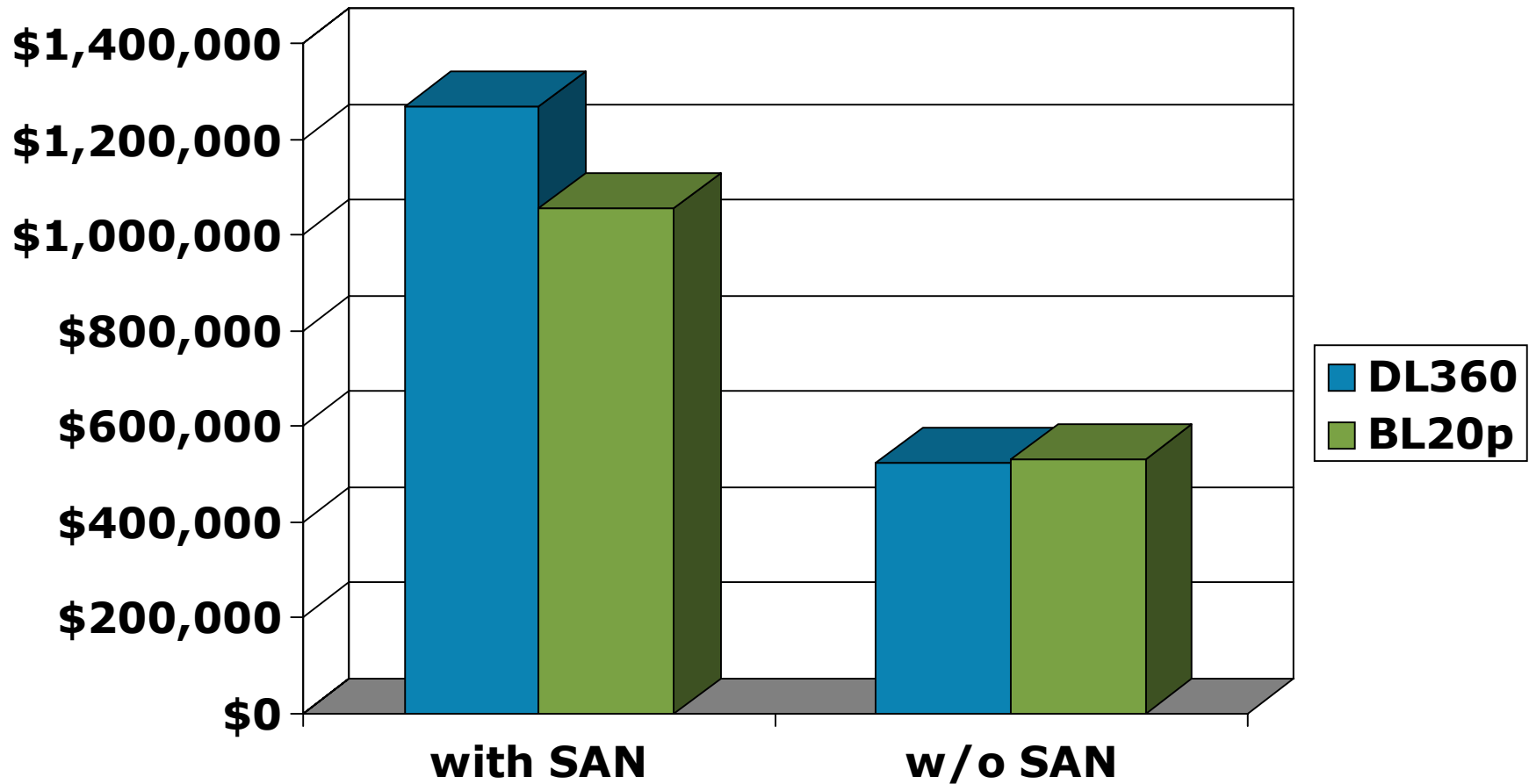Interex, Encompass and HP bring you a powerful new HP World.
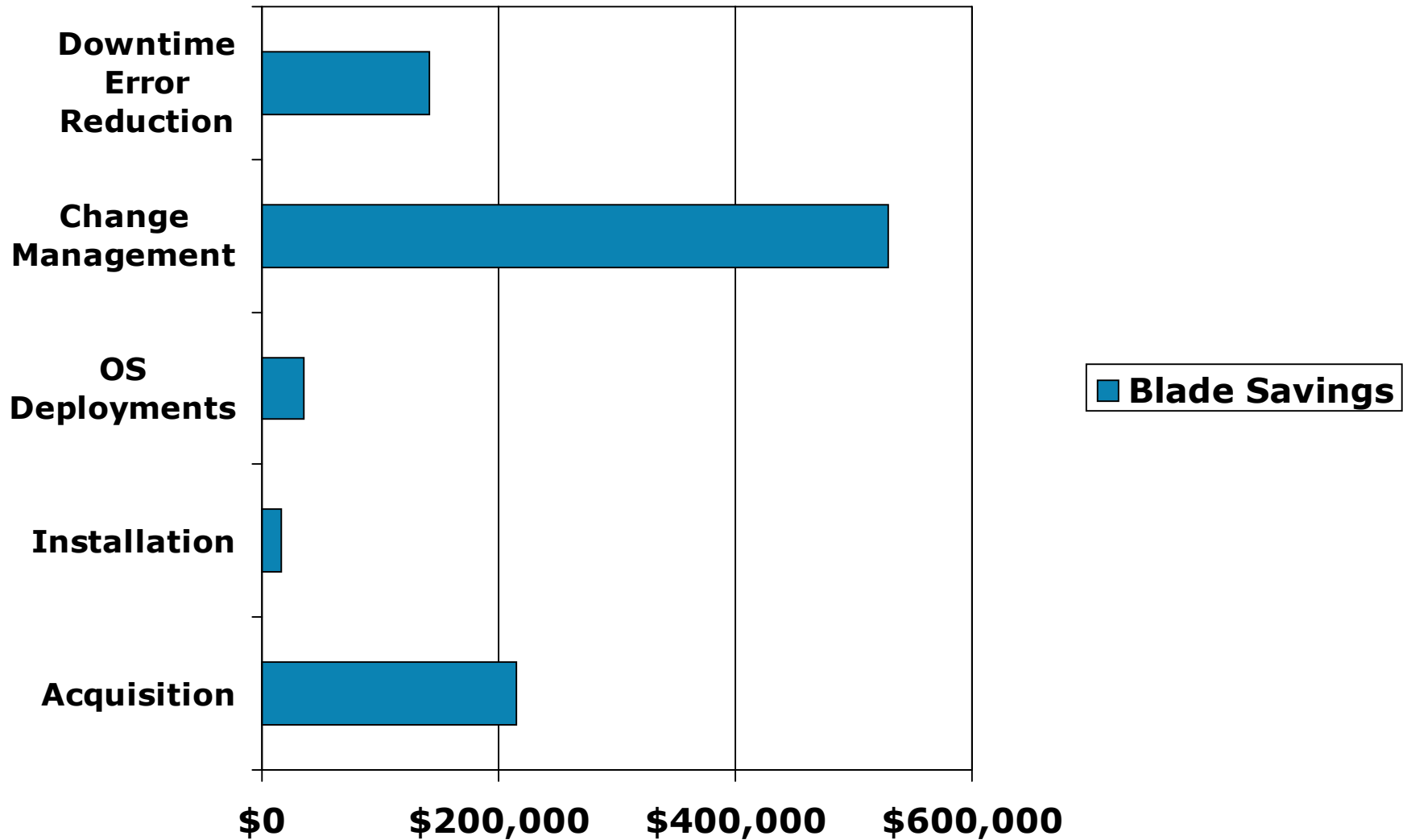
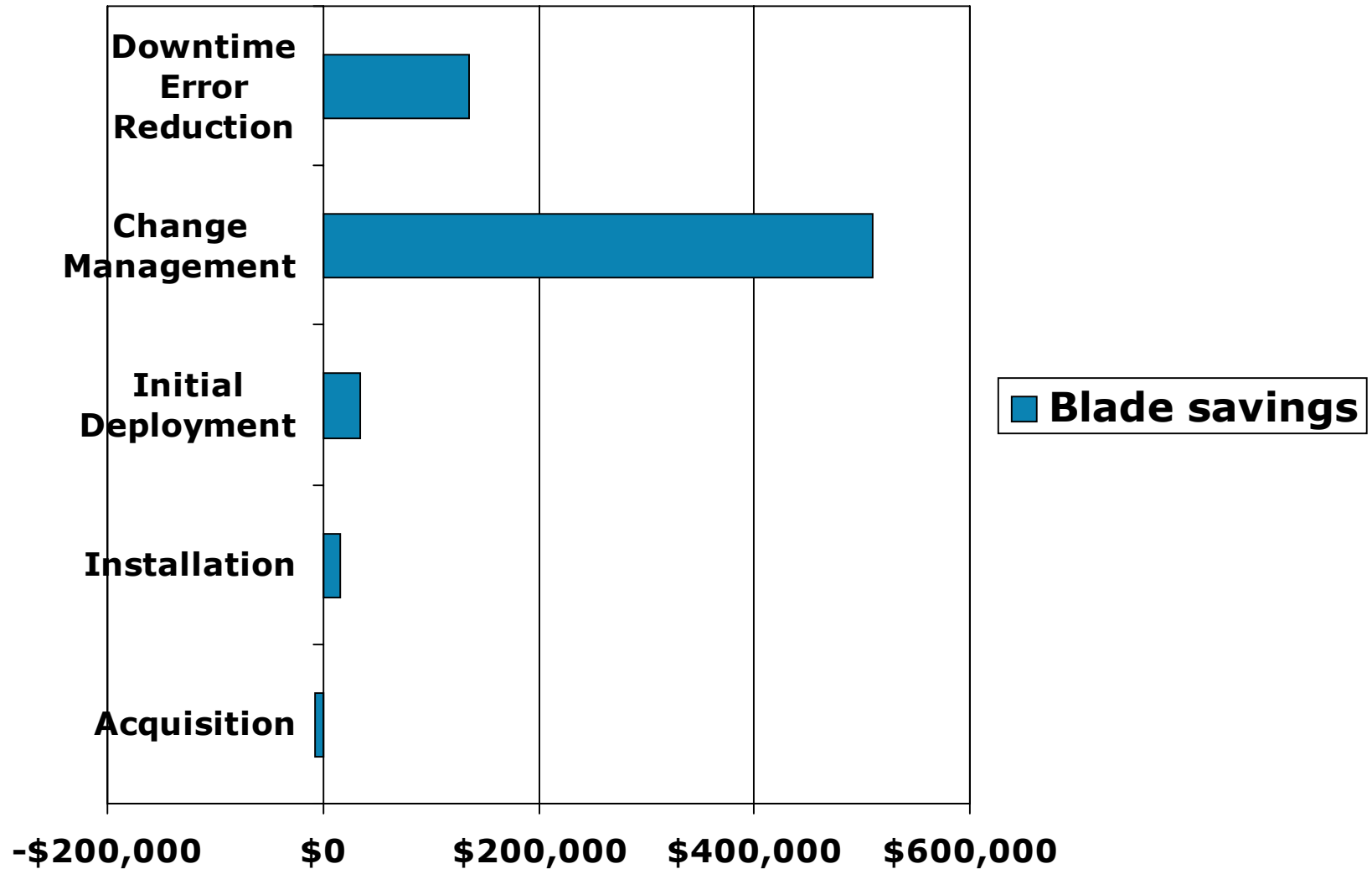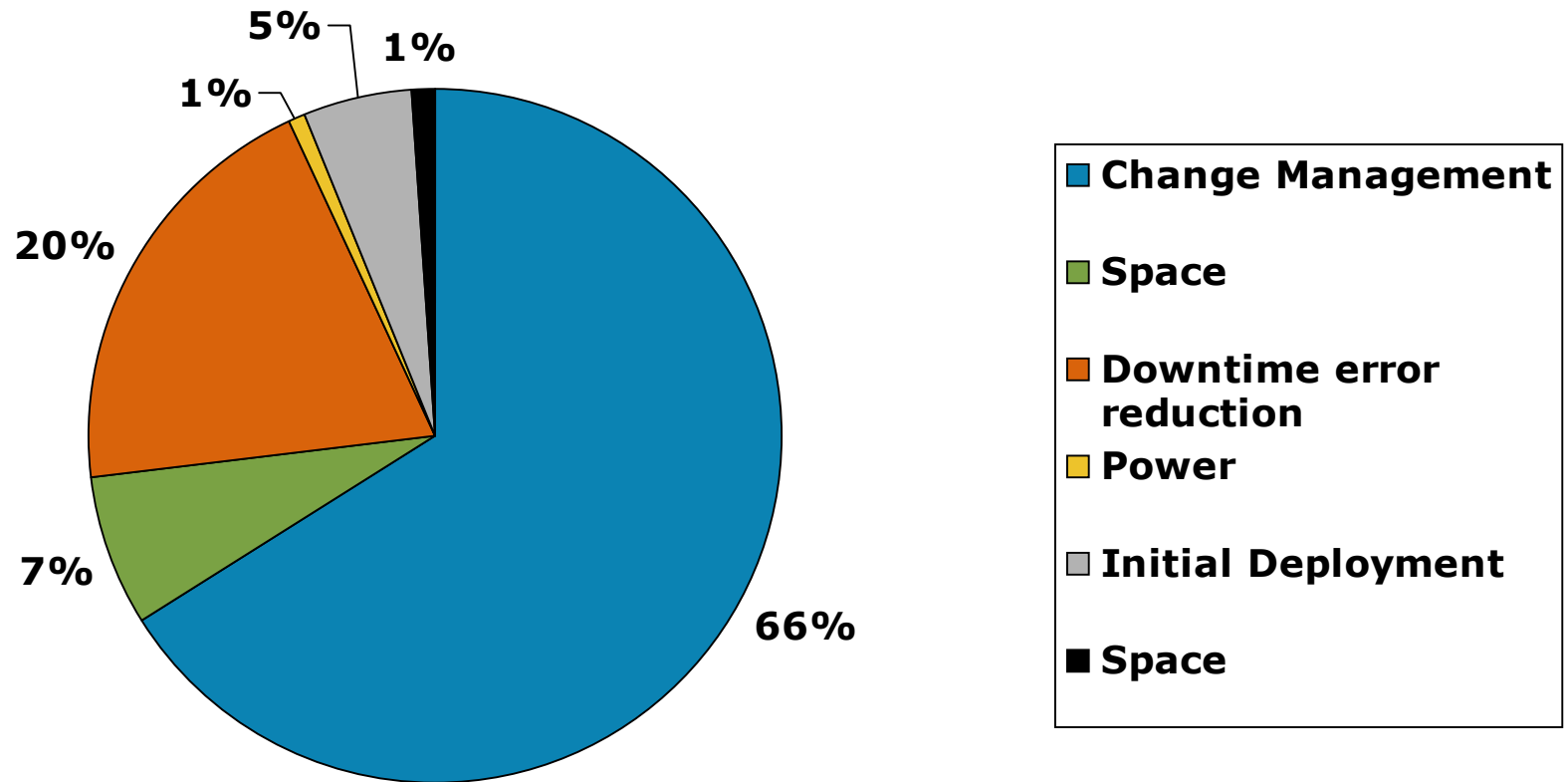# Back up Slides

Acquisition Cost Comparisons – 100 Nodes

First Year TCO components – 100 servers BL20p G2 with SAN vs. DL360

First Year TCO components –100 servers BL20p G2 w/o SAN vs. DL360

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Bar chart — Blade savings by category:

Category	Blade savings (approx.)
Downtime Error Reduction	~$130,000
Change Management	~$500,000
Initial Deployment	~$40,000
Installation	~$20,000
Acquisition	slightly negative

X-axis: -$200,000 $0 $200,000 $400,000 $600,000

Legend: ■ Blade savings

First Yr. Blade savings - %

Pie chart:
- Change Management: 66%
- Space: 7%
- Downtime error reduction: 20%
- Power: 1%
- Initial Deployment: 5%
- Space: 1%

Legend:
- ■ Change Management
- ■ Space
- ■ Downtime error reduction
- ■ Power
- ■ Initial Deployment
- ■ Space

ORACLE

Various Oracle Clients
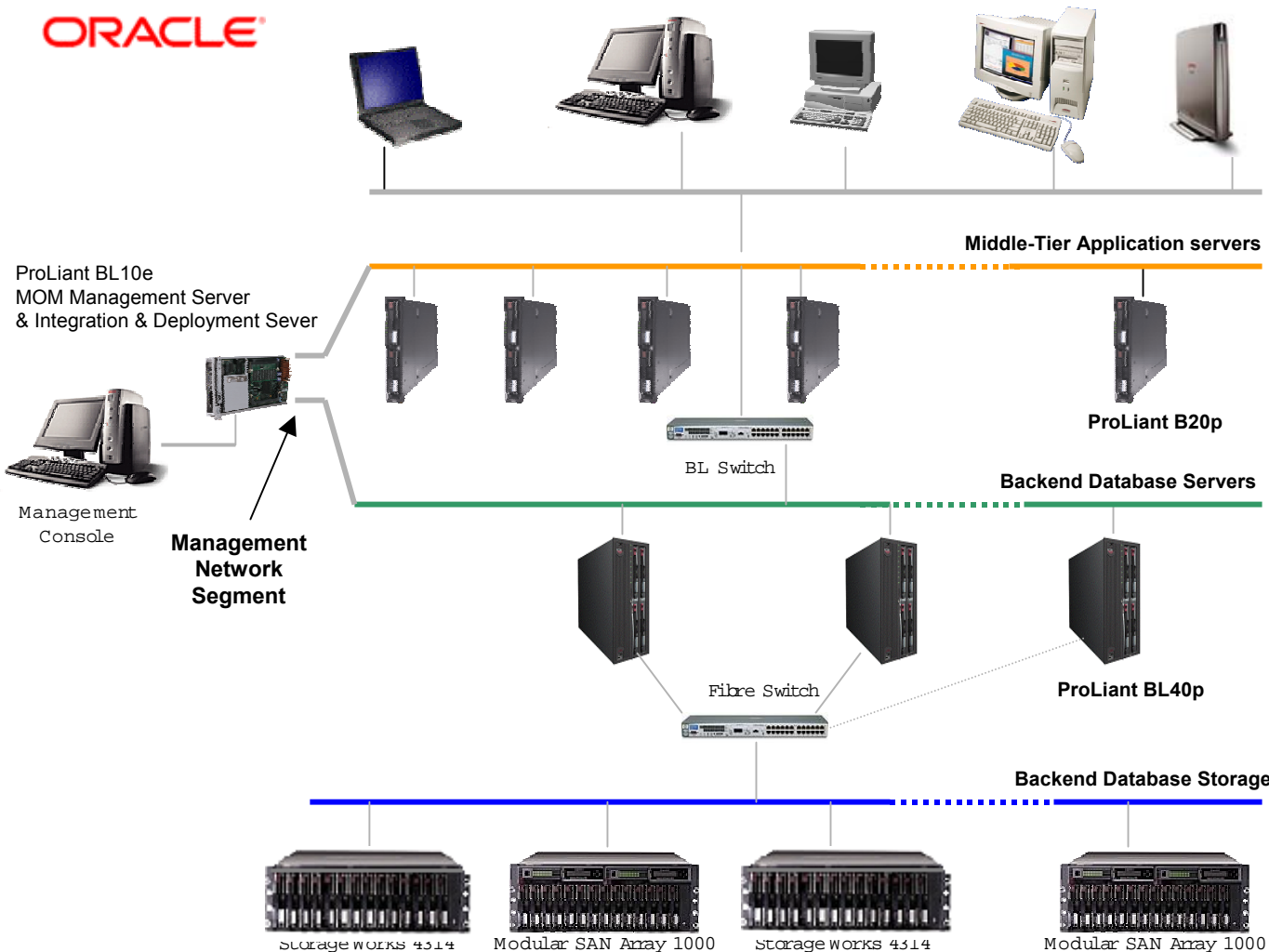
Middle-Tier Application servers

ProLiant B20p Servers Provide a Highly Scalable Middle-Tier for Oracle 11i Application Servers

ProLiant BL10e
MOM Management Server
& Integration & Deployment Sever

Management Console

Management Network Segment

ProLiant B20p

BL Switch

Backend Database Servers

Backend Oracle 9i Real Application Clustered Database using 2 or more ProLiant BL40p servers

Fibre Switch

ProLiant BL40p

Backend Database Storage

Easily Expandable Oracle 9i Database Storage based on ProLiant StorageWorks

StorageWorks 4314   Modular SAN Array 1000   StorageWorks 4314   Modular SAN Array 1000