VNUG 2014

HP NonStop Hardware and Platforms

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Forward-looking statements

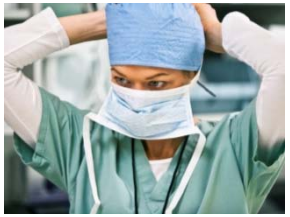
This is a rolling (up to three year) roadmap and is subject to change without notice.

This document contains forward looking statements regarding future operations, product development, product capabilities and availability dates. This information is subject to substantial uncertainties and is subject to change at any time without prior notification. Statements contained in this document concerning these matters only reflect Hewlett Packard's predictions and / or expectations as of the date of this document and actual results and future plans of Hewlett-Packard may differ significantly as a result of, among other things, changes in product strategy resulting from technological, internal corporate, market and other changes. This is not a commitment to deliver any material, code or functionality and should not be relied upon in making purchasing decisions.

Powering your always-on world

Stay connected every minute of every day with HP NonStop

400 M+
subscribers in advanced Telco network applications



$3.5 T+
credit and debit card charges

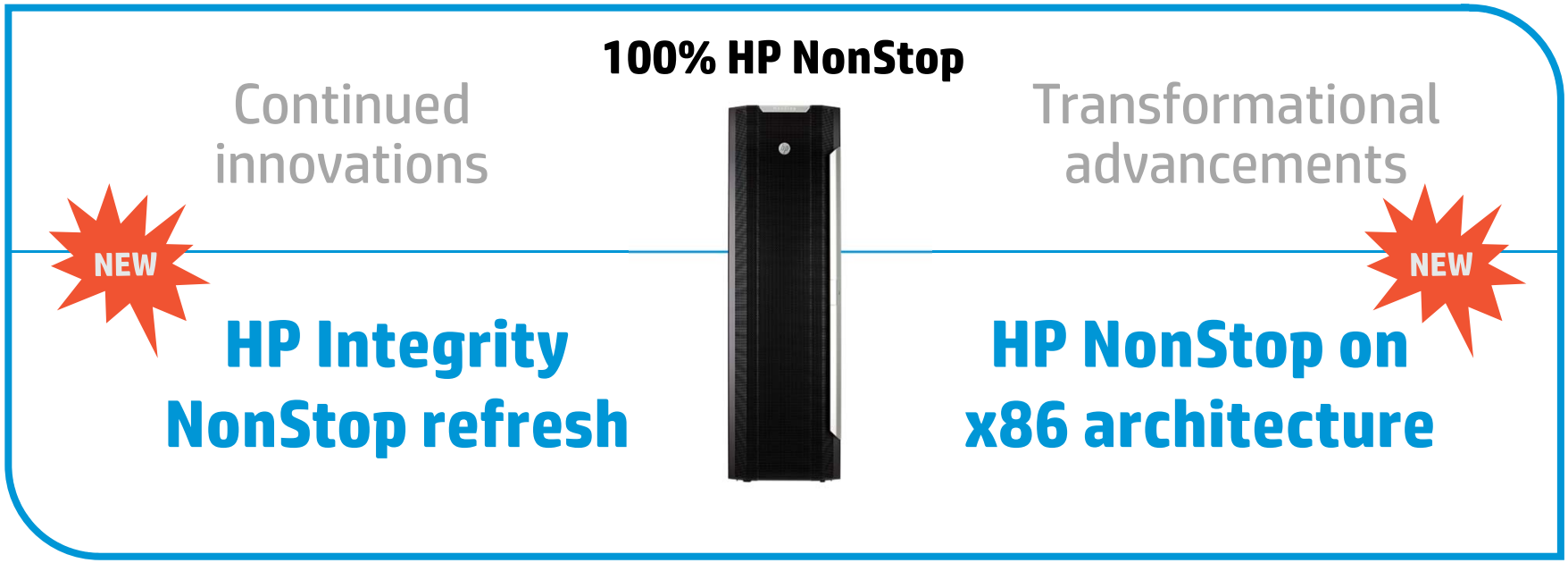
100%
of the top 10 global manufacturers

Leading
medical institutions worldwide

Largest
global retail payments processors

Revolutionizing the always-on, globally-connected world

Industry's first flexible approach to a fault-tolerant infrastructure



Play video

USE THIS VER zHP_MEG_NONSTOP_standalone.mov 2.20 time - Shortcut.lnk

Revolutionizing the always-on, globally-connected world

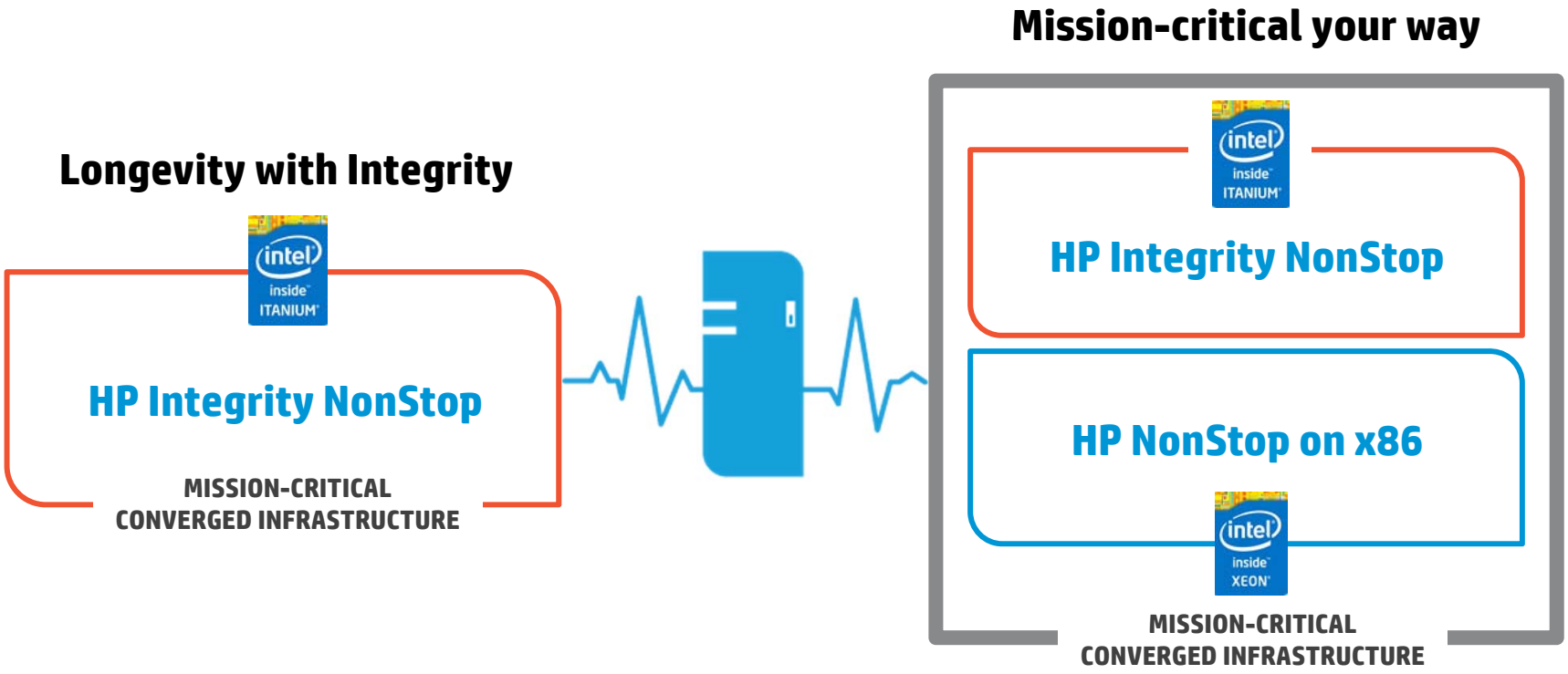
Because your customers never wait

“No matter what HP NonStop hardware architecture you choose, you will continue to get 100% NonStop value that makes what you do truly matter.”

- Meg Whitman, CEO, Hewlett-Packard

Always on Timeless Efficient

Flexibility to choose your NonStop path



Jean Bozman on NonStop x86 announcement

Former IDC Research Vice President, Enterprise Servers

> ***… she added, "For NonStop customers, in the installed base, this move to bring NonStop to x86, will open the door to wider adoption, and continued ability to tap NonStop functionality and applications into the future. It also brings the prospect of attracting new customers that might not have considered NonStop before. This also will allow NonStop to be used for new workloads that are emerging in the datacenter - and that require very high levels of availability."***

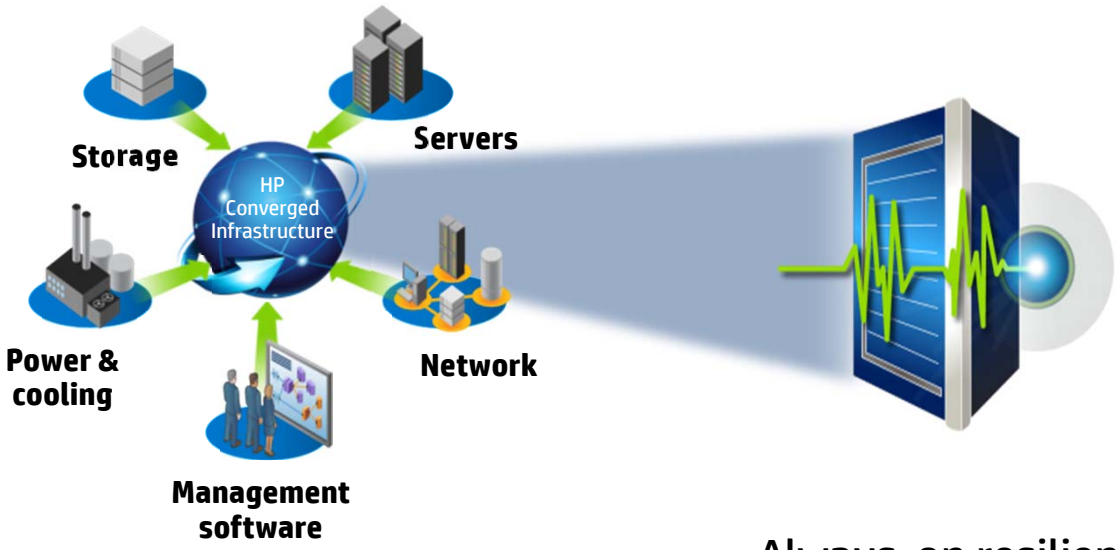
Source: Richard Buckle's blog Thursday, November 28, 2013

http://ituq-connection.blogspot.com/2013/11/hp-continues-to-set-goals-very-high-and.html

Growing partner ecosystem for a changing world

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

NonStop S-series
Proprietary design

- Custom proprietary CPU hardware design
- *ServerNet* system interconnect
- Custom memory
- Custom I/O
- Non-standard drives
- Custom rack
- Custom power & cooling

Integrity NonStop
Converged Infrastructure

- Standard HP processor with proprietary interconnect card
- Standard HP blade enclosure
- *ServerNet* system interconnect
- Standard DIMMs
- Standard I/O
- Standard drives & carriers
- Standard HP rack
- Standard power & cooling

NonStop on x86 architecture
Converged Infrastructure

- Standard HP processor with InfiniBand interconnect card
- Standard HP blade enclosure
- Standard InfiniBand system interconnect
- Standard DIMMs
- Standard I/O
- Standard drives & carriers
- Standard HP rack
- Standard power & cooling

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HP Integrity NonStop servers

Meeting Mission Critical customers' needs

HP Integrity NonStop BladeSystem NB56000c	HP Integrity NonStop NS2400	HP Integrity NonStop NS2300
Complex application environments	Medium / emerging markets	Price sensitive markets
Large databases	Stand-alone applications	Development & test
Option for 2 or 4-core licensing	2-core enabled	1-core enabled
Highly expandable I/O	Hardware bundles	Preconfigured HW bundles

- All are based on Intel® Itanium® 9500 series 4-core capable processor (AKA Poulson)

Common across all J-series NonStop servers

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

HP NonStop Platforms and Roadmap

HP Integrity NonStop BladeSystem

NB56000c

Third generation of Integrity NonStop BladeSystems

Built on proven HP Integrity Blade BL860c i4

- Intel® Itanium® 9500 series (Poulson) 4-core capable processor
- 2-core or 4-core software licensing (Core Licensing)
- Memory size increase up to 96 GB per NonStop CPU

Performance capacity increase up to 1.5X* compared to the current NB54000c
(2-core to 2-core, 4-core to 4-core)

HP NonStop OS RVU J06.16 (or later)

On-line migration from NB54000c

Next generation BladeSystem enclosure with 94% efficiency power supplies

Gen8 CLIM I/O components

BladeCluster advanced clustering – up to 24 nodes using 3 zones

* Performance is based upon NonStop Order Entry benchmark from HP NED, actual application performance will vary.

HP Integrity NonStop BladeSystem carrier-grade

NB56000c-cg

Third generation of carrier-grade Integrity NonStop BladeSystems

Built on proven HP Integrity Blade BL860c i4

- Intel® Itanium® 9500 series (Poulson) 4-core capable processor
- 2-core or 4-core software licensing (Core Licensing)
- Memory size increase up to 96GB per NonStop CPU

Performance capacity increase up to 1.5X* compared to the current NB54000c-cg
(2-core to 2-core, 4-core to 4-core)

HP NonStop OS RVU J06.16 (or later)

On-line migration from NB56000c-cg

Next generation BladeSystem carrier-grade enclosure with DC power supplies

Carrier-grade Gen8 CLIM I/O components

BladeCluster advanced clustering – up to 24 nodes using 3 zones

NEBS level 3 certified

* Performance is based upon NonStop Order Entry benchmark from HP NED, actual application performance will vary.

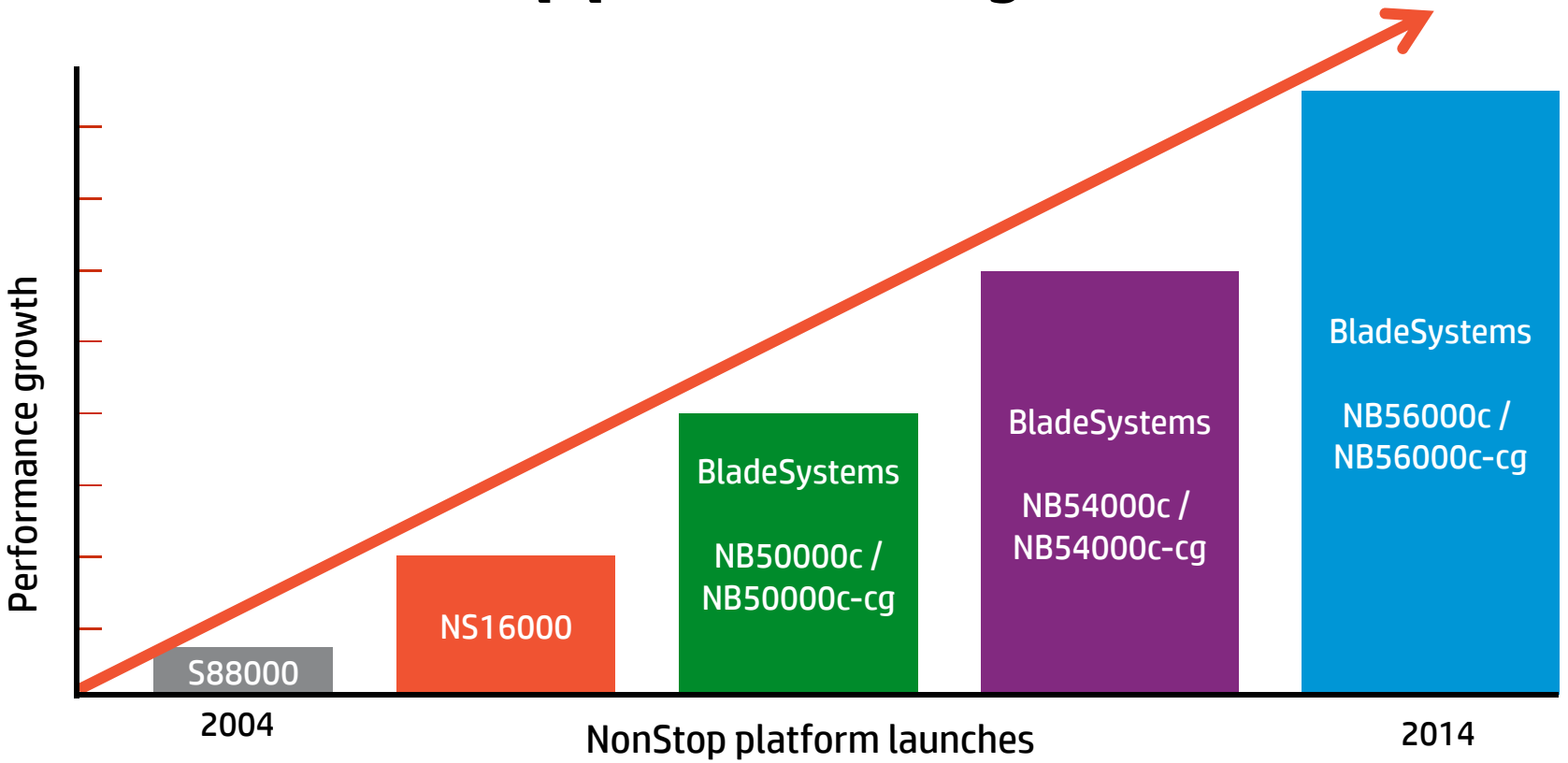
NEBS Level 3

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



NonStop's investment protection process

An easy hardware upgrade

In-rack upgrade from 1st or 2nd generation NonStop BladeSystem

To 3rd generation of NonStop BladeSystem

Remove previous generation of HP NonStop blades

Replace with current generation of HP NonStop blades

HP Integrity NonStop NS2400 platforms

New

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 9500 series

Up to 4 CPUs (8-cores), each with 16, 32 or 48 GB of main memory

VIO Ethernet & Cluster I/O Modules (CLIMs)

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

Clustering via Expand-over-IP

42U commercial

36U seismic

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HP Integrity NonStop NS2300 platform

New

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 9500 series

Up to 4 CPUs, each with 16, 32 or 48 GB of main memory

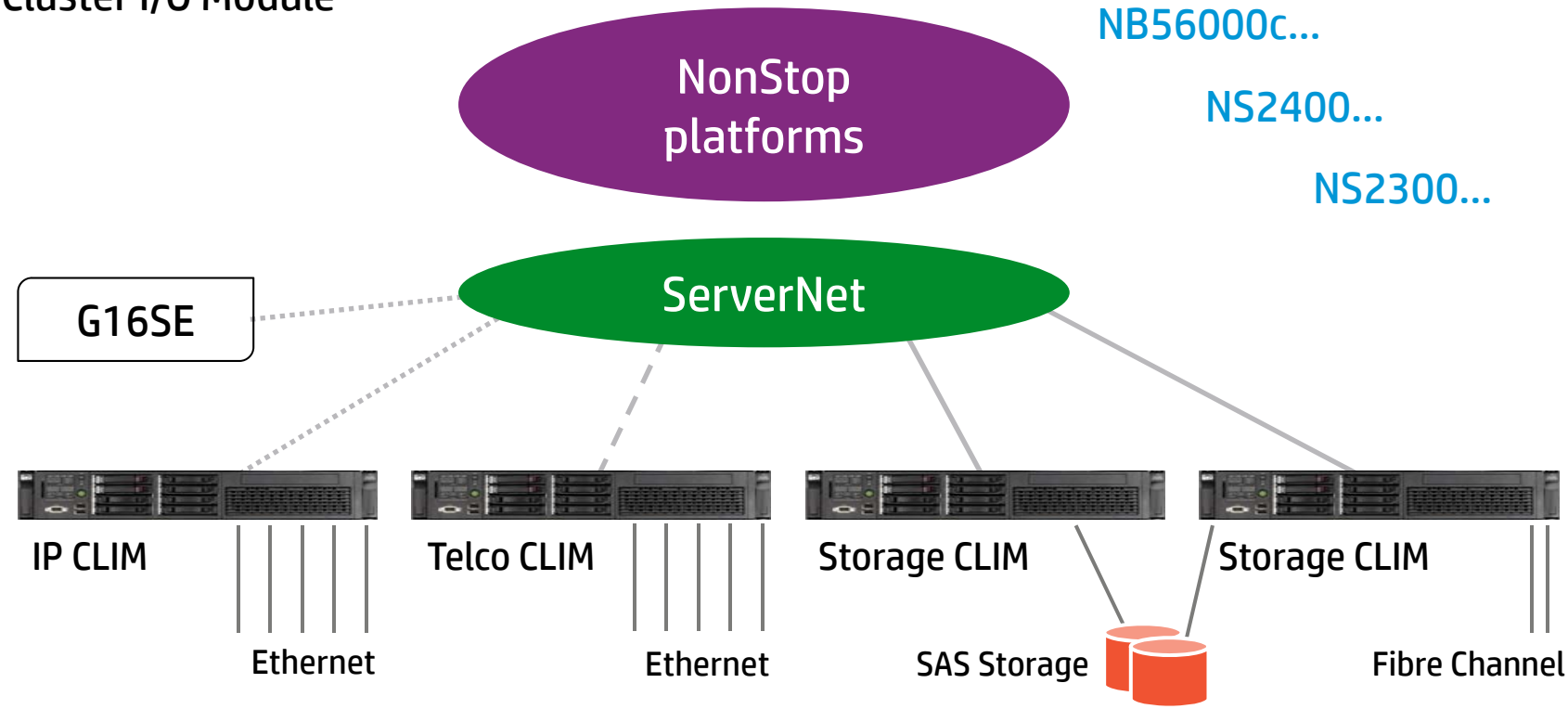
VIO Ethernet & Cluster I/O Modules (CLIMs)

36U and 42U racks

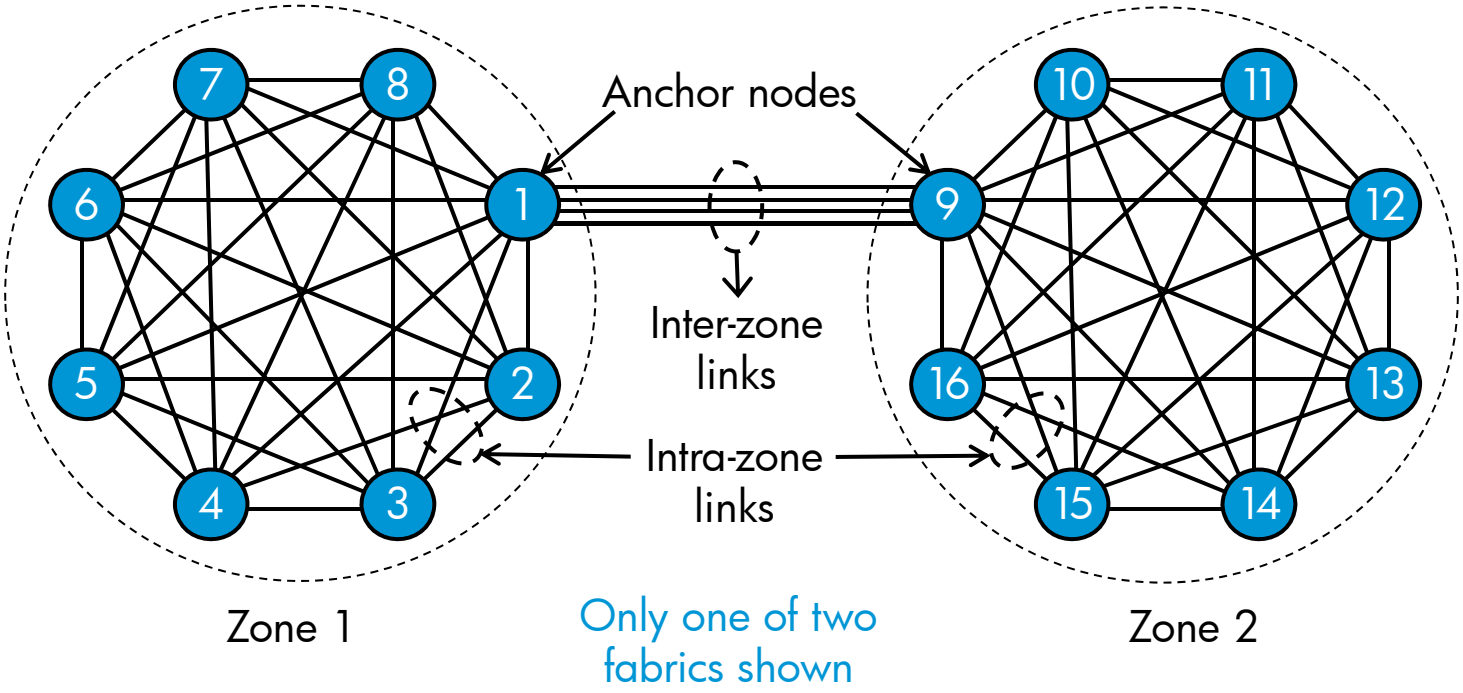
Clustering via Expand-over-IP

NonStop CLIM I/O infrastructure

Cluster I/O Module



BladeCluster solution two-zone connections



65km distance Z to Z

HA anchor nodes available

Anchor nodes route while CPUs are down

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

New products and features

NonStop Solid State Drives - SSDs

Enterprise performance and endurance 200GB 6G SAS SLC SFF

- Enterprise class suitable for very high read/write workloads
  - High write endurance, specified as ~~1~~4 25 drive writes per day for five (5) years
- OSM Service Connection can display SMARTSSD Wear Gauge information
- Okay to mix SSDs and HDDs in the same NonStop disk enclosure
- Same feature set as HP NonStop Hard Disk Drives (HDDs)
  - Dual ported and hot pluggable
  - Mirroring - four paths to each volume
  - Drive partitioning - each partition with its own DP2 cache
  - Volume Level Encryption (VLE)
- Higher performance, lower latency
- Up to 20 SSDs per CLIM pair <increased limit>

Will SSDs and partitioning improve your application performance

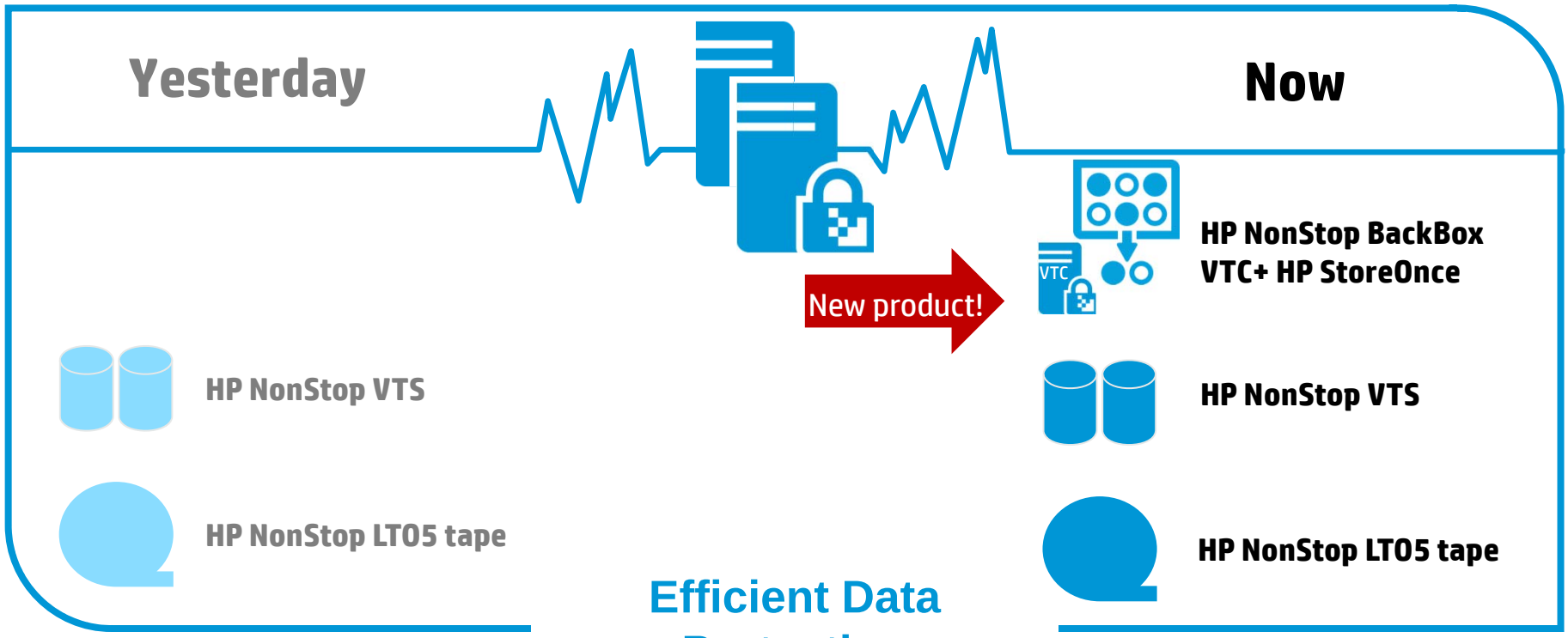
Yes

Maybe

no

- Does your application do random I/O?
- Is your application I/O bound? Sometimes?
- SSDs can provide faster response times and increase transaction throughput (more IOPS)
- Increased amount of DP2 cache per physical device with partitioning
  - faster response time with higher DP2 cache hit rate

Delivering HP NonStop Data Protection



HP NonStop BackBox VTC Models

HP NonStop BackBox VTC Small to Medium Model

1U Proliant DL360p Gen8 server

- Supports 2 NonStop systems
- 1 GbE IP to StoreOnce standard (10 GbE optional)

HP NonStop BackBox VTC Large to Enterprise Model

2U Proliant DL380p Gen8 server

- Supports 4 NonStop systems standard (scales up to 16)
- 10 GbE IP to StoreOnce standard

HP NonStop BackBox VTC Internal Storage Model

2U Proliant DL380e Gen8 server

- Supports 2 NonStop systems standard (scales up to 4)
- Internal RAID 6 disk storage: 10.8TB, 19.5TB or 27.3TB usable

For use with HP StoreOnce for a state of the art data center solution

Future NonStop platforms

NonStop on x86 architecture

- **Expands** the HP NonStop product family
- Based upon Intel x86 architecture
- Bladed system - based on the c7000 blade enclosure
- InfiniBand (IB) system interconnect and clustering
- 10GbE interface
- Leveraged CLIM I/O architecture
- Will connect to Integrity systems via Expand-over-IP

Revolutionizing mission-critical leadership

Current → **Future**

Future NonStop enterprise Itanium mission-critical platforms

HP Integrity NonStop product line

NonStop BladeSystem — 9500 → Kittson

NonStop Entry-class — 9500

Future NonStop enterprise x86 mission-critical platforms

HP Future NonStop x86 product line — 100% NonStop

→ x86

NonStop Software and other enhancements

SQL/MX 3.2.1
NS JSP 7.0
64-bit OSS

NSASJ (JBoss EJB Container)
NSJ 7.0
NSMQ (ActiveMQ)

Java, ActiveMQ

Integration with HP StoreOnce
Python support
NSASJ – GUI Interface
Distributed In Memory Cache (Hazelcast)

Mission-Critical Support

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Key takeaways

NonStop's future today

Six new platforms

New Solid State Drives – SSDs

Flexibility to choose your NonStop Path

Investing in NonStop innovation

Strong roadmap

NonStop is part of the HP Mission Critical Converged Infrastructure

Strategy to expand the NonStop product family to include x86 technology

Thank you