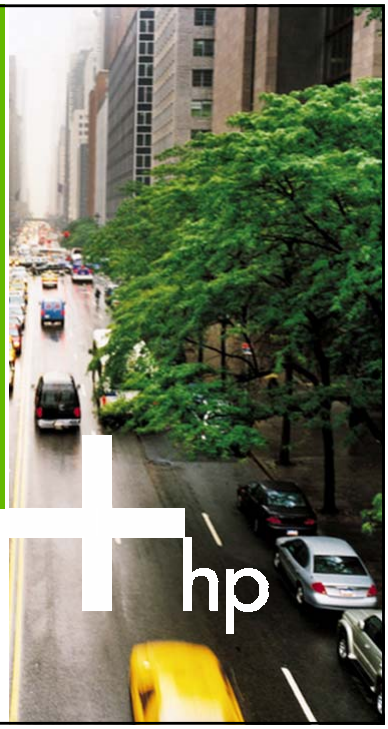
Connectivity for the HP Integrity Server Family

DECUS 2004: 2K04



Andreas Bahr
Presales Consultant, HP
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Agenda

- Integrity Server Overview
- HP Storageworks Overview
- Local attached Storage (SmartArray, HBA)
- Interoperability (IOP) SweetSpot Configurations
- HA and Clustering (MSCS, ServiceGuard)

…what customer demands

is not only


higher


faster

wider

…what customer demands

is

- more accountability
- more agility
- and a better return on IT

to build an adaptive enterprise

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The HP Integrity server family

Industry-leading systems based on Intel® Itanium® 2 processors

HP Integrity rx1600 server | HP Integrity rx2600 server | HP Integrity rx4640 server | HP Integrity rx5670 server | HP Integrity rx7620 server | HP Integrity rx8620 server | HP Integrity Superdome

2 — 4 — 8 — 16 — 64

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HP Integrity servers: The broadest line of Itanium®-based systems

scalable (cell-based) servers with super scalable processor chipset sx1000

64 Superdome

16 rx8620 with (SEU)

8 rx7620

hp zx1 chipset based systems

4 rx4640 and rx5670

2 rx2600 and rx1600

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HP industry standards-based server strategy

Current

HP NonStop Mips

HP Integrity Itanium

HP 9000 e3000 PA-RISC

HP Alpha Server Alpha

HP ProLiant x86

Enabling larger investment in value-add innovation

Future

Industry standard

HP NonStop Itanium based

HP Integrity Itanium based

HP ProLiant X86 based

Common Technologies

- Management
- Virtualization
- HA
- **Storage**
- **Clustering**

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Which operating system is best?

The one that meets your customers needs and delights them

In all cases it will run on HP's Itanium-based servers

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hp's flexible operating system strategy

Microsoft Windows Server 2003

HP-UX 11i
Internet critical. E-services ready.

Coming soon:
OpenVMS

redhat

SUSE

UNITEDLINUX

Goal:
Same Storage Connectivity
For all different OSs

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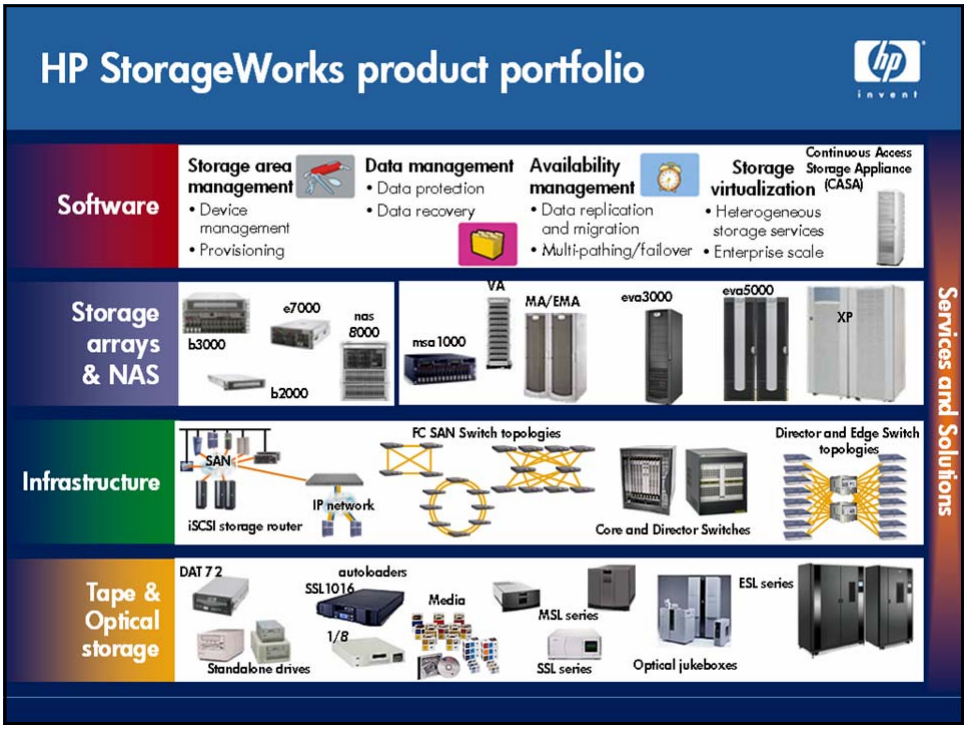
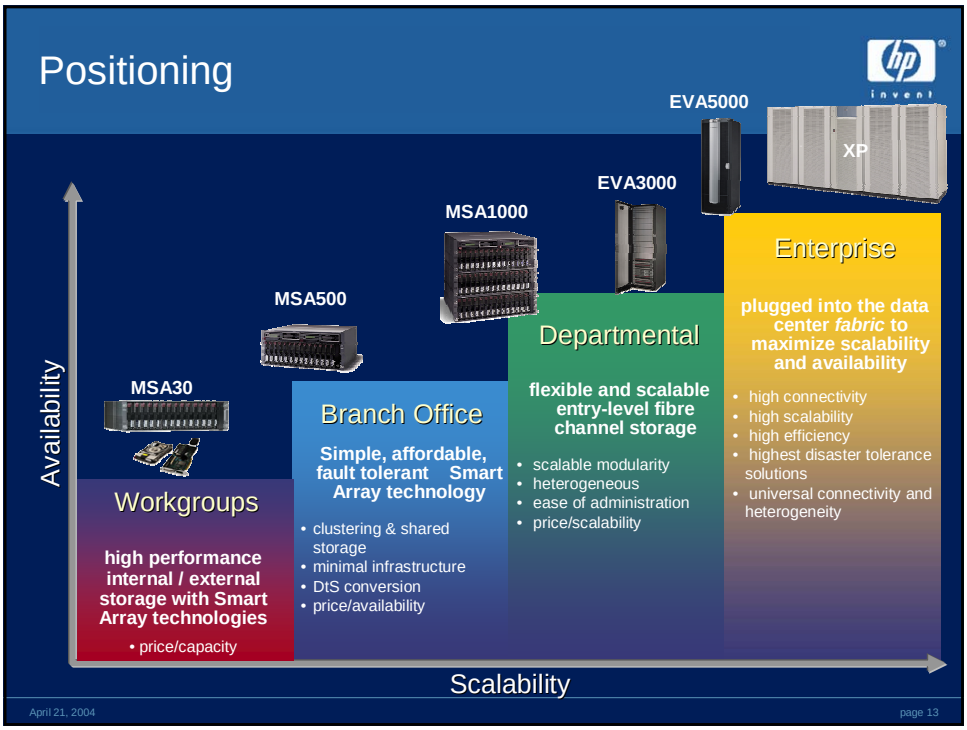
Storageworks
Overview
hp


HP StorageWorks product portfolio
hp invent
Software
Storage area management
• Device management
• Provisioning
Data management
• Data protection
• Data recovery
Availability management
• Data replication and migration
• Multi-pathing/failover
Storage virtualization
• Heterogeneous storage services
• Enterprise scale
Continuous Access Storage Appliance (CASA)
Storage arrays & NAS
e7000
b3000
b2000
nas 8000
VA
msa1000
MA/EMA
eva3000
eva5000
XP
Infrastructure
SAN
iSCSI storage router
IP network
FC SAN Switch topologies
Core and Director Switches
Director and Edge Switch topologies
Tape & Optical storage
DAT 72
Standalone drives
autoloaders
SSL1016
1/8
Media
MSL series
SSL series
ESL series
Optical jukeboxes
Services and Solutions


Positioning
EVA5000
XP
EVA3000
MSA1000
MSA500
MSA30
Availability
Workgroups
high performance internal / external storage with Smart Array technologies
• price/capacity
Branch Office
Simple, affordable, fault tolerant Smart Array technology
• clustering & shared storage
• minimal infrastructure
• DtS conversion
• price/availability
Departmental
flexible and scalable entry-level fibre channel storage
• scalable modularity
• heterogeneous
• ease of administration
• price/scalability
Enterprise
plugged into the data center fabric to maximize scalability and availability
• high connectivity
• high scalability
• high efficiency
• highest disaster tolerance solutions
• universal connectivity and heterogeneity
Scalability
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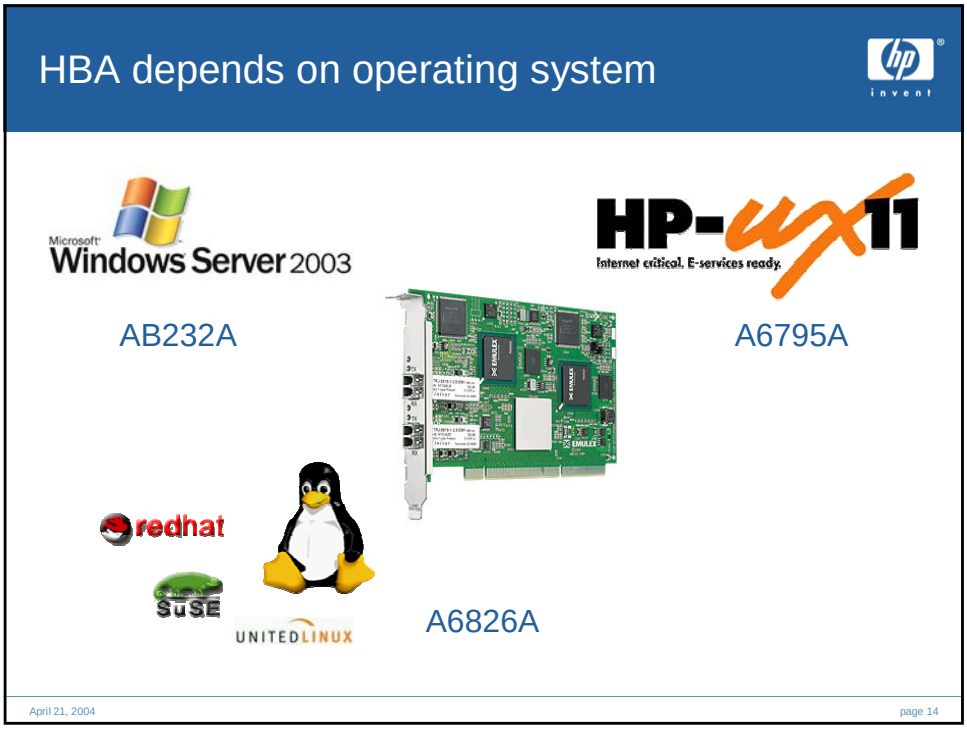
HBA depends on operating system
Microsoft Windows Server 2003
AB232A
HP-UX 11
Internet critical. E-services ready.
A6795A
redhat
SuSE
UNITEDLINUX
A6826A
April 21, 2004
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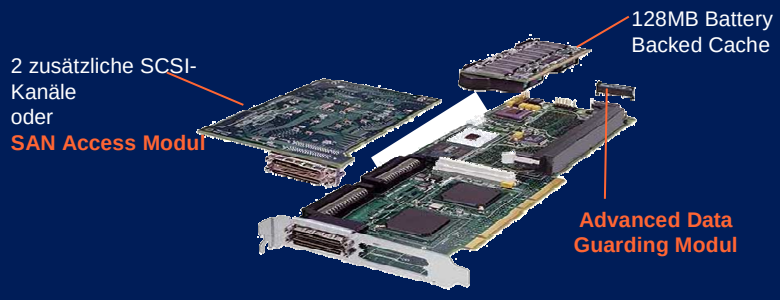
Modular Smart Array Controller 64XX

NEW:

SA 641/642	1/2 Kanal Ultra 320 Controller – max. 128 MB Cache ***PCI-X***
SA 6402/128	2 Kanal Ultra320 Controller – max. 256 MB Cache ***PCI-X***
SA 6404/256	4 Kanal Ultra320 Controller – stand. 256 MB Cache ***PCI-X***



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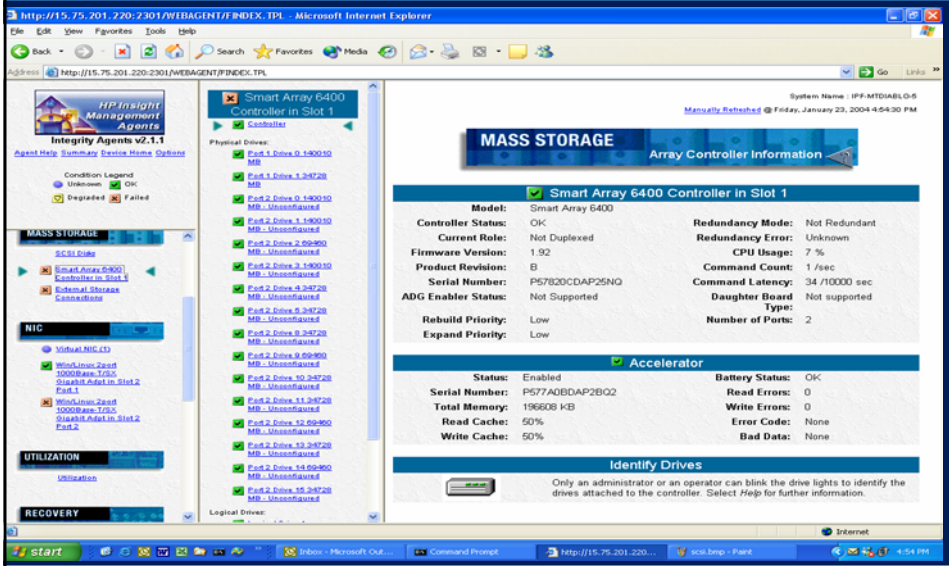
System Management home page – Smart Array



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HP storage software

XP Software
- Business Copy XP
- Continuous Access XP
- Continuous Access Extension
- RAID Manager XP
- Command View XP
- Secure Manager XP
- LUN Configuration Manager XP
- Cache LUN XP
- Auto LUN XP
- Continuous Track XP
- Secure Path
- *Cluster Extension (targeted Q4 04)*

VA Software
- Secure Manager VA
- Secure Path

EVA Software
- Business Copy
- Command View EVA
- Data Replication
- Data Protector
- Enterprise Back-Up Solution
- Secure Path
- *Cluster Extension (targeted Q4 04)*

MSA Software
- Secure Path
- Selective Storage Presentation (LUN Security)
- Data Protector
- Enterprise Back-Up Solution
- ACU/ACU-XE

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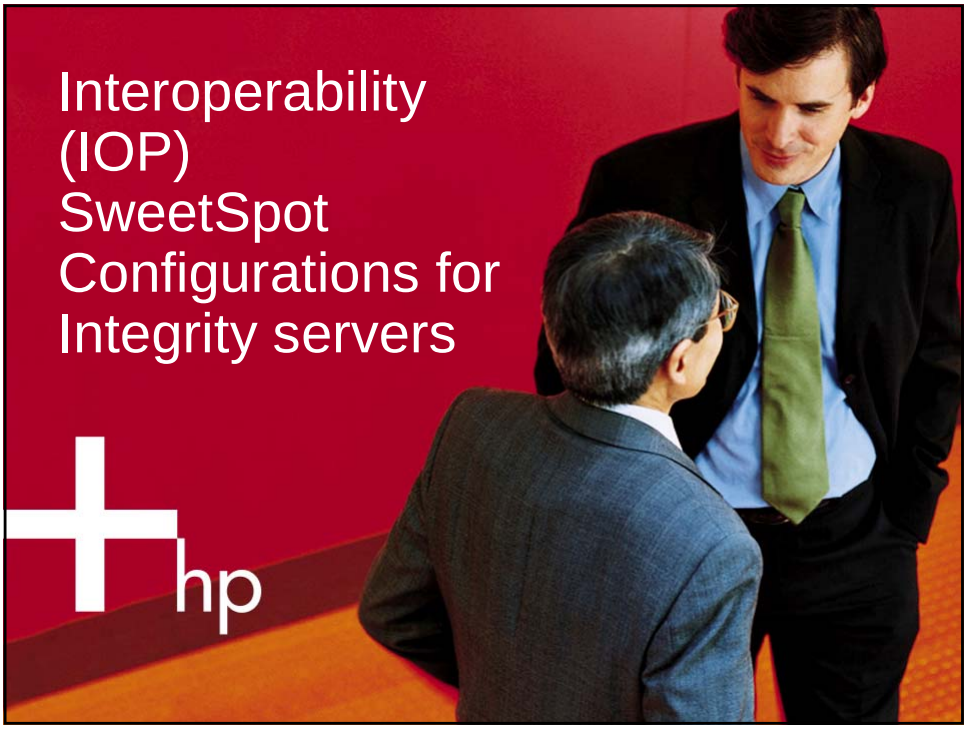

Introduction:
HP StorageWorks IOP SweetSpots

What are SweetSpots?

- Provides configuration guidelines for HP StorageWorks and HP IPF Servers
- Configuration information that allows quick response to customer RFQ's / RFP's.
- Includes storage, server, OS and IO infrastructure recommendations that offer the highest compatibility and best investment protection
- Organized by four basic tiers that represent common choice points for scalability, availability, cost and heterogeneous connectivity.

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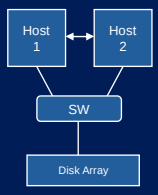
IOP Sweet-Spots Profile for Tier #1

#1: Web-Serving/Basic Application Tier
Direct Attached with Server Fail-over



- Typical Deployment
  - Adds Servers to distribute user workloads
  - Adds Storage to replicate non-critical data
  - Simple 2-node clusters with Server fail-over
  - Complete HA is not a requirement
- Customer is Cost Sensitive
  - Performance matters
  - Hardware is at the lowest possible cost
- Backup is optional
  - Restore from master web/app. image

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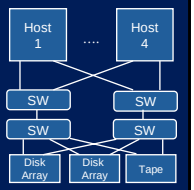
IOP Sweet-Spots Profile for Tier #2

#2: Business Critical Database Tier
Single OS type with multi-servers and/or multi-arrays



- Typical Deployment
  - Business Critical Databases
    - Order processing
    - Employee Information
    - External Web Serving
  - Basic storage consolidation
    - Single OS with pooled storage
    - HP storage only
    - Multiple versions of the same OS
- Customer is Uptime Sensitive
  - Downtime has a limited financial impact
  - Planned downtime during daily off-peak hours
    - Incremental backup windows are acceptable
- Includes fabric infrastructure, clustering SW and basic SAN management SW (Node Manager).
- Shared backup server is optional

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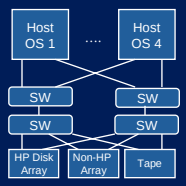
IOP Sweet-Spots Profile for Tier #3

#3: Large Datacenter Multi Apps/Databases
Hetero OS with Hetero Array & Management Software



- Typical Deployment
  - Heterogeneous environment
    - multiple O/S's & multiple arrays
  - Complex IT Datacenter Environment
    - Inherited from workgroups and/or mergers
  - A sub-set of the all combined Tier 2's
    - not all of the components in each Tier 2 configuration will be supported in a full heterogeneous SAN
- Customer is Downtime Sensitive
  - Downtime has a large financial impact
  - Planned downtime once a month / quarter
  - Online backups are required
- Includes 'full' SAN Management Software (all modules)
- Shared backup server is required

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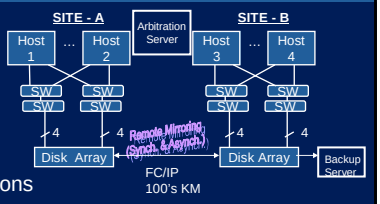
IOP Sweet-Spots Profile for Tier #4

#4: Non-Stop, Mission Critical, All the Bells & Whistles with DR



- Typical Deployment
  - Enterprise Applications
    - SAP
    - Oracle 9i RAC with extend clusters
  - Enterprise OS's and Storage
    - Not supported on all OS's or storage devices
- Customer is Mission Critical
  - Downtime results in real revenue loss
  - Downtime is limited to minutes per year
  - Zero Downtime Backups are required
- Includes Array-based Software
  - Data Replication (BC), remote mirroring (CA), etc.
- Includes 'full' SAN Management Software (all modules)
- Advanced backup capabilities required
  - Zero Downtime Backup Solutions
  - Rapid Backup & Recovery Solutions

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Summary of the IOP Sweet Spots for HP-UX 11i v2

	Tier #1 Web-Serving/Basic Application	Tier #2 Single OS Business Critical Database	Tier #3 Hetero OS Datacenter Multi Apps/Databases	Tier #4 Non-Stop, Mission Critical
server	Integrity Servers rx2600, rx4640, rx5670	Integrity Server rx4640, rx5670, rx7620 Serviceguard	Integrity Servers rx7620, rx8620, Superdome Serviceguard	Integrity Servers rx8620, Superdome Serviceguard Metro/Cont Clusters
array	VA 7110 or JBOD DS2405, DS2300	VA7410 SecurePath	EVA 5000 XP 128/1024 SecurePath OpenView SAM	XP 128/1024 SecurePath OpenView SAM Continuous Access
backup	1/8 Autoloader SSL 2160 Data Protector	MSL50xx, MSL60xx Data Protector	MSL60xx, ESL93xx ZDB Solutions Data Protector	ESL93xx, ESL95xx ZDB Solutions Data Protector

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Summary of the IOP Sweet Spots for Windows 2003 – 64bit

	Tier #1 Web-Serving/Basic Application	Tier #2 Single OS Business Critical Database	Tier #3 Hetero OS Datacenter Multi Apps/Databases	Tier #4 Non-Stop, Mission Critical
server	Integrity Servers rx2600	Integrity Server rx2600, rx5670 MS Enterprise Edition Clusters	Integrity Servers rx5670, Superdome MS EE & DC Clusters	Integrity Servers rx5670, Superdome MS EE & DC Clusters Geo Cluster
array	MSA 1000	EVA 3000 SecurePath	EVA 5000 XP 128/1024 SecurePath OpenView SAM	EVA 5000 XP 128/1024 SecurePath OpenView SAM Continuous Access
backup	1/8 Autoloader SSL 2160 Data Protector	MSL50xx, MSL60xx Data Protector	MSL60xx, ESL93xx Data Protector ZDB Solutions FRS	ESL93xx, ESL95xx Data Protector ZDB Solutions FRS

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Summary of the IOP Sweet Spots for Linux – 64bit

	Tier #1 Web-Serving/Basic Application	Tier #2 Single OS Business Critical Database	Tier #3 Hetero OS Datacenter Multi Apps/Databases	Tier #4 Non-Stop, Mission Critical
server	Integrity Servers rx2600	Integrity Server rx2600, rx4640, rx5670 Serviceguard	Integrity Servers rx5670, Superdome Serviceguard	Integrity Servers rx5670, Superdome Serviceguard Metro/Cont Cluster
array	MSA 1000	EVA 3000 SecurePath	EVA 5000 XP 128/1024 SecurePath(EVA only) OpenView SAM	EVA 5000 XP 128/1024 SecurePath(EVA only),OpenView SAM, CA
backup	1/8 Autoloader SSL 2160 Data Protector	MSL50xx, MSL60xx Data Protector	MSL60xx, ESL93xx Data Protector ZDB Solutions	ESL93xx, ESL95xx Data Protector ZDB Solutions

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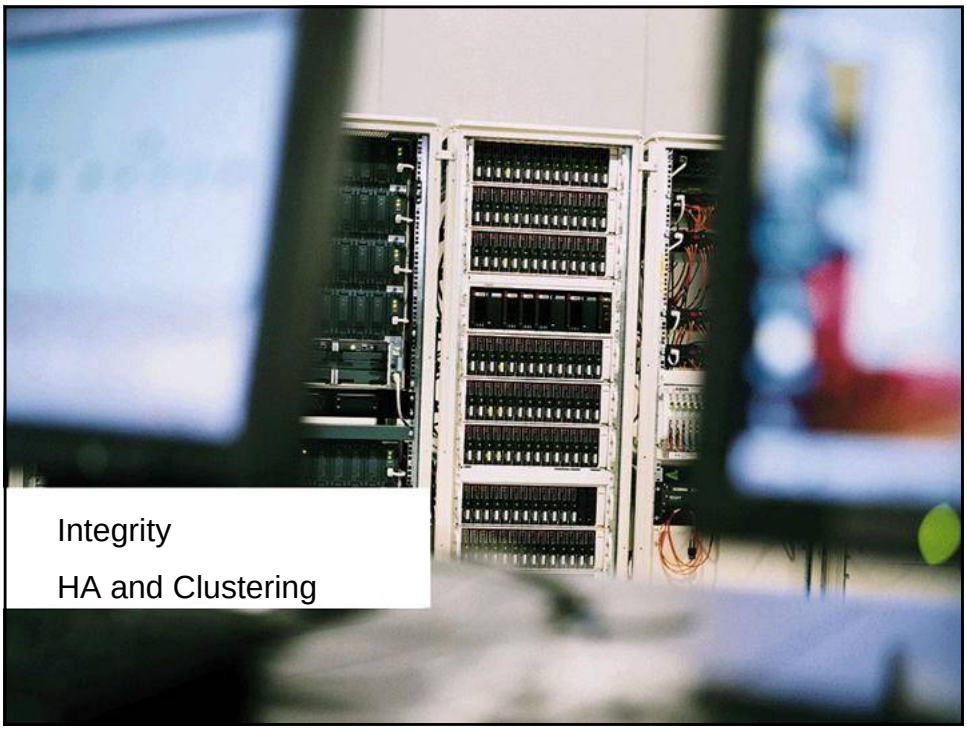
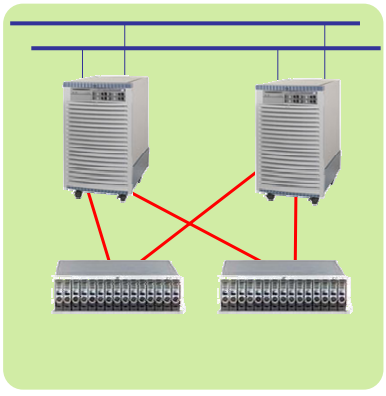


Serviceguard for Linux/HP-UX

- monitors hardware & software resources
- requires redundant hardware components (no SPOF)
- runs on standard hardware and operating systems
- integration of applications without any modification
- more than 80.000 licenses sold
- supports local, campus, metropolitan and continental configurations



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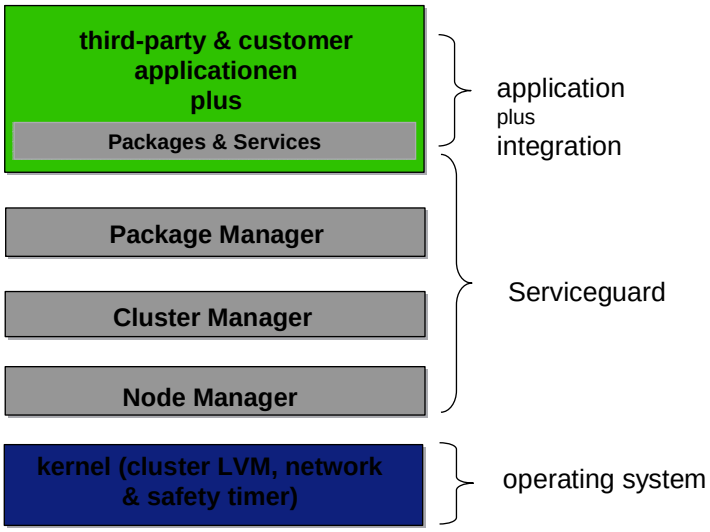
a layered Architecture



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Differences

Feature	HP-UX	Linux
number of FC nodes	16	16 (2 for EVA/MSA & SP)
number of SCSI nodes	4	2
Local LAN switch	yes	no, use bonding driver
EMS integration	yes	no EMS, use disk monitor
NIC support	Ethernet, TR, FDDI, ATM, X.25	Ethernet
RS232 support	yes	no, use quorum server
Cluster lock disk	yes	yes with A.11.15

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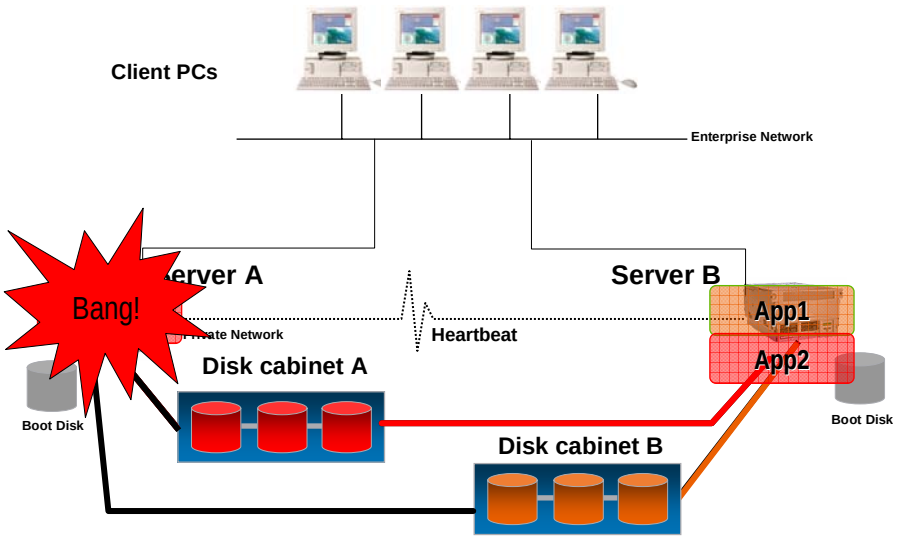
Microsoft Cluster Server



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Windows 2003 MSCS Improvements

- Larger clusters: 8 Node support
- 64-Bit support
- High Availability
- Cluster Installation Wizard
- Majority Node Set (MNS) clusters
- No Shared Disks
- Enhanced Redundancy

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Windows Support Roadmap

Windows Server 2003 Datacenter Edition

- Target: Datacenters, large RDBMS, LOB apps, DW
- 64-bit, support for up to 64-way SMP & 512 GB RAM, IA-32 EL
- 8-node clustering, NUMA, WSRM (resource manager)

Windows Server 2003 Enterprise Edition

- Target: Medium to large enterprises, LOB apps, DB
- 64-bit, support for up to 8-way SMP & 64 GB RAM, IA-32 EL
- 8-node clustering, NUMA, WSRM (resource manager)

Windows Server 2003 Standard Edition

- 64-bit, support for up to 4-way SMP & 32GB RAM, IA-32 EL*

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Windows HA roadmap

high-end

- Windows Server 2003 Datacenter Edition only
- Q104 – MSCS support, 2 to 8 node clusters, same site
  - Secure Path 4.0c
  - XP128/XP1024, EVA500/EVA3000 v3.01
- Q304 – MSCS support for geographically dispersed clusters

32 to 64 socket

Integrity Superdome

mid-range

- Windows Server 2003 Datacenter and Enterprise Edition
- Q204 – MSCS support, 2 to 8 node clusters, same site
  - Secure Path 4.0c
  - EVA5000/3000 v3.01, MSA1000, XP
- Q404 – MSCS support for geo clusters

8 socket

Integrity rx7620

16 socket

Integrity rx8620

rx8620 – DC and Ent
rx7620 – Ent only

entry-level

- Windows Server 2003 Enterprise Edition
- rx2600/rx5670 available now, rx4640 Q104
- MSCS support for 2 to 8 node clusters
  - Secure Path 4.0c
  - MSA1000, EVA5000/3000 v3.01, XP

2-way/2u

Integrity rx2600

4-way/7u

Integrity rx5670

4-way/4u

Integrity rx4640

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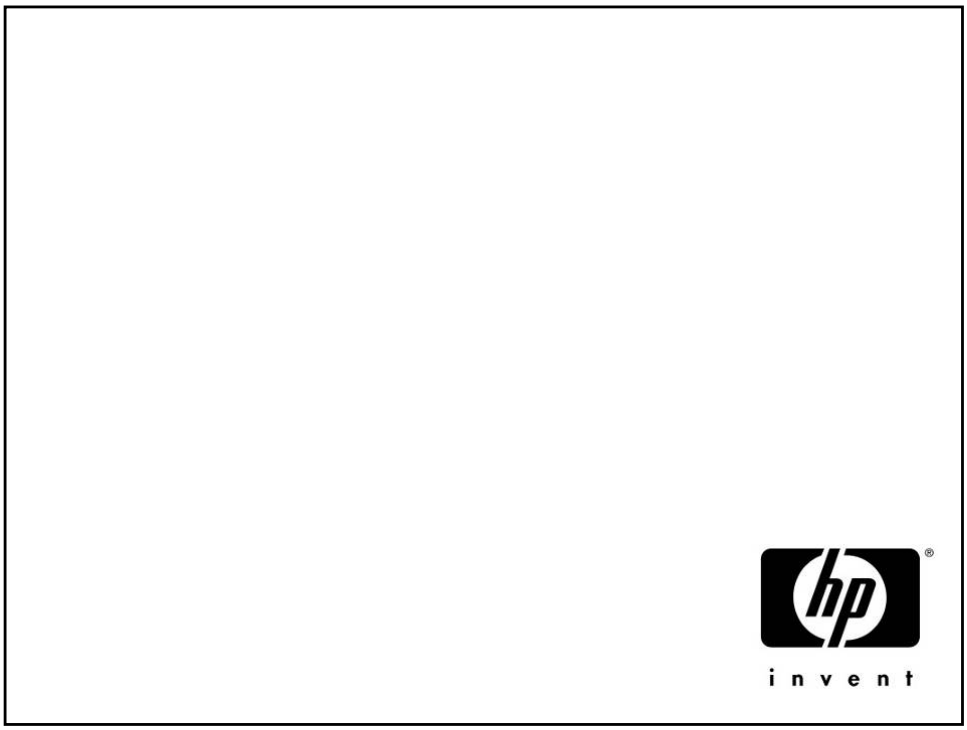
invent