Rapid Deployment Pack and Blade Servers – Cradle to Grave

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Agenda

- Blade Hardware Overview
- RDP – What's New
- Lessons Learned
- Tips and Tricks

HP Blades, Next Logical Evolution

- First complete portfolio, incl. first 4P blade
- #1 Windows/Blades
- #1 Performance in SAP, SPECweb99_SSL, Exchange

Optimized for change & scale
- Resource provision
- Auto recovery
- Dynamic scaling

Over 65K server blades sold!

Space saving scale-out
- Embedded technologies
- Management by groups
- Remote deploy & manage

#1 rack-optimized x86 servers

#1 Windows & Linux

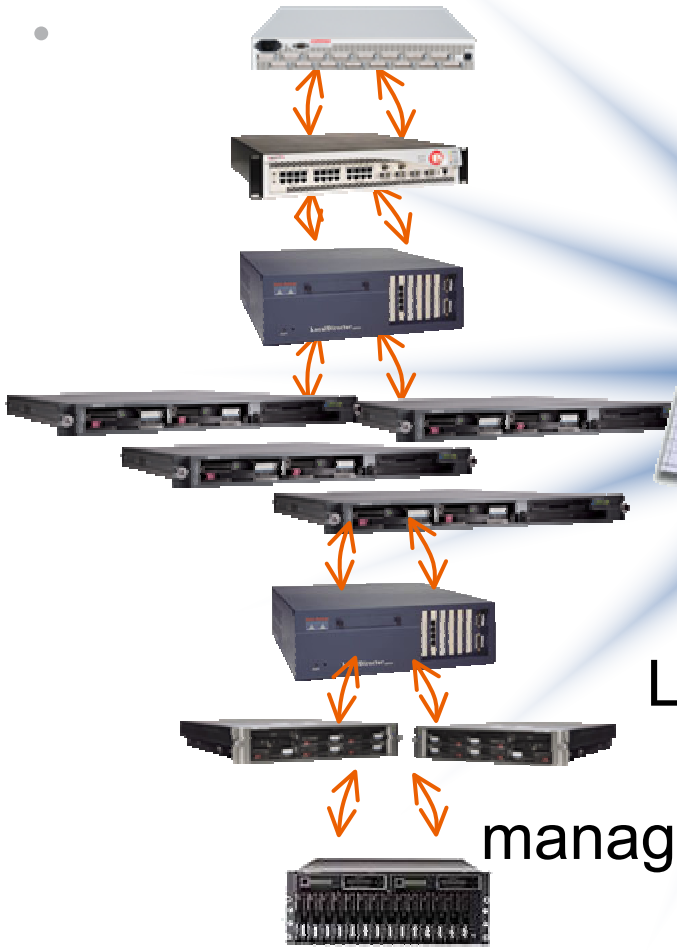
Harness the power of standards
- First x86 server: SystemPro
- Price:performance servers
- Standards, best of breed

#1 x86 servers

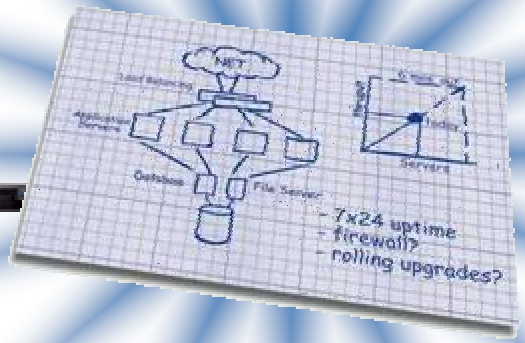
Over 7M servers sold!

1989 2004

HP Blade Systems: Integration of Servers, Network, and Storage



access tier
application tier
data resource tier



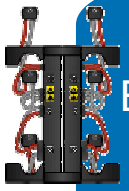
firewall/VPN
L2 VLAN switch
load balancer
management & deployment

rack-mounted server architecture

blade system architecture

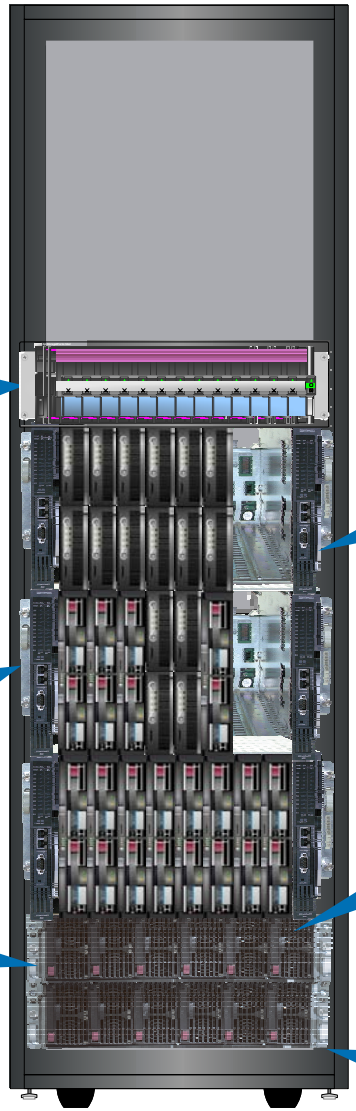
Centralised Power Solution.

Future Systems Compatibility & Capability
Later generations compatibility with power systems

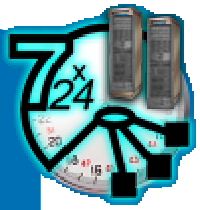


Secure, Safe, Scalable Enclosure Power Feeds
Bus Bars offer highly available and scalable enclosure feeds

Dramatic Power & Heat Reduction
Typically 30% less than Similar traditional servers



Visualization and intelligent power management
Systems Insight Manager
Complete systems control



N+1 Power Redundancy
iLO, Structured power redundancy through out enclosures

Wholesale Power Cable Consolidation
4 power leads can power up to eighty blade servers

HP Server Blade Portfolio
designed for adaptive, multi-tiered architectures

1P

BL10e (BL e-Class)
- Maximum density blades for scale-out solutions
- Front-end web and infrastructure applications

2P

BL20p (BL p-Class)
- Performance 2P blade designed with enterprise availability
- Mid-Tier Applications Server Blade

New

BL30p (BL p-Class)
- Optimized for compute density and external storage solutions
- Mid-Tier Applications Server Blade

4P

BL40p (BL p-Class)
- High performance 4P blade designed for mission-critical applications
- Back-end Server Blade

Intel Inside XEON & AMD 64 Opteron

Proven, reliable, and powerful x86 processor architecture

HP WORLD 2004 Solutions and Technology Conference & Expo

ProLiant BL20p G2

Dual port fibre channel mezzanine card available for SAN storage

- Up to two high-speed 3.06GHz/533MHz Xeon processors
- Up to 8GB max ECC DDR memory
- All three NICs Gbit capable (10/100/1000)
- Advanced version of Integrated Lights-Out (iLO) for remote graphical console and virtual media support
- USB Support (Local Floppy, CD, KVM, etc)
- Internal drive capacity, up to 292GB
- Choice of Patch Panel or GB Switch for Network connectivity

Currently Available

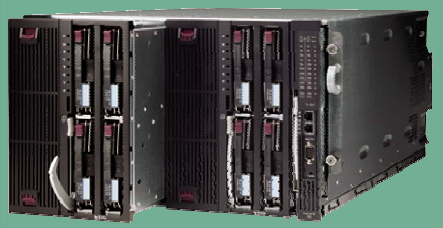
Performance dual processor server blade designed with enterprise availability

ProLiant BL40p

First 4-way server blade engineered for the back-end enterprise space

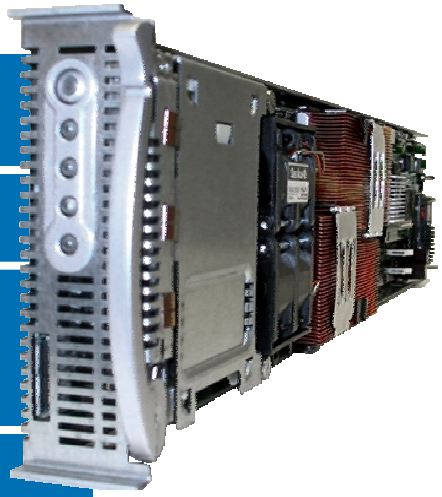
- Features up to four Xeon MP 3.0GHz/4MB L3 or 2.2GHz/2MB L3 processors
- Up to 12GB max ECC DDR memory with online spare
- Integrated Smart Array 5i Plus and four hot plug SCSI drives
- USB Support (Local Floppy, CD, KVM, etc)
- Advanced version of Integrated Lights-Out (iLO)
- Two PCI-X slots for redundant Fibre Channel connectivity to take full advantage of external networked storage

Currently Available



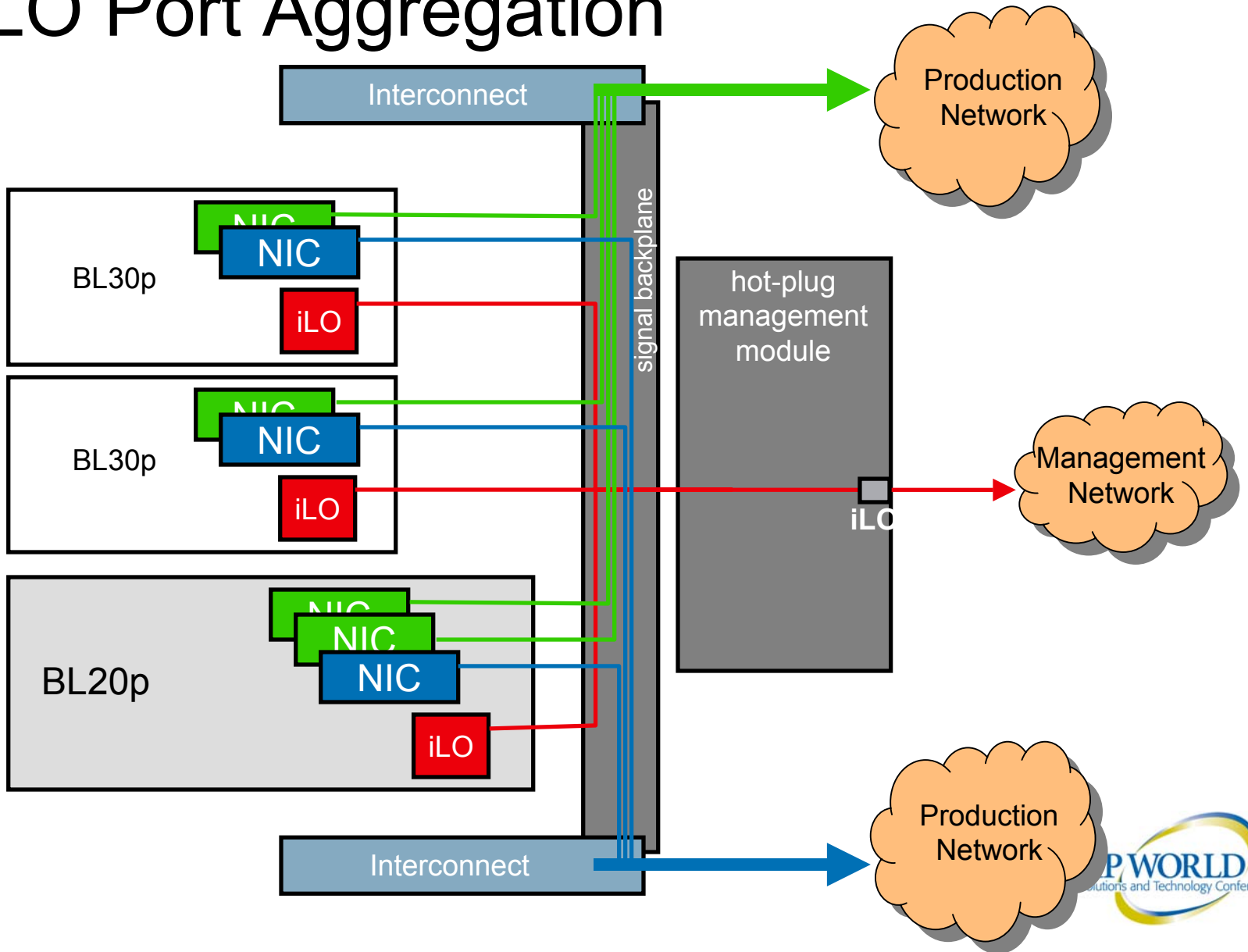
High performance 4-way server blade powering mission critical back-end applications

BL30p Blade Spec Summary



Form Factor	16 blades per 6U enclosure (required sleeve holds 2 blades)
CPU Capacity	Dual processor capable
Processor	Prestonia 533 front-side bus 3.06 GHZ / 512K L2 cache 3.2 GHz / 2M L3 cache
Memory	PC2100 DDR 1GB std (1x1GB) / 4GB max using 2 sockets Flex Memory enables interleaving with 2 DIMMs
Internal Storage	Optional, up to two (2) 60GB small form factor ATA, non-hot-plug
RAID	Set in OS only; BIOS setting allows both HDDs to be bootable
Management	integrated Lights Out (iLO) with Advanced Pack features
NICs	(2) General purpose 10/100/1000 NICs plus one 10/100 for iLO
FC SAN Support	Dual-port FC adapter option (QLogic ISP2312)

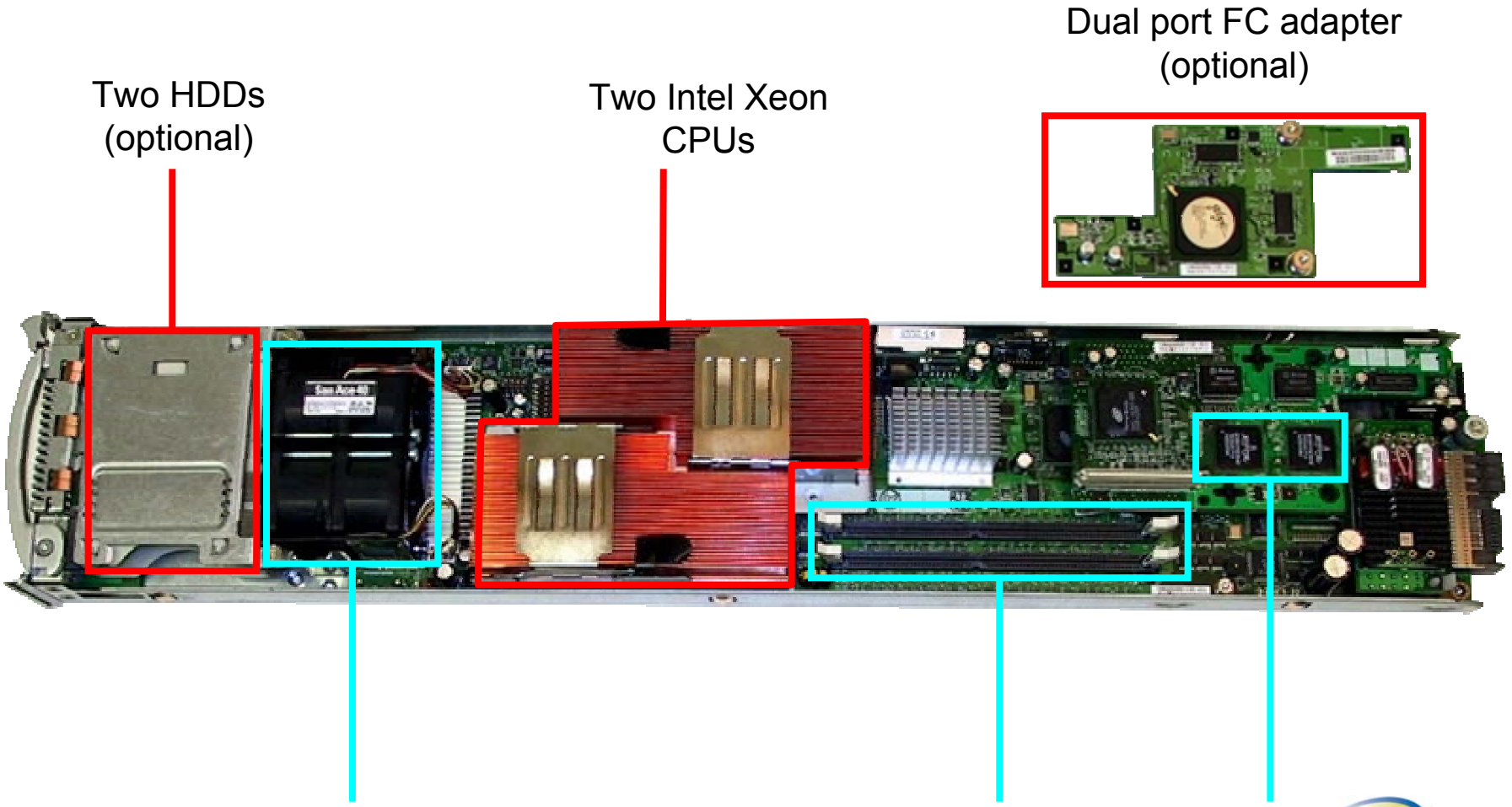
iLO Port Aggregation



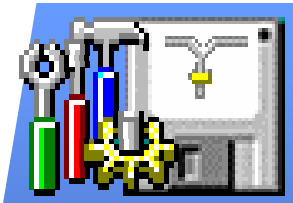
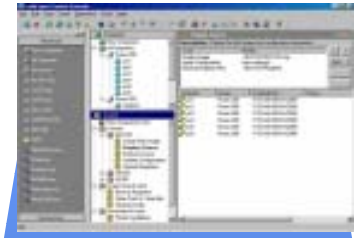
Blade Sleeve

- Sleeve is required to support BL30p
- Sleeve fits a single p-Class server blade bay and holds 2 BL30p blades
- Enables 16 double-dense blades per enclosure – up to 96 per rack!

BL30p Features



Deployment Positioning

SmartStart CD	SmartStart Scripting Toolkit	Rapid Deployment Pack
		
single server	multiple server	multiple server
interactive, assisted install	automated with boot disk required	automated from remote console
interview-based or replication	customer-created scripts	pre-packaged deployment events

What is Rapid Deployment Pack?

Joint HP and Altiris solution

Automates the process of deploying and provisioning server software

- Altiris Deployment Solution for servers for Windows or Linux
- ProLiant Integration Module - includes optimizations for ProLiant servers

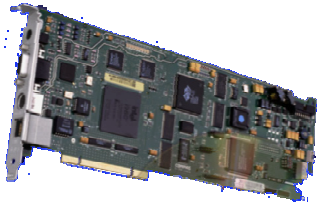
- A software option that can be purchased along with ProLiant servers
- Available in two packages
  - Windows Edition: hosted by Windows server and deploys Windows and Linux
  - Linux Edition: hosted by Linux server and deploys only Linux
- 7-day evaluation license built into every CD
- Additional 30-day evaluation license available from www.hp.com/servers/rdp download

Extending ProLiant Server Support

ILO and RILOE integration

Integrates with HP Lights-Out functions for power control and console interface

- browse directly to an iLO/RILOE system from the deployment server console



SAN Support

- *How To* Guide for deploying SAN drivers and support software on ProLiant Blade Servers
  - SAN HBA drivers
  - Fibre Channel Setup
  - Install Secure Path
  - Driver support connecting to HSG80, EVA, XP
  - Boot from SAN - www.hp.com/servers/rdp/kb search for “SAN”

What's new in RDP Windows Edition, Release 1.60?

New Server Support

- ProLiant BL30P
- DL585

New OS Support

- Red Hat Enterprise Linux 3 Update 2 Scripted Installation
- RHEL 3 Imaging
- RHEL 2.1 Update 4

Misc

- SSST 2.4
- PSP 7.10
- SAN and BfS drivers are integrated
- Virtual R/E/B with mixed server types
- Improved WEB Console

Competitive Comparison

	HP ProLiant BL	IBM
Power Redundancy	Redundant AC inputs Redundant power supplies Non-redundant DC	Redundant power supplies and AC Switches, mgmt module and blowers rely on A-side DC
Blade Storage Options	SCSI ATA FC SAN	SCSI ATA FC SAN
Maximum 42U Density	**96 blades (non-redundant power)** 80 (redundant power)	84 blades
Simultaneous remote mgmt sessions	**Any**	1 per enclosure
# PDUs Needed	**0**	Up to 16 (16 x $2000 that is)
Facility DC Connectivity	**Yes**	No
Backplane Design	Completely passive; Each bay has breaker protection	Active backplane (over 200 components); Bays are not breaker protected

HP versus IBM

- HP offers SAN connectivity with redundant local disks
  - IBM offers either SAN connectivity OR redundant local disks
- HP offers SCSI drives with no change in form-factor
  - IBM has a 1U per blade cost to use SCSI
- HP has AMD on the roadmap
  - Intel resells Bladecenter making an AMD future bleak
- HP consistently wins SAP and Exchange benchmarks
- HP ships with 3 GB NICs standard
  - IBM charges for the 3rd NIC (and no SAN connectivity if you do)
- HP is shipping the same original Power Supplies
  - IBM is revving up for its 4th generation of Power Supplies
- HP has certifications for all major SAN vendors (even IBM!)
  - IBM has certified IBM Storage

Lessons Learned

- Cisco Switch Compatibility
  - All Switches are Cisco compatible
    - GbE has a STP limitation (see below)
    - GbE2 (Nortel Alteon Application Switch) is 100% compatible
    - KEEP SWITCH FIRMWARE CURRENT!!!
    - 100% Cisco IOS switch is on the way – we heard you!
- Spanning Tree Config
  - GbE
    - If LAN has multiple STP instances, either disable STP on GBE or disable crosslinks
  - GbE2 – Which do you prefer?
    - STP Off = Blocked Uplink (Requires little training for network group)
    - STP On = Blocked Crosslink (Requires some training for network group)

Lessons Learned (cont'd)

- Incorrect Rack Name in RDP Console
  - Info is from static SMBIOS table and requires reboot to change
  - Last resort is to reboot Server Enclosure (SE) Mgmt module – No Downtime
- Blades do not power-on Automatically
  - Blue patch cable is not installed
  - BL30p requires SE and Power Enclosure (PE) firmware to be at 2.03+ (Don't mix and match firmware)
- Invalid Topology errors
  - Check Blue patch cable connections for matching up/down arrows
  - If using 2 mini-bus bars, set highest PE and SE's to Power Zone 2

Lessons Learned (cont'd)

- My Server won't PXE boot
  - "The wheel just spins and then times out"
  - The wheel (of fortune ☺) spins for 2 basic reasons:
    - PXE-E51 – DHCP Problem (Cisco Switches, DHCP Service, etc)
    - PXE-E53 – PXE Problem (Check PXE Service, associate boot files)
  - DHCP Server Option 60 req'd if PXE and DCHP reside together
  - Enable "Port Fast" if using Cisco switches
    - Test this with a small mini-hub/switch if possible
- "Bad Command or Filename"
  - Usually happens when F: drive doesn't map
  - Add the RDP server to the lmhosts in the PXE bootfile
- PXE Boot hangs at "Initializing TCP/IP via DHCP" Computer name is already assigned
  - DHCP server offered an address that is statically

Tips and Tricks

- Make Copies of your default jobs
  - Copy entire default job folders to your own folders
  - Or export the default folders to .bin files for safekeeping
- Make copies of your "..\deploy\configs" folder
  - Allows customization of unattended, BIOS, and arrays with no worries if you make a mistake you can't find
- Running out of memory during installs?
  - Update your PXE/Server ROM
  - Use the UNDI driver
  - Don't remove the REM Bootwork Unload from your jobs
- Error 53 during Mapping of Network drives
  - Add DS to the lmhosts. file in BootDisk Creator
  - Don't run Netbios on both NICs of DS (if multi-homed)

Tips and Tricks

- When Possible, use blank CONREP files
  - Unique CONREP file only needed for non-default BIOS
  - This approach allows the same CONREP input files to be used on all Proliant platforms
- Use the enclosure “Service Port” to your advantage
  - Uses DB-9 Null Modem cable (included)
  - Shows overall server enclosure health info
  - Displays current IP address of each iLO in each blade
- Static IP Bay Configuration (SIPBC)
  - New with the –B22 SKU (existing enclosures are upgradeable)
  - Makes iLO address “sticky” to the slot (1.55+ fw req’d)
  - Makes swapping and replacing blades easier – yes, it’s optional

Tips and Tricks

- iLO Mouse is less than perfect?
  - Use HPLOMOPT/HPONCFG to optimize mouse –or-
  - Install Terminal Services pass-thru Service
- iLO Login names are difficult to update?
  - Use HPCONFG/HPLOCFG in conjunction with HPSIM –or-
  - Install iLO Directory Services Integration and use Directory accounts!
- Stop PXE boot for troubleshooting
  - Press ESC when “Press F2 for diags” is displayed
  - Hitting F2 offers some low-level diagnostics
    - To restart the boot process type “Bootwork.exe”
- HP Smart Components (formerly called softpaqs)
  - Add a /s to silently install any SC (cp00xxxx.exe)
  - SC’s do not return standard DOS errorlevel codes
    - Add a /DOSRETCODE switch to force DOS errorlevels

Tips and Tricks

- NIC Teaming
  - Do not image a server with teamed NICs
  - Can be automated using cqniccmd.exe
- NIC Teaming Configuration
  - Use Load Balancing unless a good reason exists not to
  - Balance with IP = best when requestors are across a router
  - Balance with MAC = best when requesters are on local vlan
- Need to reboot iLO?
  - Go to Network Settings Page and click “Apply”

Tips and Tricks

- My Server is stuck in a “Boot Loop”. It boots PXE, connects the server and says “Booting to Production”.
  - The server is being forced to boot PXE and the job assigned to it is an OS (Windows/Linux) job.
- SE is missing the Blue Interconnect Cables
  - Use short regular patch cables
- Setup IM agents and passwords on the DS after completing RDP Installation
- Initial PXE clients do not show up in RDP console
  - They sit at the PXE Menu awaiting input
    - Set “Initial” PXE option to Boot Immediately

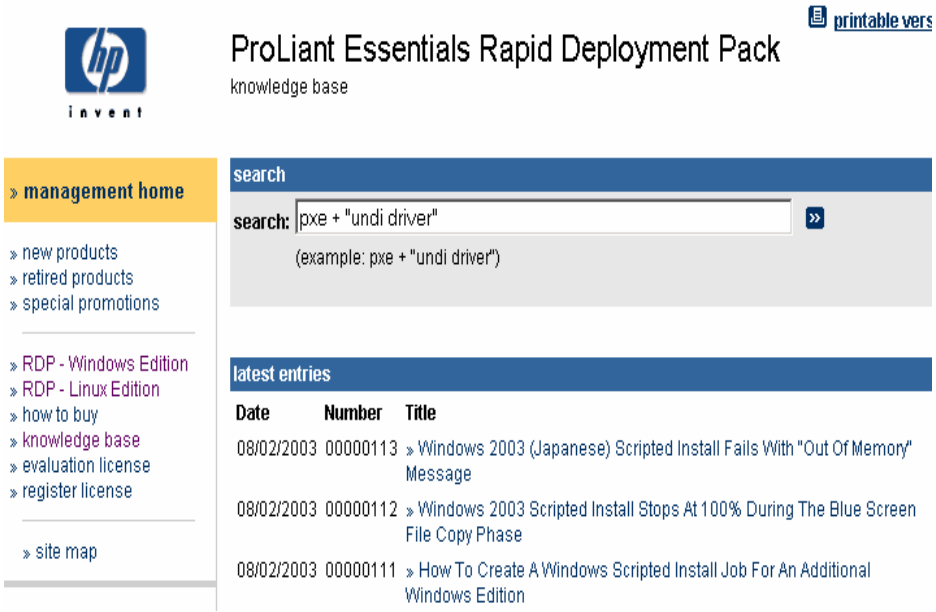
Tips and Tricks

- "Can I debug the PXE process"
  - Yes – look in the ..\PXE\PXE.ini file. Set all "debug" lines to TRUE
  - This will spit 4 txt debug files to the root
- "I really screwed up my PXE server"
  - Remove just PXE server from Add/Remove programs
  - Run PXE.EXE from the CD

Comprehensive set of resources

The *new* Knowledge Base

- Available at www.hp.com/servers/rdp/kb
- Search for information through the RDP knowledge base by keyword search
- Index.html trick



Planning Documentation

- Planning Guide
- Support Matrix

Installation Documentation

- 1.5 added Separate Installation Guide
- User Guide
- Altiris Deployment Solution User Guide and Rel Notes

Other Documentation

- SAN Boot Guide
- Microsoft Technet

Where to go for help

WWW.HP.COM/GO/Blades

WWW.HP.COM/SERVERS/RDP

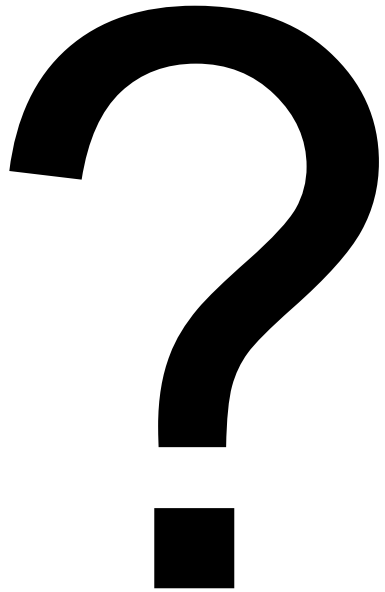
WWW.HP.COM/SERVERS/SWDRIVERS

WWW.HP.COM/SERVERS/RDP/KB

WWW.ALTIRIS.COM/FORUM

WWW.RDPGURU.COM

Questions?

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