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HP NonStop hardware roadmap

Session TB2573

Mark Pollans / June 2013

Forward-looking statements

This is a rolling (up to three year) roadmap and is subject to change without notice.

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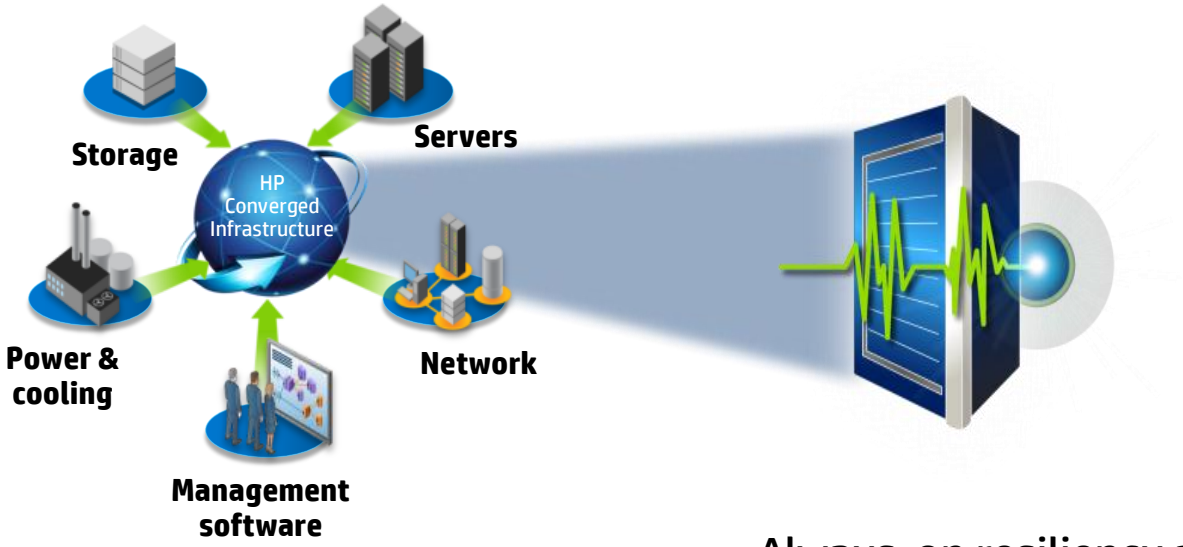
Agenda

- NonStop and the HP Mission Critical Converged Infrastructure
- New platforms and roadmap
- New products and features
- Key takeaways

HP Mission Critical Converged Infrastructure

HP Mission Critical Converged Infrastructure



The data center of the future is built on a Converged Infrastructure

Always-on resiliency and flexibility with Mission Critical Converged Infrastructure

Execution of NonStop strategy - delivered

Leveraging Standards

Mission Critical
Converged Infrastructure

NonStop S-series

Proprietary design

- Custom Rack
- Custom Power & Cooling
- Custom proprietary CPU with internally designed components
- Custom memory
- Custom IO and interconnect
- Non-Standard Drives
- ServerNet switches

Integrity NonStop

Moving to standards

- Standard HP Rack
- Standard Power & Cooling
- Standard BCS Server with modifications for FT
- Standard DIMMs
- *Custom* IO and Interconnect
- Off the Shelf Drives
- *ServerNet* switches

Integrity NonStop BladeSystem

Converged Infrastructure

- Standard HP Rack
- Standard Power & Cooling
- Standard HP Blade Chassis
- Standard Blade with unique interconnect mezzanine card
- Standard DIMMs
- Standard IO
- Off the Shelf Drives
- NonStop-unique HW *ServerNet*

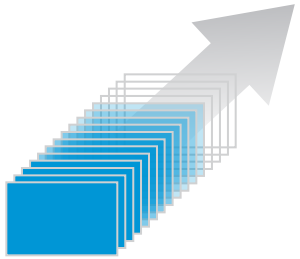
Advancing Mission Critical Converged Infrastructure

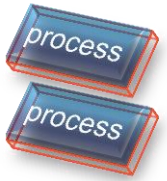
While maintaining the NonStop fundamentals

All Modern

All Standard

All NonStop





HP NonStop Platforms and Roadmap

HP Integrity NonStop BladeSystem NB54000c

Extending the Mission Critical Converged Infrastructure

Expanded Workload Capability

- 100% NonStop
- ~2X performance in same footprint

Investment Protection

- Blade swap upgrades and Core Licensing
- No change for storage or networking

IT Simplification

- Common modular architecture
- Open, modern development tools

HP Integrity NonStop BladeSystem NB54000c-cg

Carrier-grade platform

EXTENDS the high-end of the HP Integrity NonStop BladeSystem carrier-grade platform

~2x the performance capacity compared to the current NB50000c-cg

Intel® Itanium® 9300 series four-core processor on the BL860c i2

2 or 4-core software licensing available

Main memory size up to 64 GB per NonStop CPU

Modular I/O CG components (AKA CLIMs)

Improved controllers - CG CLIMs
- RAID 1 CLIM OS disks
- CG 6 Gb SAS 2.0 storage subsystem

BladeCluster advanced clustering – up to 24 nodes using 3 zones

Revised HP BladeSystem carrier-grade c7000 enclosure

NEBS level 3 certified

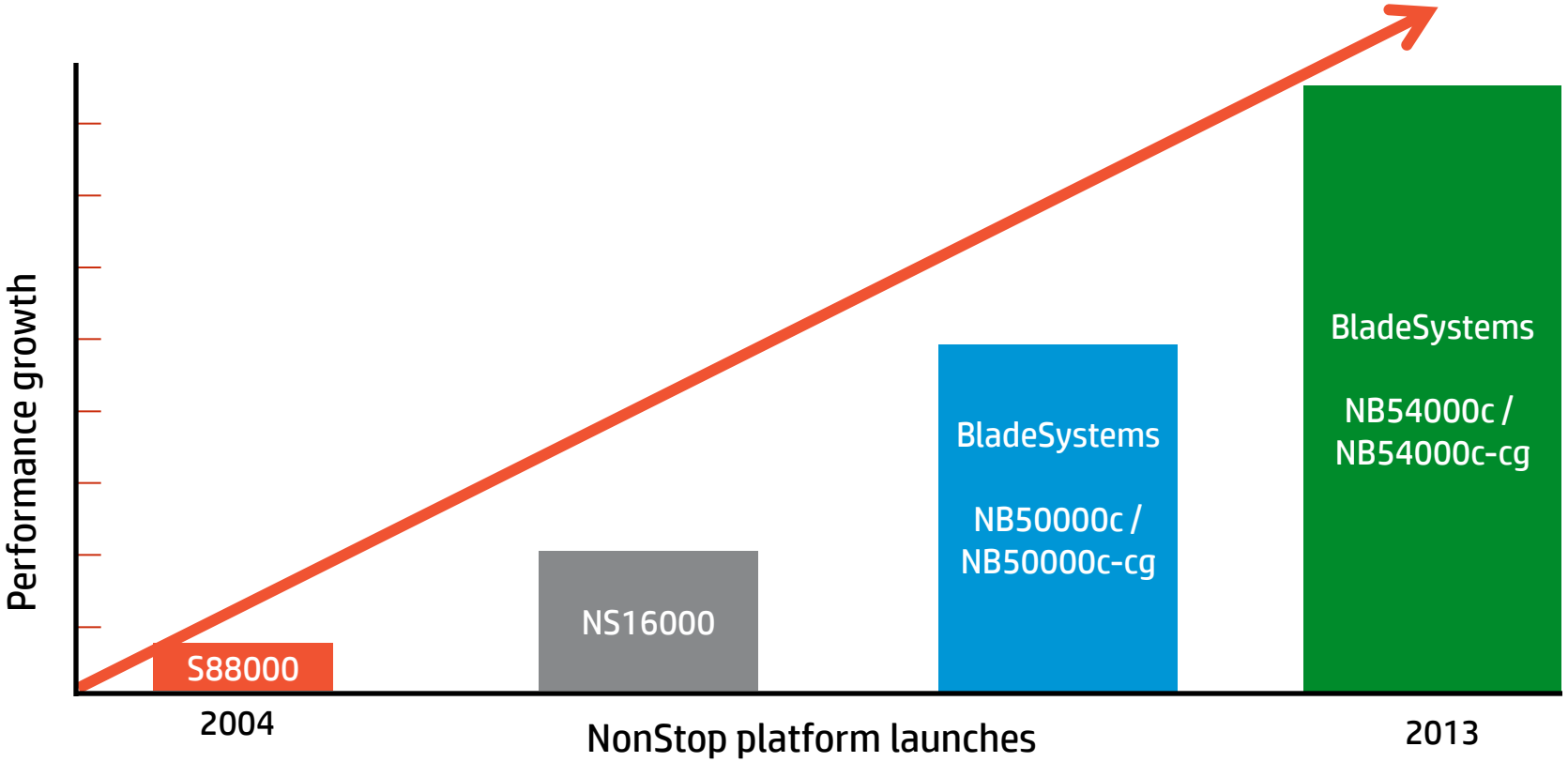
NEBS Level 3

Network Equipment-Building System

Criteria highlights:

- Seismic resistance
  - Earthquake, shock, and vibration
  - HP NonStop seismic rack
- Fire resistance
- Environmental
  - Thermal margin testing (operating and non-operating)
  - Humidity
  - Altitude
- RF emissions and tolerances
  - Unique for NEBS Level 3
  - Different from regulatory
- Airborne contaminants
  - Exposure to various gas mixtures for 14 days

Sustained NonStop performance growth



HP Integrity NonStop NS2200 platforms

Entry-class

Designed specifically for

- Emerging markets and stand alone apps
- Migration platform from small to mid S-Series servers
- J-series development and test

Rack mounted entry-class servers

2- core enabled Intel® Itanium® Processor 9300 series

Up to 4P (8 cores); each with 8 GB, 16 GB, or 32 GB memory

Modular I/O components (AKA CLIMs)

- RAID1 CLIM OS disks
- 6G SAS 2.0 storage subsystem

36U and 42U cabinets (AC or DC powered – T, ST)

Minimum RVU J06.12

Clustering via Expand-over-IP

HP Integrity NonStop NS2100 platform

Entry-class

- Designed specifically for
  - Emerging markets and stand alone apps
  - Migration platform from small S-Series servers
  - J-Series development and test systems
- Rack mounted entry-class server
- 1-core enabled Intel® Itanium® Processor 9300 series
- Up to 4 CPUs each with 8 GB, 16 GB, or 32 GB of memory
- VIO Ethernet & Cluster I/O Modules (CLIMs)
- 42U and 36U cabinets
- Clustering via Expand-over-IP
- Minimum RVU J06.14

HP Integrity NonStop Servers

Meeting Mission Critical customers' needs

HP Integrity NonStop BladeSystem NB54000c

Complex application environments
Large databases
Option for 2 or 4-core licensing
Highly expandable I/O

HP Integrity NonStop NS2200

Medium / emerging markets
Stand-alone applications
2-core enabled
HW bundles

HP Integrity NonStop NS2100

Price sensitive markets
Development & test
1-core enabled
Preconfigured HW bundles

Common across all J-series NonStop servers

- NonStop fundamentals – availability, scalability, data integrity, common modular architecture and security
- CLIM based storage and networking
- NonStop J-series OS

HP Integrity NonStop

The platform for continuous business

Current | **Future**

Extending Mission-critical Converged Infrastructure

NonStop BladeSystem
NB54000c
NB54000c-cg

NonStop entry-class rack mount servers
NS2100
NS2200

NonStop BladeSystem
Poulson-based

NonStop entry-class rack mount server
Poulson-based

NonStop platforms
Kittson-based

NonStop software enhancements

- SQL/MX 3.2
- NS JSP 7.0
- 64-bit OSS

- SQL/MX 3.2.1
- NSJ 7.0

- SQL/MX
- NSASJ (JBoss EJB Container)
- NSMQ (ActiveMQ)
- Distributed In Memory Cache (Hazelcast)

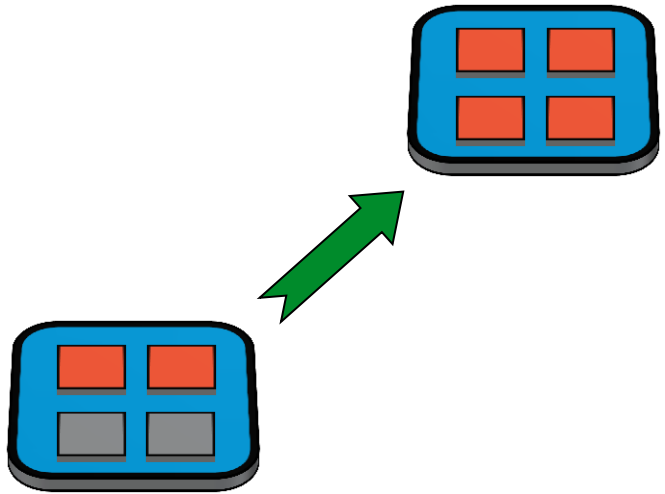
This is a rolling (up to three year) Statement of Direction and is subject to change without notice

New products and features

Core Licensing: 2 or 4-core

Brings new dimensions in scalability for Integrity NonStop BladeSystems

- Customers can purchase an NB54000c (or NB54000c-cg) with 2-cores enabled at a lower software price point
- Upgrades to 4-cores can then be done at any time during the life of the system
  - Increase system performance and capacity in the same footprint
  - No hardware changes or downtime required
  - Single software command to enable additional cores (from 2-core to 4-core)
  - Software price points are based upon the core license option selected



NonStop's investment protection strategy

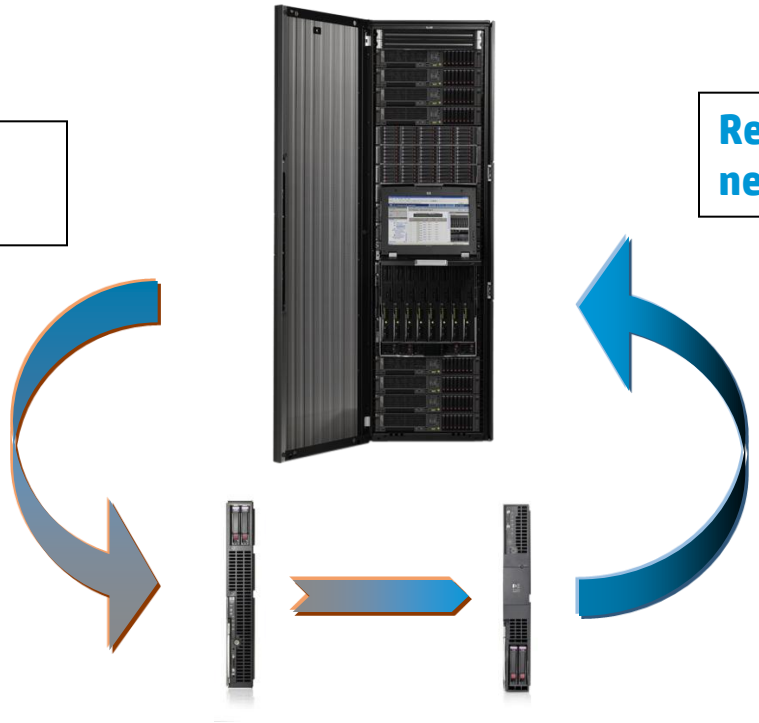
Direct upgrade to next generation platform

- Relicense the software and choose either a 2 core or 4-core licensed
- No recompilation required
- Software migration credits
- Hardware trade-in credits
- Keep all existing I/O: communications, disks, and tape
- Swap the processor blades (CPUs)

NonStop's investment protection process

An easy hardware upgrade

Remove HP NonStop **older** blade



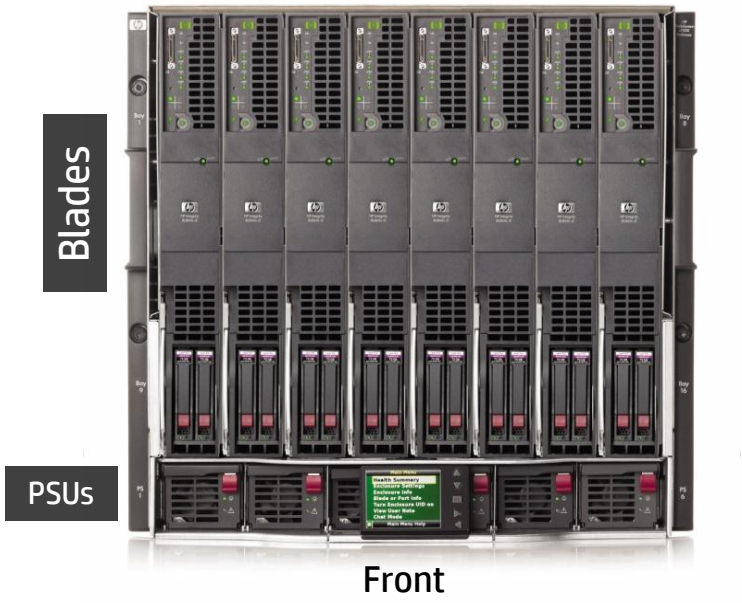
Replace with HP NonStop **next generation** blade

Integrity NonStop BladeSystem c7000

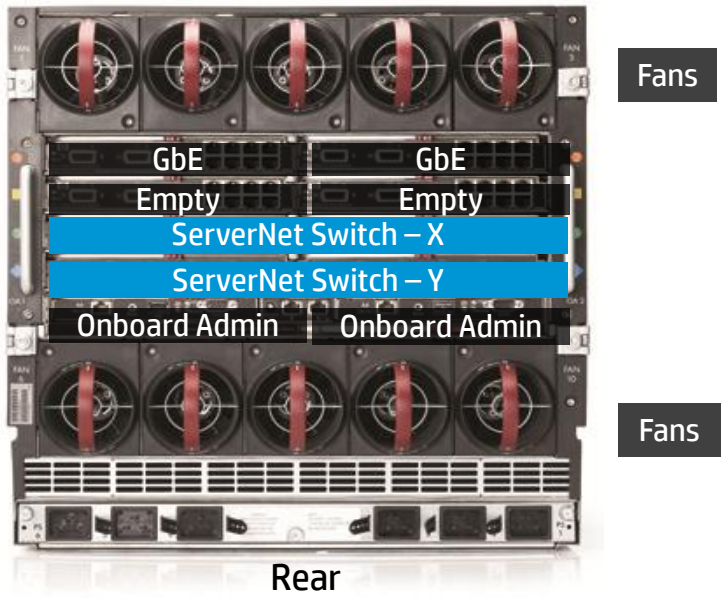
Enclosure, infrastructure, and blades

Up to 64 GB memory per blade

Server blades



Switch modules

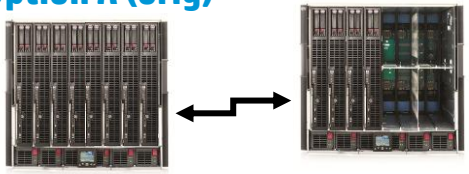


Flex Processor Bay Configuration - FPBC

New dimensions of flexibility and choice

- Doubles the I/O connectivity for systems with 8P or fewer
- Plan for future I/O and processor expansion
- One time datacenter layout
- Balance I/O and processors across multiple racks for systems with 8P or fewer
- Supports HA BladeCluster on systems with 8P or fewer

Option A (orig)



CPUs: 0-7

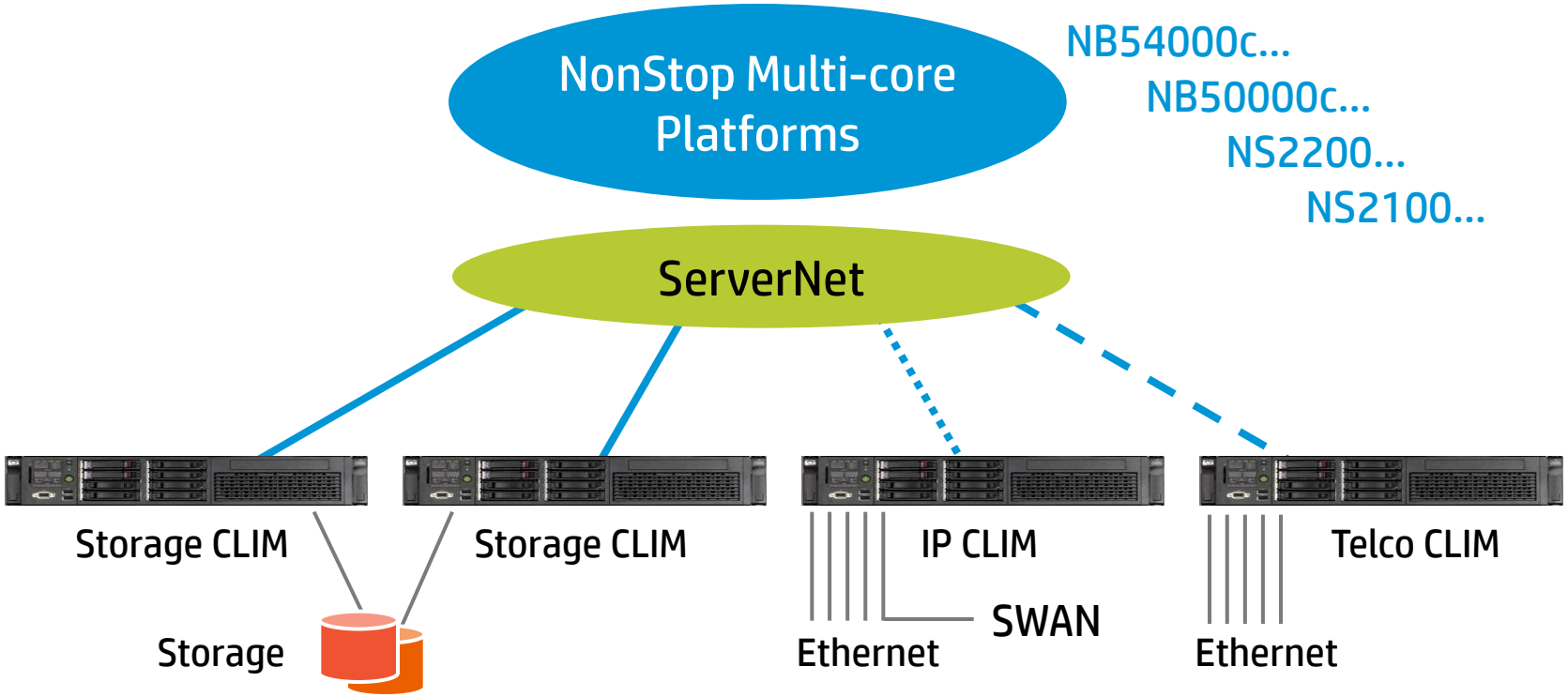
CPUs: 8-11

Option B (FPBC)

CPUs: 0,2,4,6

CPUs: 1,3,5,7

NonStop CLIM I/O infrastructure



NonStop Solid State Drives – SSDs

Enterprise class 6Gb SAS 2.0 200GB SLC

- State of the art SAS solid state drives (SSDs) for NonStop
- Enterprise performance suitable for unrestricted read/write workloads
- Single Level Cell (SLC) NAND flash technology
- 6Gb SAS interface – dual ported
- 200GB SFF (2.5 inches)
- Delivers higher performance, lower latency and lower power solutions
  (when compared to traditional rotating storage drives)
- Hot pluggable
- Up to ten SSDs per CLIM pair

Features of NonStop SSDs

Adding new dimensions in NonStop storage solutions

- Okay to mix SSDs and HDDs in the same NonStop SAS disk enclosure
- Supported with host-based mirroring; four paths to each volume
- Up to 8 disk partitions, each with its own DP2 cache
- Supports VLE (Volume Level Encryption)
- Write Cache Enable – WCE optionally available, enabled per SSD
- OSM Service Connection has an action to display SMARTSSD Wear Gauge information
  - Percentage of SSD wear already used
  - Estimated remaining life based upon projected usage
- OSM generates EMS event, alarm, and dial-outs when an SSD nears end of life
- Excellent IOPS throughput and random I/O performance

NonStop SSD performance demo 2

Base platform: HP Integrity NonStop NB54000c server

Demo 2 – random 4KB reads/writes at 90/10 %

SSD IOPS = ~50x HDD IOPS when using 10 threads for parallel access

SSD ~22,000 IOPS; HDD ~450 IOPS ~50x

- NonStop CPU 4: 10 threads on a Solid State Drive (SSD)
- NonStop CPU 5: 10 threads on a Hard Disk Drive (HDD)

- 4KB structured files similar to what NonStop SQL database uses
- Using un-mirrored volumes (single drive)
- Measurement is IOPS for a 40 second period (ramp up, peak, ramp down)

These are peak numbers and not intended for sizing production systems

Will SSDs and partitioning improve your application performance

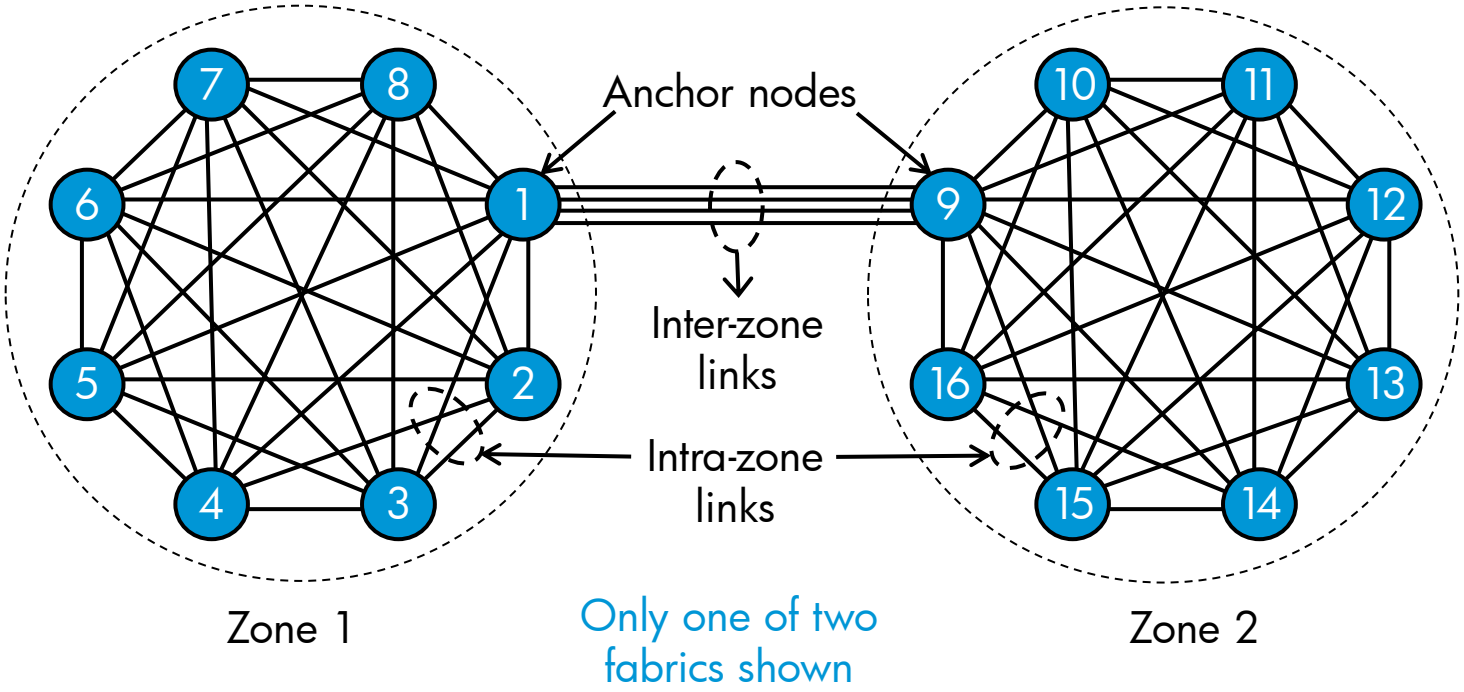
Yes

Maybe

no

- Faster transaction response (random I/O)
- Increased transaction throughput (more IOPS)
- More DP2 cache per physical device with partitioning (faster response time with higher DP2 cache hit rate)
- Potentially smaller system footprint

BladeCluster solution two-zone connections



No single point of failure with high-availability anchor node option

BladeCluster solution key features

Operates at ServerNet 3 speeds
- 250 MB/s versus 125 MB/s in 6770 and 6780 ServerNet clusters
- Up to 16 times more aggregate bandwidth than in 6770 and 6780 ServerNet clusters

RoHS compliant

Supported topologies
- Up to 8 nodes per zone; up to 3 zones; up to 24 nodes per BladeCluster solution

Longer distances
- Up to 65 Km (August 2011) versus 15 Km in 6780 ServerNet Clusters

Designed for BladeSystem platforms and NS16200 clustering
- BladeCluster solutions can also be used with 6770 and6780 ServerNet Clusters
- Offers connectivity options for S-series and NS14200 platforms

NonStop Tape Update

Latest Physical and Virtual Tape Offerings

Physical Tape (LTO-5)

- M8701A: 24 cartridge, FC ACL rack mount
- M8702A: 24 cartridge, FC ACL table top
- M8705A: Single play, SAS table top
- M8706A: FC Library drive for Oracle SL500
- M8707A: FC Library drive for Oracle SL3000
- M8708A: FC Library drive for Oracle SL8500

Entry Level Media Manager (ELMM)

- HSF03V01: ELMM for H-series
- QSF03V01: ELMM for J-series

Virtual Tape

- VT5900-Q
  - HP DL380p Gen8 LFF Server
  - Two Intel Xeon E5-2690 (2.90GHz/8-core/20MB) performance processors
  - 16GB DDR3 Memory
  - Optical Drive
  - 4 x 1Gb Ethernet ports
- VT5900-QSW (VTS s/w release 8.3)

Key takeaways

New products and features

- Solid State Drives - SSDs
- Increased BladeSystem memory size to 64 GB
- Flex Processor Bay Configuration
- Brand new entry-class server the NS2100 (web search it)

NonStop is positioned for a bright future

- Strong roadmap
- Investing for the future
- NonStop is part of the HP Mission Critical Converged Infrastructure

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- TK4183, Delivering on HP's Compute Vision for the New Style of IT
- BB3501, NonStop in the explosive world of mobile and wireless networks
- BB3502, HP NonStop and FSI payments: a best-of-breed ISV value chain
- BB3503, NonStop solutions: beyond financial services and telco

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