

HP Integrity NonStop Hardware and Software

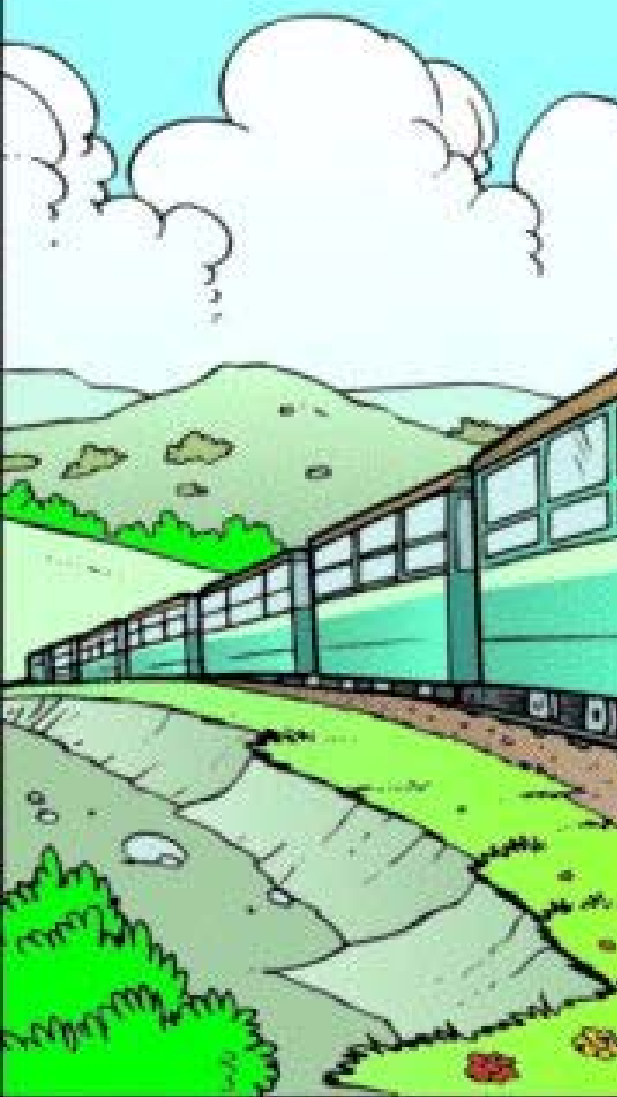
VNUG, May 2010

Mittal Parekh

WW Product Manager, Multiple Product Lines
NonStop Enterprise Division



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Agenda

1. HP Integrity NonStop Multi-core Hardware
2. HP Integrity NonStop Multi-core Software
3. Volume Level Encryption
4. Summary



We heard you.....and you.....



Find ways to be more efficient, so that even with less money you can still deliver the strategy

Now is the time to improve the efficiency of the IT system itself

..DO MORE WITH LESS..



We're holding off on replacements, but spending wisely where we're investing for the future...

Costs are under pressure, but we must remain competitive

NonStop customers asked for

Deliver 24 x 7 availability

- Minimize both planned and unplanned outages
- Drive recovery time to near-zero
- End-to-end availability
- Instill a culture of 24 x 7 support

Handle massive scalability

- Handle the largest workloads
- Scale without planned outage
- Scalability of multiple dimensions—processors, database, and software

Drive to standards-based computing

- Lower cost hardware by leveraging “volume economics”
- Modern software interfaces
- Service Oriented Architectures

Provide longevity of support

- Provide product support and upgrade capability over decades
- Maximize continuity and consistency

“Give us bigger, better, faster...cheaper NonStop platform”

NonStop: Investing for the future

Modernize

Standardize

Customers tell us they want...

Modern applications
built using modern tools
running on standard platforms
with 24/7 reliability

How do I get from this...

Legacy software

Job Scheduler

Flowcharts

Cobol Compiler

Vendor management tools

Hierarchical database

Green Screen / CLI

24/7, scalable
and proven...

but expensive, and
needs special skills

Proprietary hardware

Unusual Chipsets

Bus Architectures

MBs of unique storage

Proprietary I/O Bus

Vendor networking protocol

Vendor peripherals

COBOL
in 24 Hours
SAMS

7 Hank Reds

...to this?




Modern software

Development environments

Management tools

Database programming

Web/GUI interfaces



Open, low-cost
and more common
skills...

but how do I make
it reliable? Scalable?



Standard hardware

Common chipsets

Blades

Storage

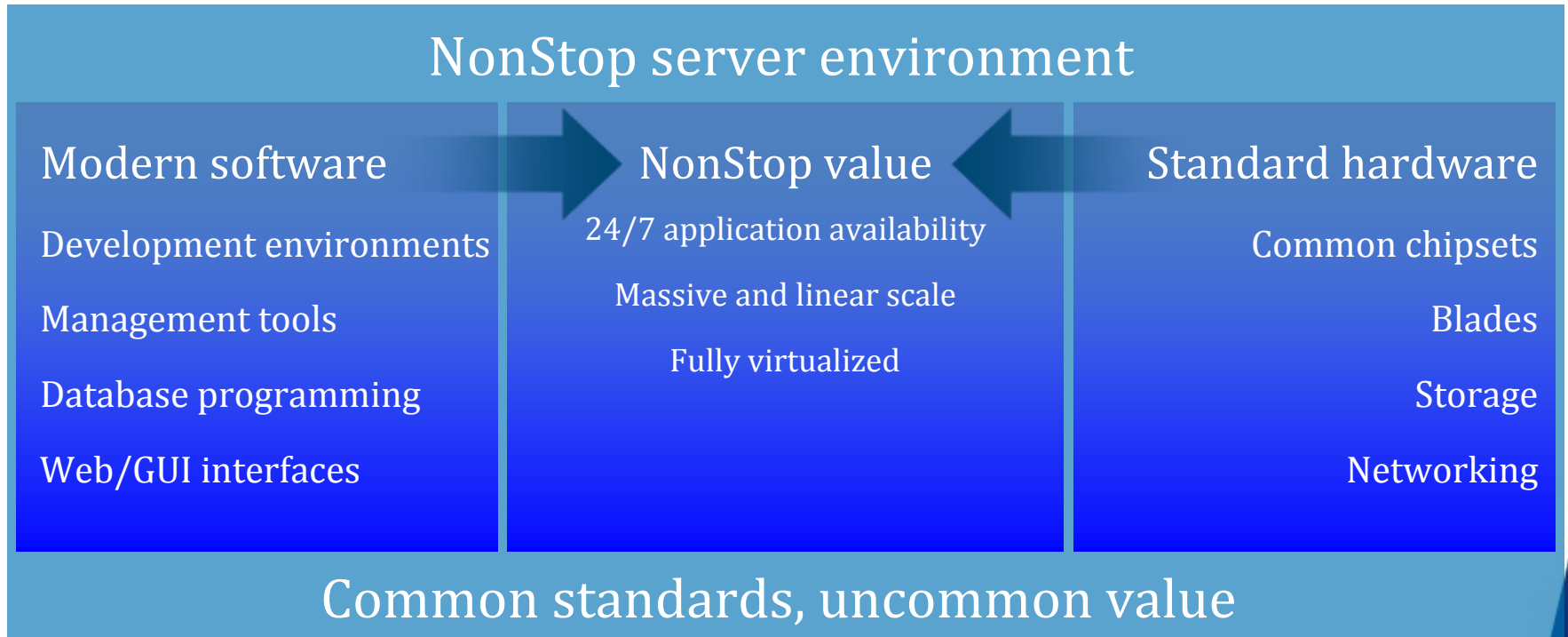
I/O infrastructure



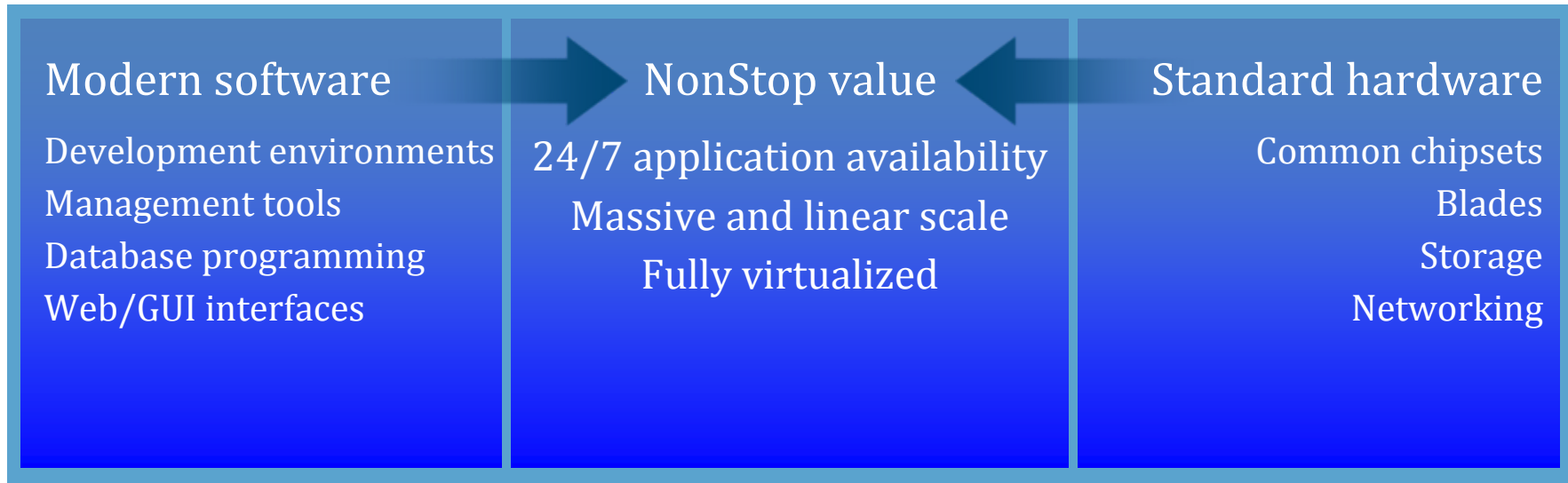
HIBERNATE

ROLLBACK • TRUNCATE
ALTER • XSQL

The new NonStop... modern, standard, and 24/7



NonStop and HP's Converged Infrastructure



Virtualized • Resilient • Orchestrated • Optimized • Modular



HP Integrity NonStop BladeSystem

First-ever 24/7 mission critical
computing system built with
bladed modularity and standards

Double the performance

Half the footprint

100% NonStop



Half the footprint...

Double the performance

Integrity NonStop

8 CPUs/performance = 1x



Driving efficiency via:

- Multi-core blades
- SAS storage
- Standard I/O
- Integrated ServerNet
- Integrated management

Integrity NonStop BladeSystem

8 CPUs/performance = 2x



Delivering:

Higher performance
Higher density
Lower cost

NS2000

The new entry-level Platform

- NSMA/J-series RVU only
- Intel's Itanium Dual-core Montvale processor
- Support new I/O Infrastructure
- Rack-mount form-factor
- Target markets
 - Development, test platform for NB50000c
 - Small stand-alone applications
 - Emerging markets



The NonStop standardization journey

An Overview



NonStop S-series

A Proprietary Design with

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

Integrity NonStop

Moving to Standards with

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

Integrity NonStop BladeSystem

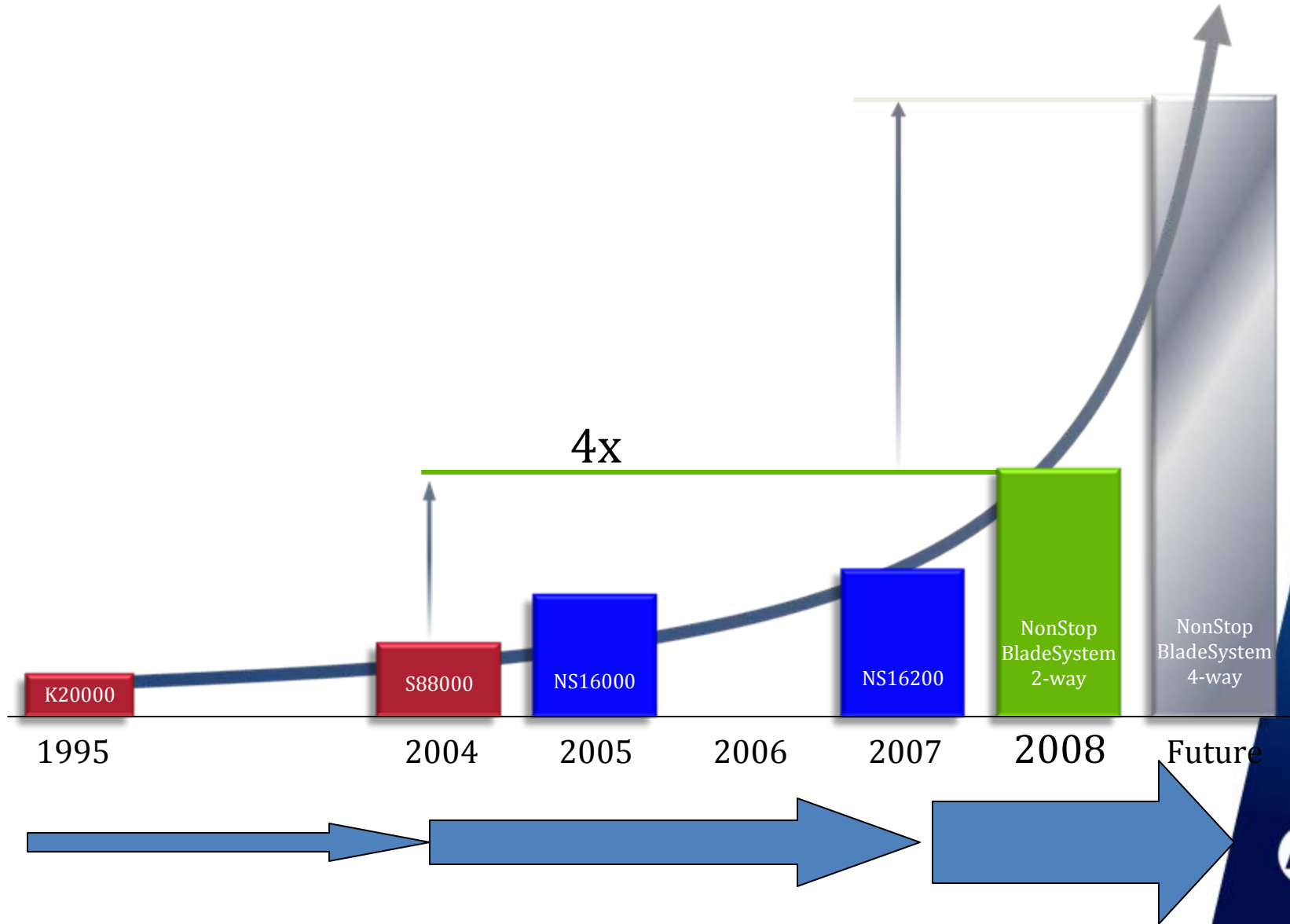
Even More Standardization

- Standard ISS Chassis and Rack
- Standard Power & Cooling
- Standard Blade with unique interconnect mezzanine card
- Standard DIMMs
- Standard IO
- Off the Shelf Disks
- Only NonStop-unique HW is ServerNet



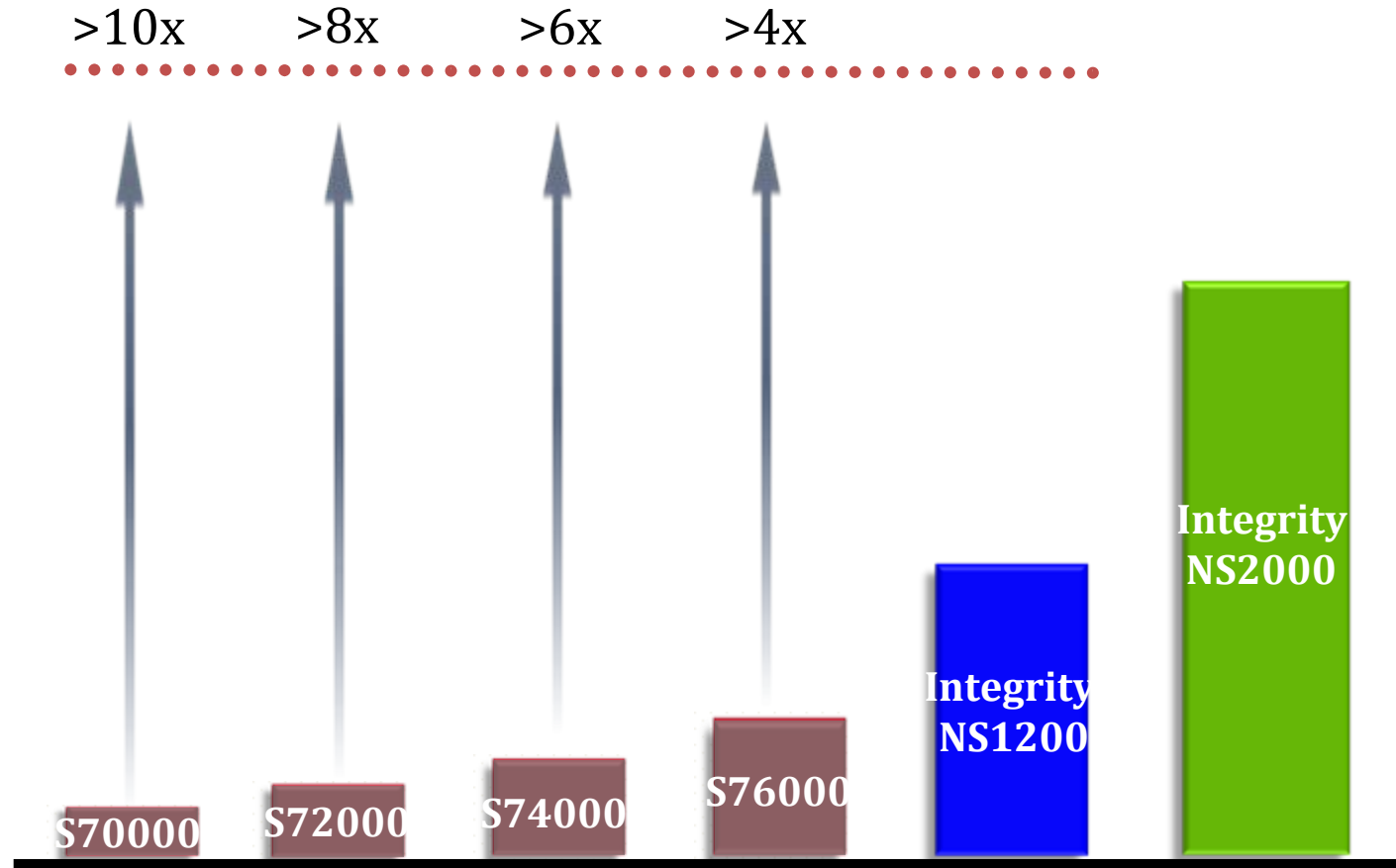
The NonStop standardization journey

Performance with RAS



The NonStop standardization journey

Modern and Affordable NonStop



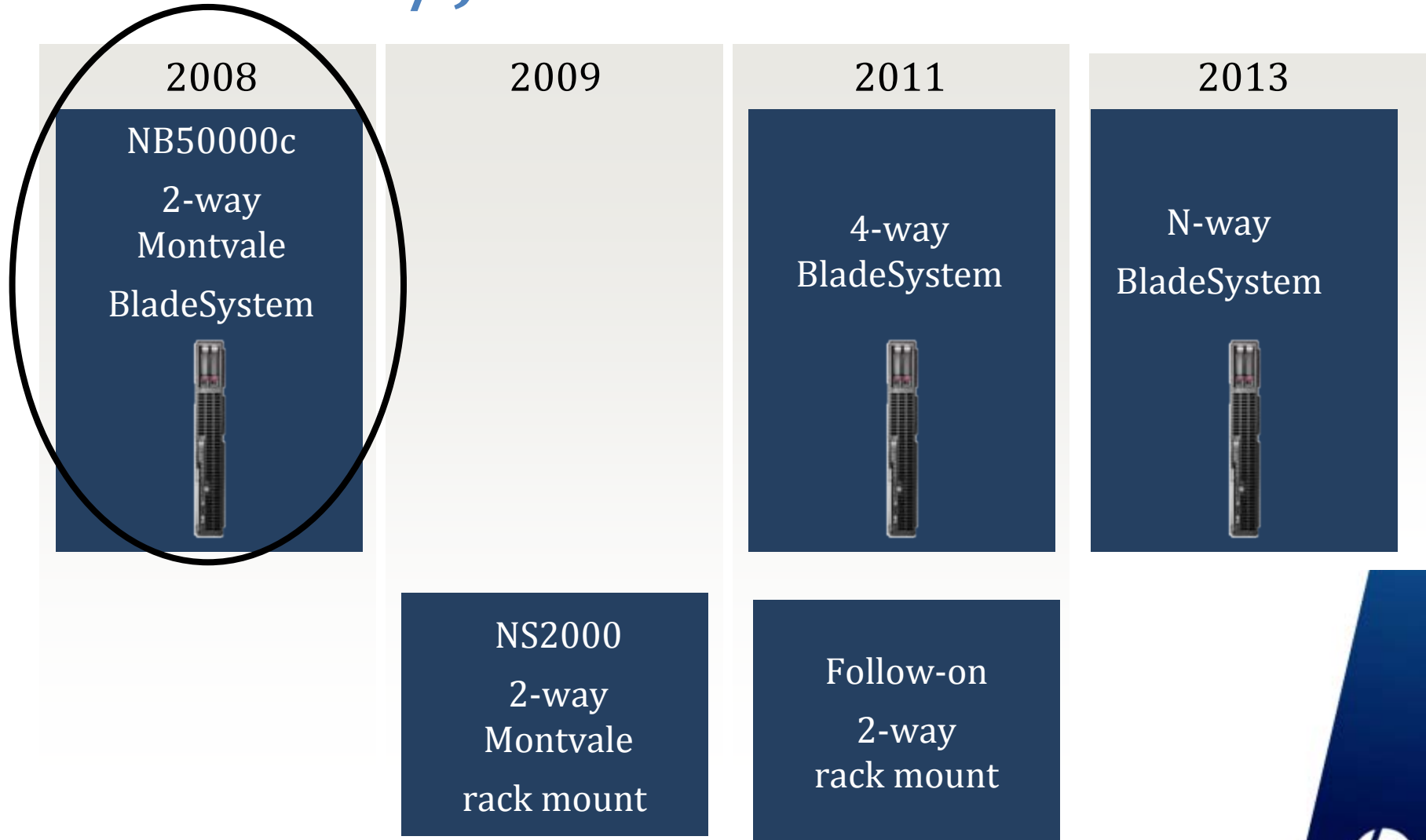
100% NonStop

- Always available
 - 24/7 continuous availability
 - Fault-tolerant NonStop OS
 - Fully-integrated fault-tolerant software stack
- Massively scalable
 - Scale-up in addition to Scale-out
 - Linear scalability
 - High-speed ServerNet clustering
- Complete investment protection
 - 100% software compatible
 - Seamless clustering with prior systems
 - Supports existing I/O infrastructure



HP Integrity NonStop roadmap

Multi-core/J-Series



NonStop BladeSystem

System configuration overview

Blade chassis

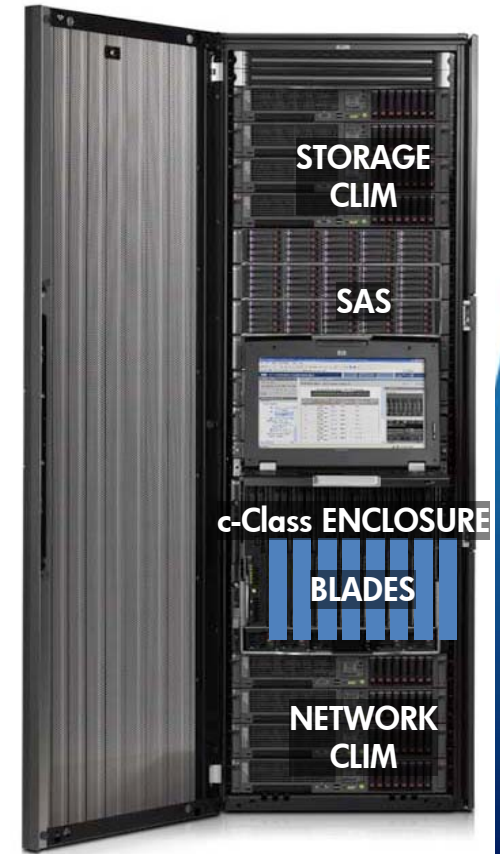
- c-Class enclosure
- ServerNet double-wide switch modules
- Ethernet single-wide switch modules (maintenance connections)

Logical processors/blades

- Two to eight blades per chassis, each with:
 - One 1.66 GHz dual core Montvale processor (one logical CPU)
 - ServerNet Mezzanine card
 - 8, 16, 24, 32, 48 GB main memory per logical CPU

Input/output

- Networking CLIM
 - Five GBit Ethernet ports (five copper or three copper/two fibre)
- Storage CLIM
 - 2 SAS HBA default; 2 additional: SAS/FC HBA choices
 - SAS enclosure: Hosts up to 25 disks
SAS 146 GB @ 15K drives, 300 GB @ 10K drives
 - XP connection option; FC tape option
- IOAME is supported, S-series I/O for traditional TDM based SS7 only

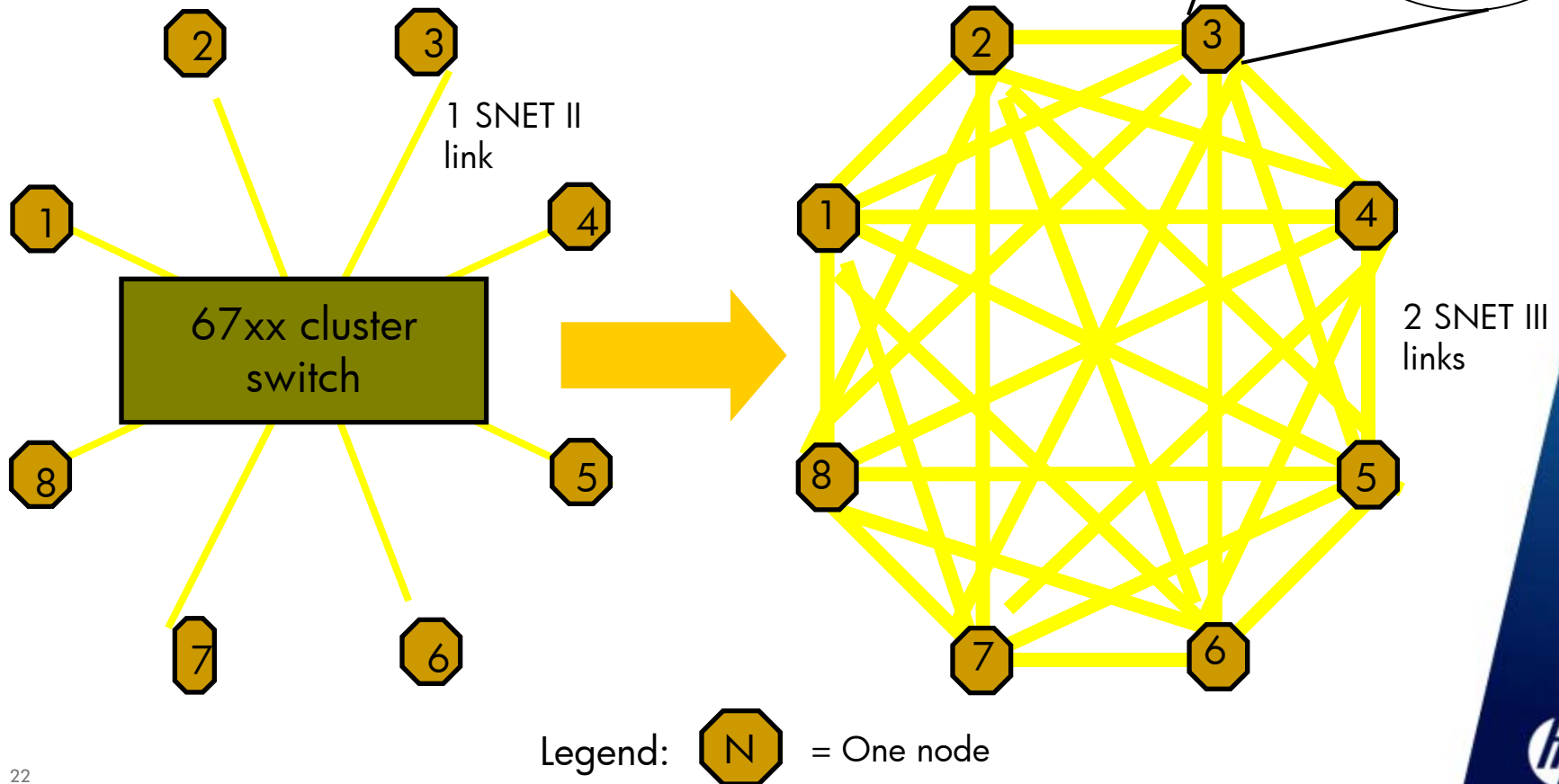


New I/O infrastructure

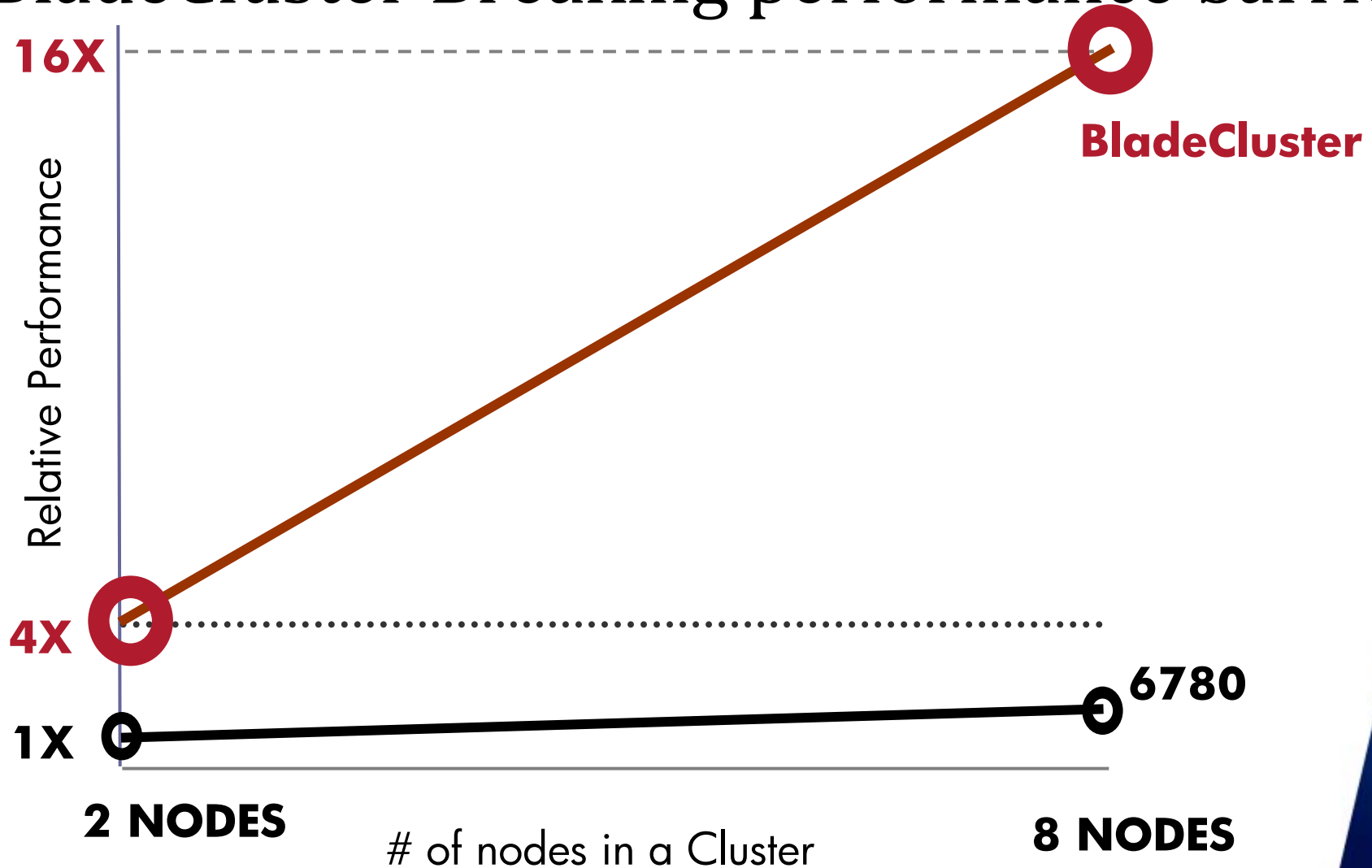
- Three Cluster IO Module (CLIM) products
 - **IP CLIM** for networking protocols and Ethernet connectivity
 - **Storage CLIM** for attaching Serial Attached SCSI (SAS) disks, Storage XP Array family, and fibre channel tape
 - **Telco CLIM** for SS7 over IP and other
- Can co-exist with existing I/O Infra such as
 - IOAME
 - SS7 over T1/E1 via S-series I/O



Next generation of NonStop Clustering: BladeCluster



Next Generation of Clustering: BladeCluster Breaking performance barrier



HP Integrity NonStop Multi-core Software



NonStop software investments

In a nutshell

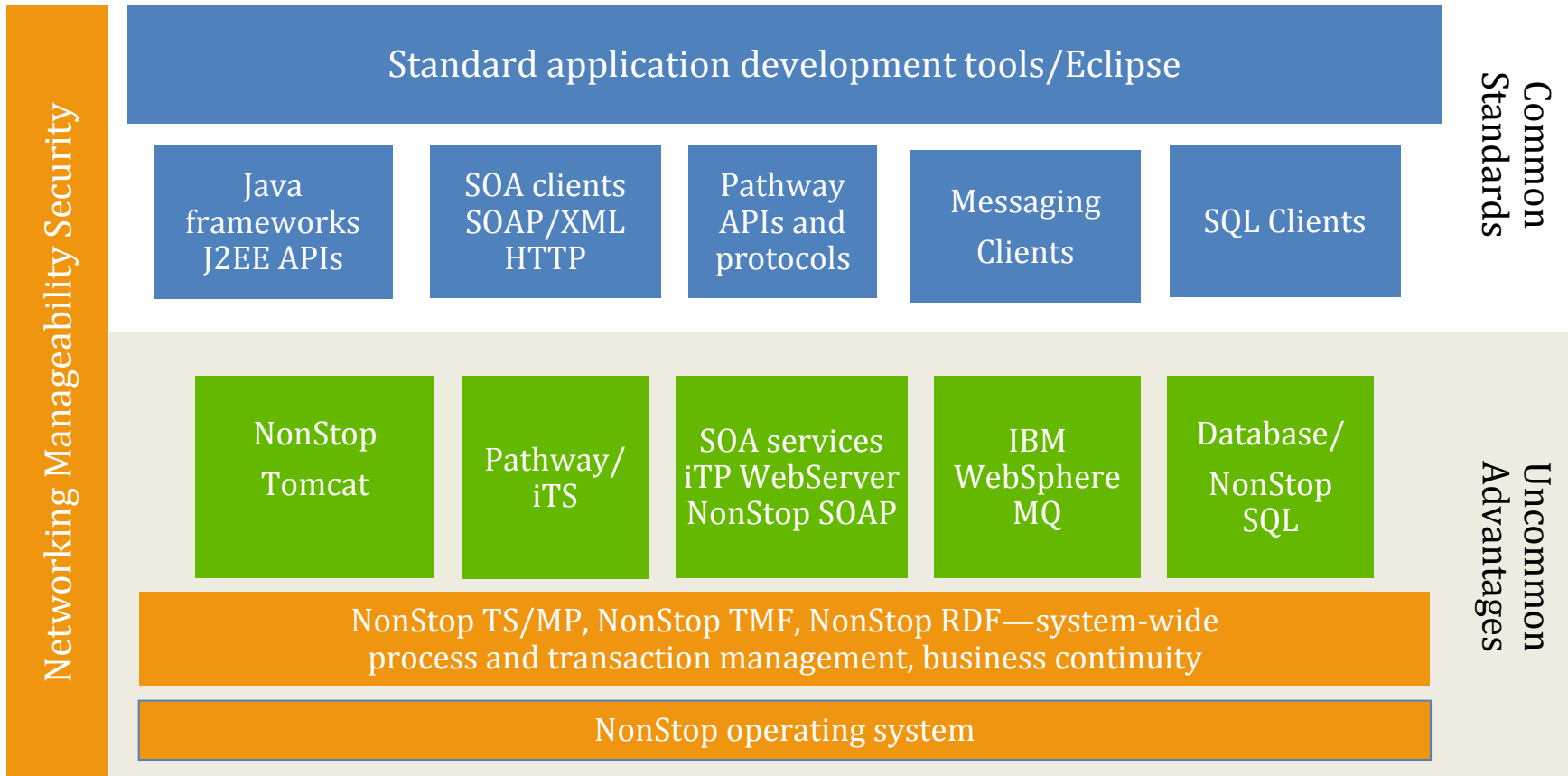
- Support **industry standard technologies** for application development
- Differentiate these standard applications by deploying them into the **most scalable and available platform infrastructure** (without change)
- Make this infrastructure easily accessible, open, highly secure, and simple to manage

Common standards, uncommon advantages
The same application runs better on NonStop



NonStop software

Investments across the stack



Operating system infrastructure – plans

Adherence to industry standards, preparing for Quad-Core

February 2009

- **Guardian Binary Semaphore – Limits Relief**
 - Increase the number of binary semaphores per process from 64 to 24K

May 2009

- **OSS File Open – Limits Relief**
 - Increase OSS file opens (per CPU including sockets, terminals, disk, ...) from 12K to 64K
 - Increase OSS disk file opens (per CPU) from 12K to 48K
 - Increase OSS open sockets (per CPU) from 4K to 16k

2H 2010

- **Standard Library Support for Non-blocking IO**
 - Non-blocking IO for threaded applications using standard C libraries
- **System Limits Relief**
 - Increase OSS PIDs (per 16P system) to 128K
 - Increase number of Guardian processes to 10K
 - Increase OSS file opens (per CPU) to 128K
 - Increase OSS disk file opens (per CPU) to 96K
 - Increase OSS open sockets (per CPU) to 32K

Time



SOA, Java and Open-source Frameworks

Java open-source application platform with NonStop fundamentals

April 2009

- **Released NSJava 6.0**

- Certified implementation of JDK 6.0

July 2009

- **Open Source Java Frameworks**

- Spring framework for business logic tier

- Axis 2 for SOA web-services

- Server Faces and Sprint MVC for Web tier

- Hibernate for persistence tier

June 2009

- **Large Message Support in SOAP 3.0**

- SOAP messages limit increased from 32K to 2MB

2010

- Apr 2010 Released Update to NSJava 6.0

- **Standards-based SOAP engine (4.0)**

- Based on open source Apache AXIS2/C architecture (EAP available earlier) Feb. 2010

- Adheres to SOAP 1.2 standard

- **NonStop Java Server Pages 6.1**

- Deep port of latest Apache Tomcat servlet engine (version 6.0.20) July 2010

Time

Future product plans, dates, and functionality are subject to change without notice

NonStop SQL/MX Database Roadmap

2006 2007 2008 2009 2010 2011 2012 2013

SQL/MX 2.1.1 – G06.27 September 2005

S-series

SQL/MX 2.2 – H06.05 March 2006

SQL/MX 2.3 GA – H06.10 May '07

SQL/MX 2.3.1 – H06.13/J06.03 Feb. '08

SQL/MX 2.3.2 – H06.16/J06.05 Nov. '08

SQL/MX 2.3.3 – H06.19/J06.08 Aug '09

SQL/MX 2.3.4 – Feb '10

SQL/MX 3.0 – Feb'11

Integrity NonStop

Pathway Roadmap

Continuous functional enhancement and technology currency

May 2009

- NonStop TS/MP 2.4
 - Online application upgrade
 - Increased limits
 - Large context-free Pathsend messages**
 - Improved ACS availability and recovery
 - Optimized server/cpu placement for greater cpu utilization
 - Support for FC/HISTORY/! command
 - Increased granularity of CREATEDELAY
 - Enhanced change auditing
 - More efficient PATHMON link handling
 - Domain level PDMCOM commands**

NEXT RELEASE

- NonStop TS/MP 2.5
 - Improved low-load link selection
 - SPI support for PDMI
 - Faster stopped server clean-up
 - Enhanced CPU weighting and rebalancing
 - Node independent DEFINES
 - Global Pathsend timeout
 - Run PATHMON at high-pin
 - ACS user tracing

Future product plans, dates, and functionality are subject to change without notice

Time

HP NonStop Business Continuity Suite

Roadmap



Business Continuity

Integrated
products designed
to protect your
data and ensure
your business.

Remote Database Facility (RDF)

Update 9 – May 2009

Planning for Update 10 underway

AutoSYNC

Update 12 – Jan 2010

AutoTMF

Update 9 – Jan 2010

SQL DDL Replicator (SDR)

Update 1 – July 2009

TMF Synchronous Gateway

Shipped – and partner solutions due mid to late 2010

All of these
products can
help make
migrations
and upgrades
easier!

Future product plans, dates, and functionality are subject to change without notice

NonStop manageability strategy

Best TCO and best TCE to customers

Customer satisfaction

Create new manageability products and solutions, and enhance and improve existing ones to satisfy customer needs

Customer choice

Provide customers a comprehensive selection of manageability products and solutions to choose from

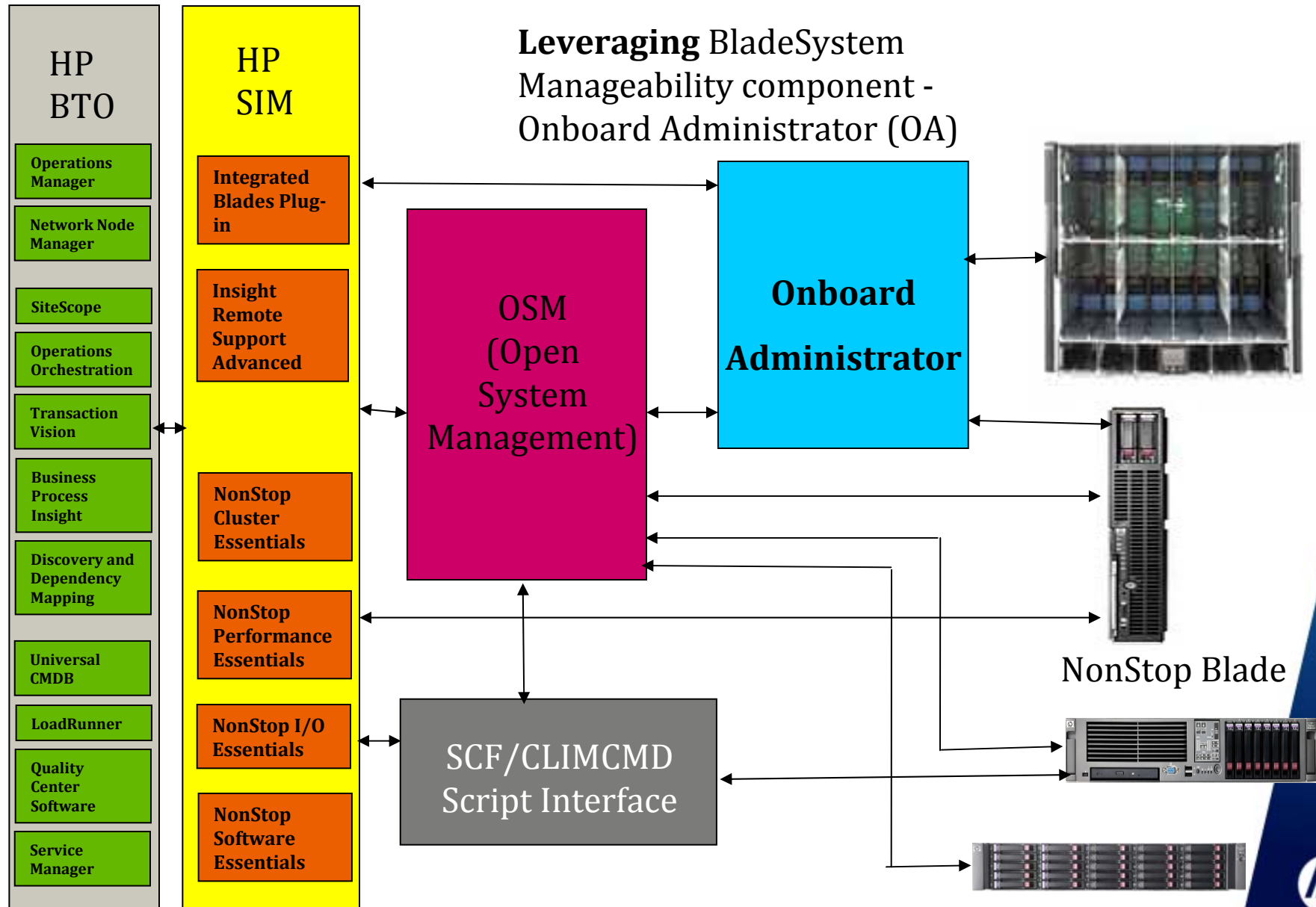
Enterprise integration

Provide manageability products and solutions to manage NonStop in heterogeneous enterprise environments

HP Unified Infrastructure Management



Integrity NonStop BladeSystem: Manageability



NonStop Software Security Products



On Platform Security

Safeguard

NS System Console
Security Program

Secure iTP
WebServer/SOAP

Data In Motion

NonStop SSH

IPSec

Atalla NSP
(Encryption
Processors for ATMs)



Data At Rest

NonStop Volume
Level Encryption
(Feb. 2010 GA)

Data Sanitization

Secure VTS
(Virtual Tape System)



Audit and Compliance

CLW (Compliance
Log Warehouse)

SafeArt (Safeguard
reporting)



HP Secure Advantage

Your secure end-to-end business advantage

Business Outcomes		
Products – Partners – Solutions		
Defend IT resources By improving availability and protecting your networks, systems, applications, software and DBMS, using trusted platforms	Protect data In all its forms: Data at rest Data in motion Data in use	Provide Validation Establish a secure audit trail across the organization as proof of compliance for internal and external auditors, with real-time alerts and process alignment
Minimize disruptions due to security breaches with a trusted and hardened infrastructure	Use encryption and Identity Management, in combination with other pro-active security management techniques	Encryption and Key Management, working with integrated compliance solutions across organization

NonStop is participating in the HP Secure Advantage program and is driving a Security Roadmap to offer enhanced capabilities to our NonStop customers

NonStop Software in a nutshell

Modern environment based on NonStop fundamentals

Develop Application programming models	ECLIPSE	Open Source Java Frameworks			
		Apache Tomcat			
		Certified Java SE Platform (JDK and JRE)			
		SOA Infrastructure (SOAP, XML, HTTP, WSDL)			
Deploy Application infrastructure	NonStop TS/MP				
	NonStop OS				
Differentiate	Network access	SOA infrastructu re	Open source Java frameworks	Business logic	Database
Transparent Scalability	✓	✓	✓	✓	✓
Transparent Fault Tolerance	✓	✓	✓	✓	✓

Delivering Uncommon advantages by leveraging Common Standards

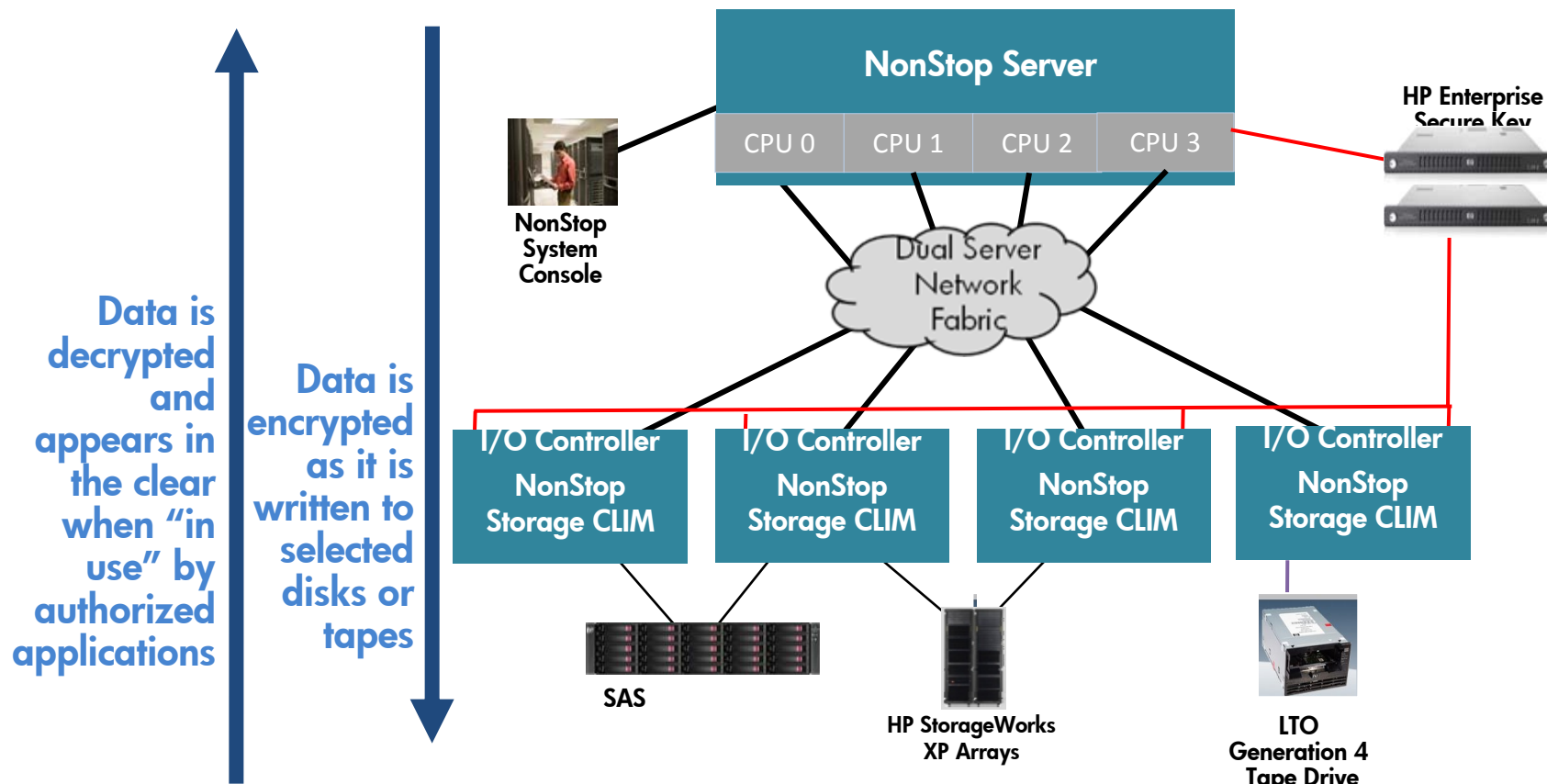


Volume Level Encryption



Volume Level Encryption

Quick Overview



Summary



Bloomberg.com

“[HP] changed the design to deliver twice as much performance in half the space.”

COMPUTERWORLD

HP puts high-end NonStop system on blades ... move to volume hardware will cut online transaction price by half

The Register®

When HP talks about "blade everything", it means freaking *everything*. - Ashlee Vance

it week

HP introduces mission critical computing blade server

InformationWeek
DEFINING THE BUSINESS VALUE OF TECHNOLOGY

HP Offers 'Fail-Safe'
Blade Server

THE WALL STREET JOURNAL

“Blade servers are one of the hottest categories in computing. Now H-P hopes to use these thin systems as a wedge into IBM’s safest stronghold.”

eWEEK

HP is boldly aiming the new server at established IBM mainframe customers in an effort to convince them to move to racks of blades.

NETWORKWORLD

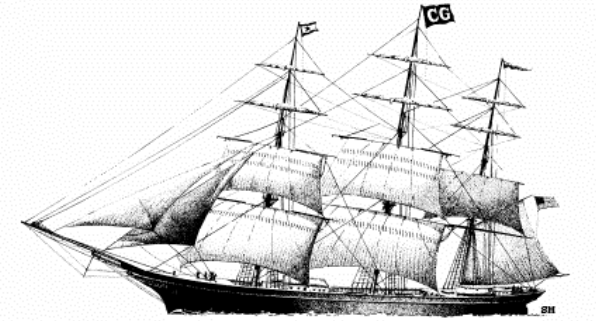
HP targets mainframe users with fault-tolerant blade server



Analyst reports and comment



Gartner



Navigating Information Technology Horizons SM



Analyze the Future



ff² the Availability Digest
- - - achieving 100% uptime



**INSIGHT
64**



sageza



HP NonStop tops IBM and Sun Server of the Year 2008

The HP Integrity
NonStop NB50000c
BladeSystem topped
IBM's z10 Business
Class mainframe and
Sun's SPARC
Enterprise T5440
server

"This makes the fault-tolerant and high-performance NonStop architecture far more accessible in terms of both price and accessibility than it has been historically."

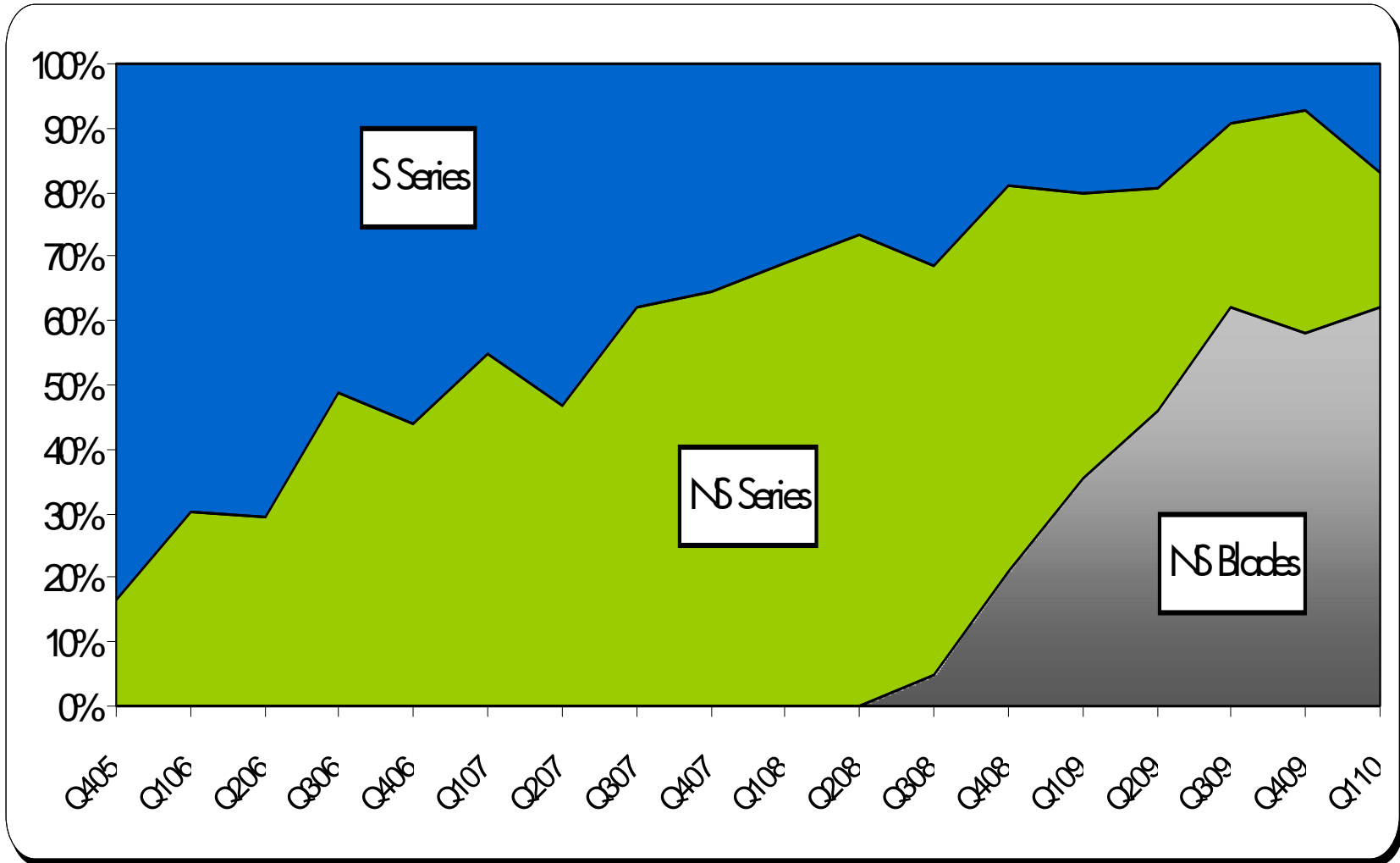


NonStop Multi-core delivered!

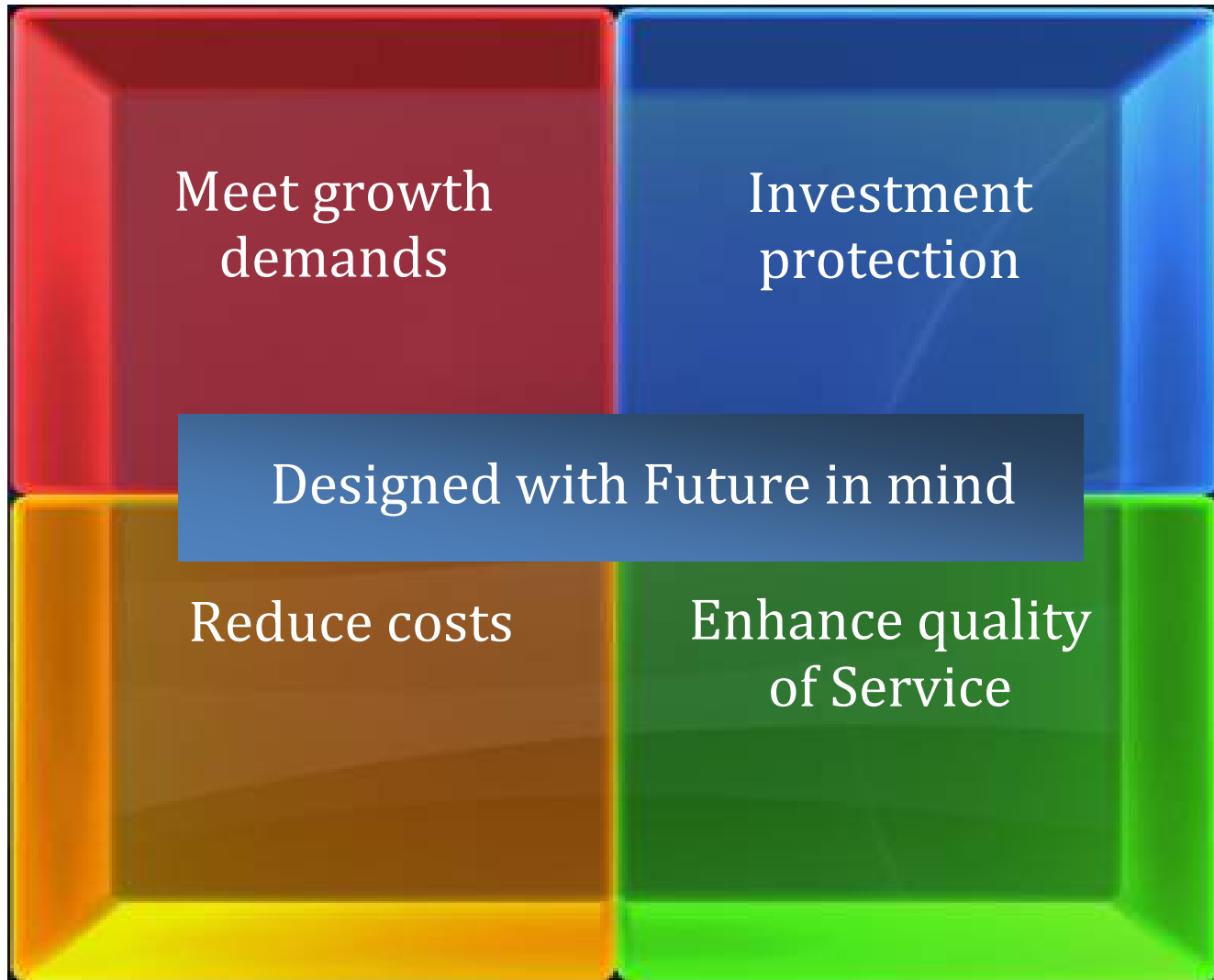
- ✓ Delivered on Performance
- ✓ Delivered on Price/Performance
- ✓ Delivered on smaller footprint/reduced cost
- ✓ Delivered on binary software compatibility
- ✓ Delivered on S-series ease-of-migration



Integrity NonStop adoption



NonStop Multi-core in a nutshell



Result of modern, standard converged infrastructure is...

Economics

- Changing the economics of mission critical computing
- Industry standard components
- Dramatic price performance improvements



Openness

- Enabling new solutions with open interfaces & open SW
- Open source execution environment: SASH
- Open development environment: Eclipse
- Leverage HP BTO suite



DO MORE WITH LESS



THANK YOU