OpenVMS Strategy and Roadmap

When downtime is not an option

Rahul Philip Mampallil

Product Manager (OpenVMS)

November 2012

Agenda

- Mission Critical and Secure Computing

- HP Converged Infrastructure

- HP Integrity with OpenVMS

- HP's Commitment to OpenVMS

- HP OpenVMS Roadmap

- HP OpenVMS on Integrity Systems – Road Ahead

- Migrate to Integrity

OpenVMS – Mission Critical & Secure Computing

Hundreds of thousands of systems installed, millions of users

Government offices worldwide
demanding security & high availability

Major hospitals

Mobile telecom billing systems scaling to
millions of users

World's largest CPU chip manufacturer
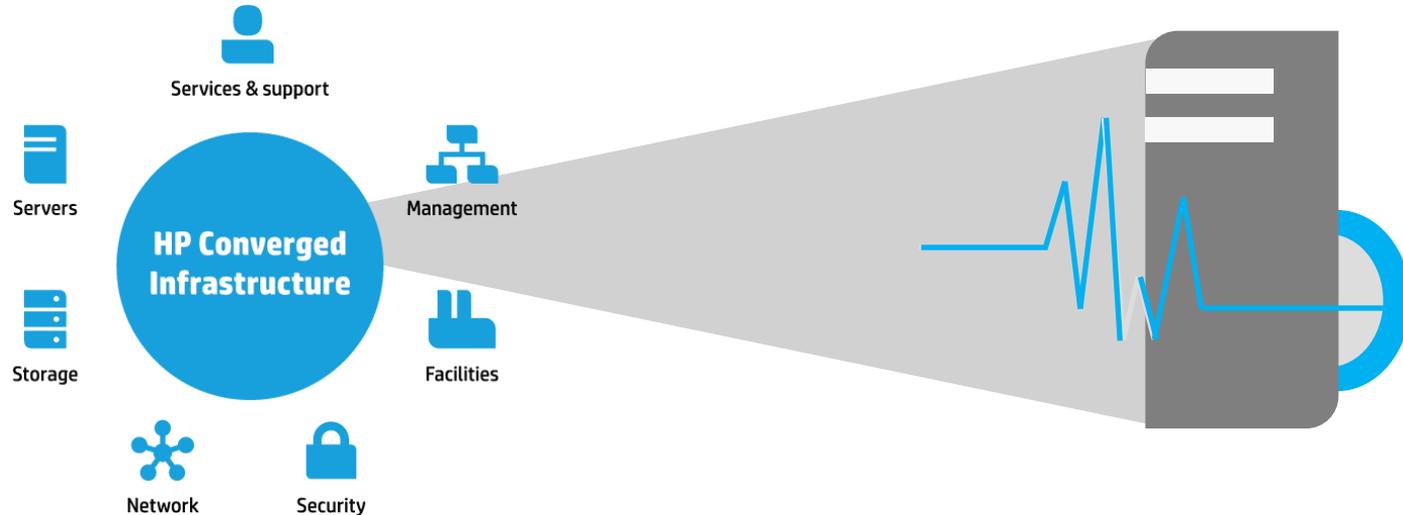
Majority of automated lottery systems

Prominent futures and derivative
exchanges worldwide

HP Converged Infrastructure

Overcome sprawl, achieve service levels in mission-critical computing

Services & support

Servers

Management

HP Converged Infrastructure

Storage

Facilities

Network

Security

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

Always-On resiliency and flexibility with HP Mission-Critical Converged Infrastructure

Expanding Mission-Critical Converged Infrastructure

FULL MISSION-CRITICAL EXPERIENCE

| SIMPLIFY AND UNIFY IT | ALWAYS-ON RESILIENCY | DYNAMIC OPTIMIZATION | INVESTMENT PROTECTION & STABILITY |

HP UX OpenVMS NonStop

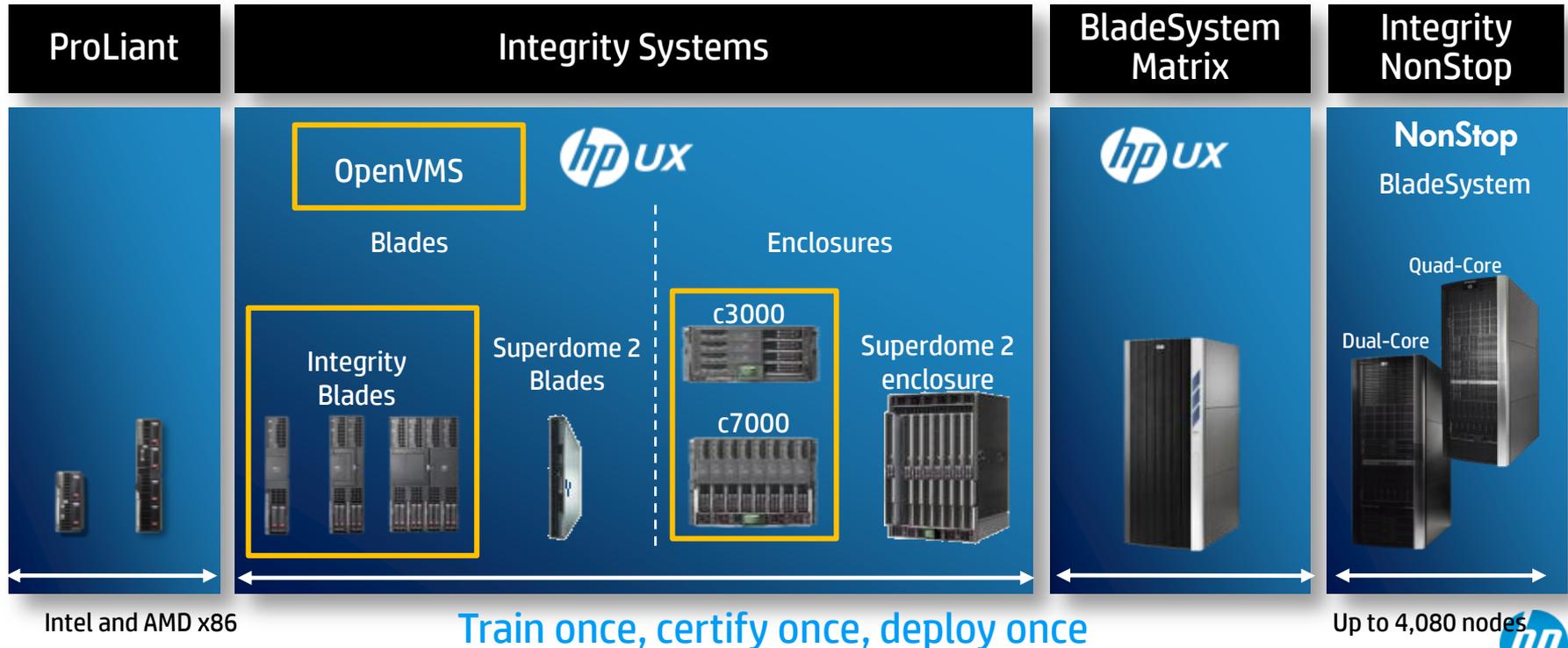Continued innovations in traditional mission-critical

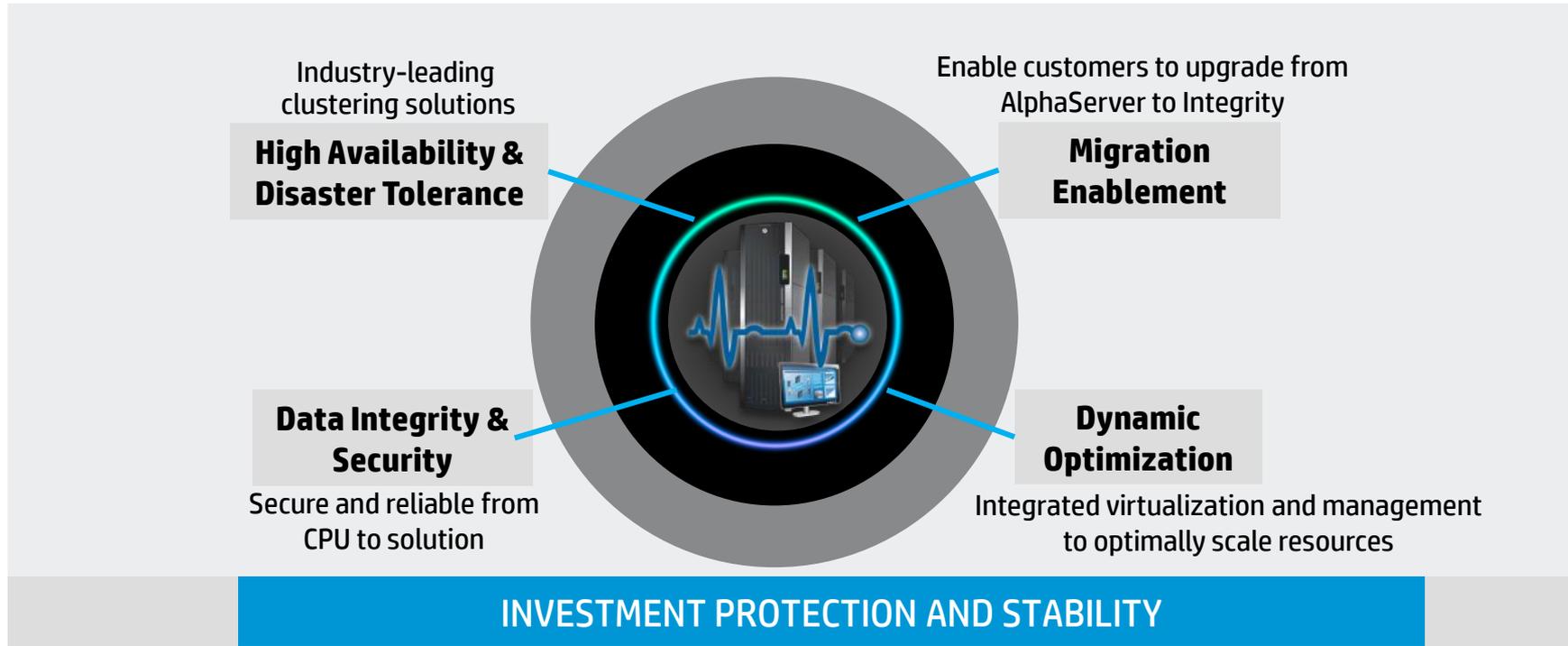Making mission-critical x86 a reality

HP Integrity with OpenVMS

Unified, bladed architecture from x86 to Superdome 2

Simplify by consolidating applications on a common platform

ProLiant	Integrity Systems		BladeSystem Matrix	Integrity NonStop

OpenVMS

hp UX

Blades

Enclosures

Integrity Blades

Superdome 2 Blades

c3000

c7000

Superdome 2 enclosure

hp UX

NonStop
BladeSystem

Quad-Core

Dual-Core

Intel and AMD x86

Train once, certify once, deploy once

Up to 4,080 nodes

HP Integrity with OpenVMS

Delivering mission-critical solutions

Industry-leading clustering solutions

High Availability & Disaster Tolerance

Enable customers to upgrade from AlphaServer to Integrity

Migration Enablement

Data Integrity & Security

Secure and reliable from CPU to solution

Dynamic Optimization

Integrated virtualization and management to optimally scale resources

INVESTMENT PROTECTION AND STABILITY
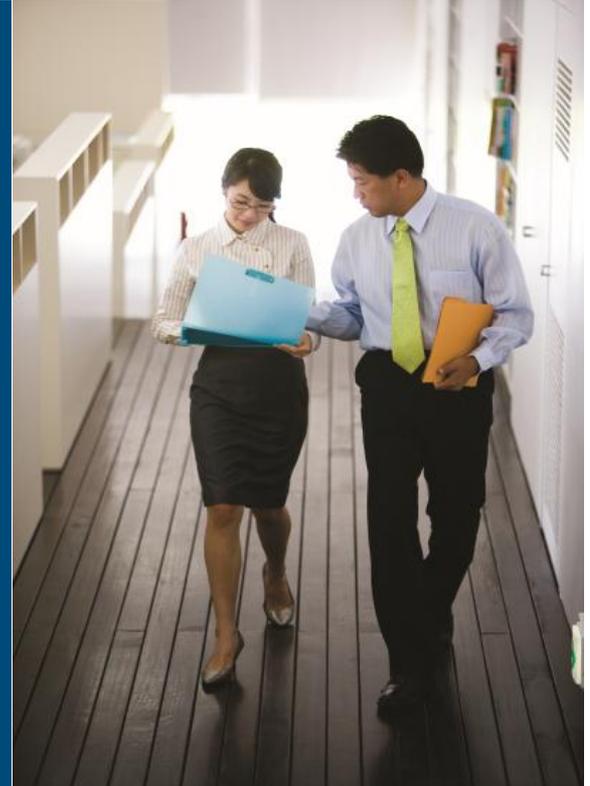
HP's Commitment

HP's commitment to OpenVMS

HP values the relationships we have built with our customers and partners, and we want you to know that despite Oracle's announcement to discontinue all software development on the Intel Itanium microprocessor, we remain committed to supporting you and your IT environment. We will continue to support OpenVMS on Tukwila-based and Poulson-based Integrity systems **beyond the next decade**.

Let me reassure you. HP plans to continue the development and innovation of Itanium-based Integrity NonStop and Integrity server platforms with our HP-UX and **OpenVMS** operating systems **for more than 10 years**.

Martin Fink, General Manager, HP BCS

March and April 2011

HP OpenVMS Roadmap

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any products remains at the sole discretion of HP.

HP OpenVMS Roadmap

Continuously delivering mission-critical solutions for 35 years!

2011	2012	Future
OpenVMS V8.4	**OpenVMS V8.4**	**OpenVMS V8.4**

• Update 500
  • New Integrity rack-mount support
  • Virtual Connect/Flex10 support
• Update 600
  • Advance power capping and IPM support
  • 10 GbE cards on rx2800 i2 support
  • P812 6G SAS support (with D2600/D2700) on rx2800 i2
	• Update 700
	  • SAS HBA mode support on rx2800 i2
	  • SSD support on i2 servers
	  • SCSI support on rx2800 i2
	  • P711m controller and 6Gb/s SAS BL Switch
	  • P2000 G3 SAS array
	  • D2200sb Storage Blade
	  • Virtual Connect FlexFabric 10 Gb/24-port module
		• Update 800
		• Poulson* processor support
		• New hardware enablement
		• Security updates
		• Enhanced system management and virtualization capability
		• Compilers enhancements

HP OpenVMS Detailed Roadmap

Continuously delivering mission-critical solutions for 35 years!

	Currently supported	Coming next
Platform & Hardware enablement	• Support for BL8x0c i2 & rx2800 i2 • EVA P6300/P6500 • LTO5 support • D2D support • 6Gb SAS support • 10GbE support on BL8x0c i2 • ESL G3 Tape Libraries • 8 GB, 16GB DIMMS support on rx2800 i2 • 450GB, 600GB SAS Disks support on BL8x0c i2 & rx2800 i2 • 900GB SAS Disk support on BL8x0c i2 • SCSI support on rx2800 i2 • SAS HBA mode support on rx2800 i2 • SSD support on BL8x0c i2 & rx2800 i2 • VC FlexFabric 10GbE/24-port module (571956-B21) support on BL8x0c i2	• Support for "Poulson" based blades and rackmount servers • 3PAR support on Integrity • FireMV graphics card support on rx2800 i2

HP OpenVMS Detailed Roadmap

Continuously delivering mission-critical solutions for 35 years!

	Currently supported	Coming next
System Management, Virtualization & Layered Product update	• Support for HP Insight Software V6.x • SMH V2.2-1 for BL8x0c i2 & rx2800 i2 • VC Flex-10 support with BL8x0c i2 • Integrity VM v4.3 PK2 support • Disk File Optimizer (DFO) 2TB support • Operations Manager HTTPS Agent V8.6 refresh • OMW 9 support • ABS V4.5 (1202) update	• "Poulson" support • HP-RTR support on RHEL 6.0, 6.1 & 6.2 • Archive Backup System (ABS) V4.5 update
Security & Networking	• Kerberos V3.2 • Secure OS Delivery • TCP/IP V5.7 ECO 4 • SSL 0.9.8w plus security fixes • DECnet-Plus ECO 2 • CIFS V1.2 ECO1 PS002	• SSL refresh • DECnet-Plus ECO release • CIFS update • TCP/IP V5.7 Update

HP OpenVMS Detailed Roadmap

Continuously delivering mission-critical solutions for 35 years!

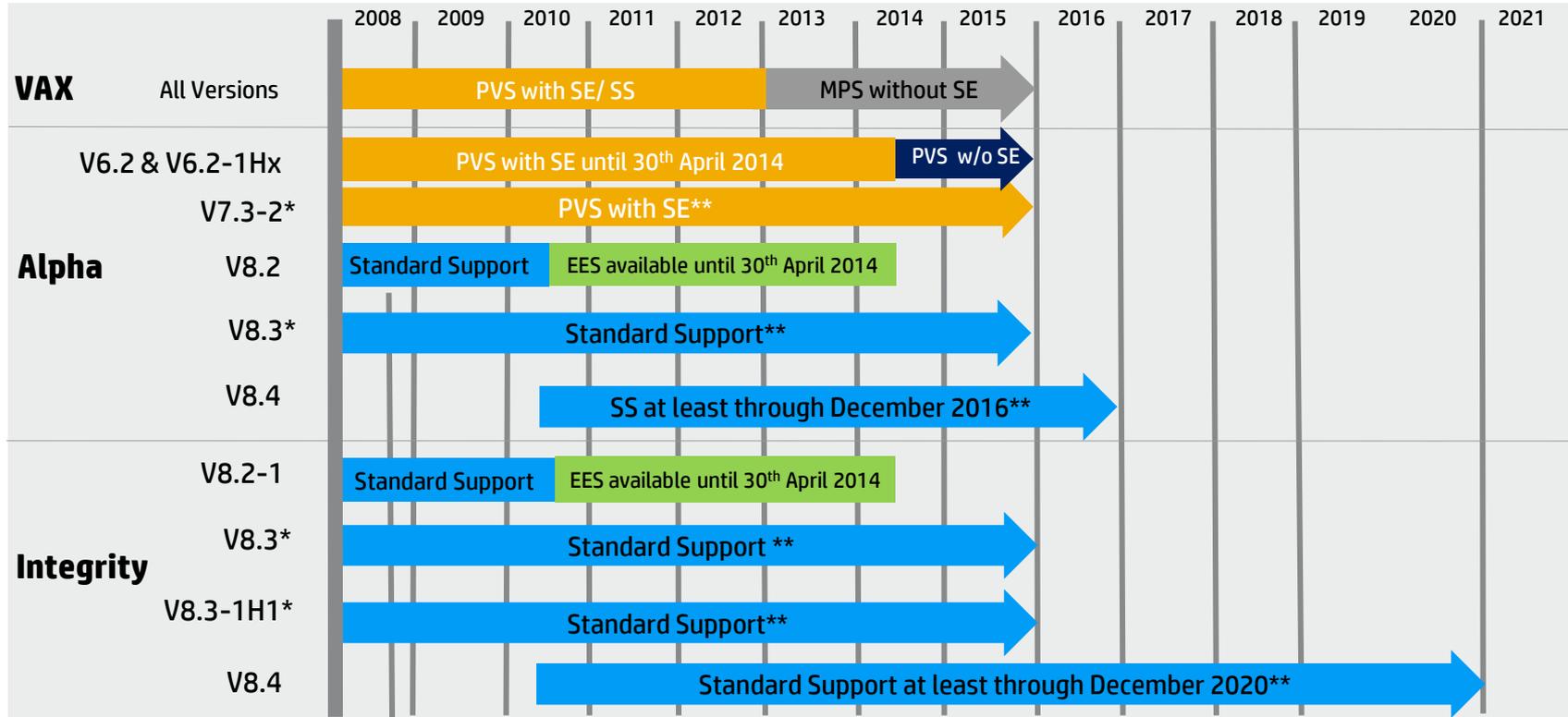|	Currently supported	Coming next
UNIX Interoperability & Migration Enablement	• GNV V3.0-1	• Open source product updates
Application Development – Compilers & Deployment Tools	• Basic V1.7 ECO kit (Integrity) • C V7.3 ECO Kit (Integrity & Alpha) • C++ V7.4 (Integrity), C++ V7.3 (Alpha) • COBOL V3.0 ECO kit (Integrity) & V2.9 (Alpha) • DECset V12.8 ECO 3 (Integrity & Alpha) • Pascal V6.1 ECO kit (Integrity & Alpha) • Fortran V8.2 ECO kit (Integrity) • Distributed NetBeans V6.5.2 (Integrity & Alpha) • Java V5, Java V6 (Integrity only) • OpenView Rdb SPI V8 (Integrity & Alpha)	• C V7.3 ECO kit (Integrity) • C++ V7.3 ECO kit (Alpha) • C++ V8.0 (Integrity) • COBOL V2.9 ECO kit (Alpha) • DECset V12.8 ECO kit (Integrity & Alpha) • Fortran V8.2 ECO kit (Alpha)

HP OpenVMS Detailed Roadmap

Continuously delivering mission-critical solutions for 35 years!

	Currently supported	Coming next
Application Modernization & Integration Infrastructure	• CSWS V2.2 (Apache V2.0.63 based) • CSWS_PHP V2.2 upgrade (PHP V5.2.13 based) • Perl V5.8.6 • Tomcat (JSP) V5.5.26 • DCE V3.2 • WSIT V3.4-1 • Secure Web Browser (based on SeaMonkey) V1.1-12 • HP Firefox Web Browser V2.0-18 (Integrity only)	• Perl V5.10.x • Tomcat V7.0 support (Integrity) • Secure Web Browser (based on SeaMonkey V2.4.x) update • Firefox update

HP OpenVMS Service Support Roadmap

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
VAX	All Versions	PVS with SE/ SS					MPS without SE								
Alpha	V6.2 & V6.2-1Hx	PVS with SE until 30th April 2014							PVS w/o SE						
	V7.3-2*	PVS with SE**													
	V8.2	Standard Support		EES available until 30th April 2014											
	V8.3*	Standard Support**													
	V8.4			SS at least through December 2016**											
Integrity	V8.2-1	Standard Support		EES available until 30th April 2014											
	V8.3*	Standard Support **													
	V8.3-1H1*	Standard Support**													
	V8.4			Standard Support at least through December 2020**											

- • * Prior Version Support (PVS) or Standard Support will be provided on these versions at least through December 2015.
- • ** w/24 months prior expiration notice: A 24-month notification will be provided before support is ended.
- • Standard Support ends when the 2nd subsequent release ships. HP supports the current version and one back.
- • Extended Engineering Support (EES) will be available at additional cost.

EES	Extended Engineering Support
MPS	Mature Product Support
PVS	Prior Version Support
SE	Sustaining Engineering
SS	Standard Support

# HP OpenVMS on Integrity Systems– Road Ahead

HP OpenVMS on Integrity Systems

Continued innovation in mission-critical computing

Integrity with OpenVMS

- Mission Critical Converged Infrastructure design for modularity and flexibility
- Unparalleled availability, security and reliability for mission-critical environments

Itanium® 9300

Poulson

2011

2013 – 14
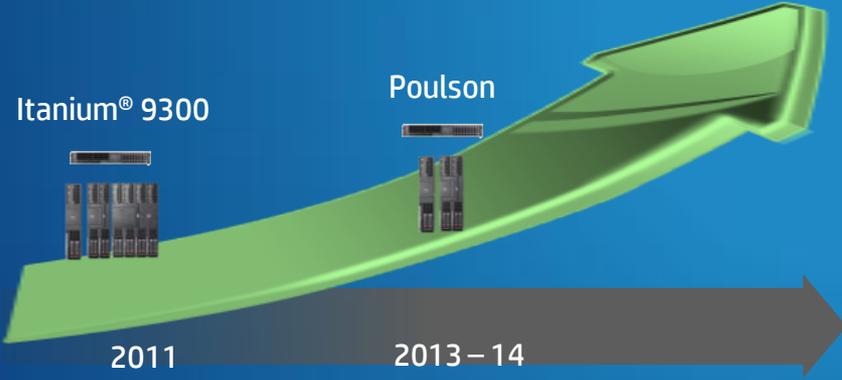
Intel Itanium Processors

- Socket-compatible design for all future releases
- No recompile needed across generations
- Built on a 7 generation foundation of mission-critical processor technology

intel
Itanium® 9300

intel
POULSON

intel
KITTSON

2011

2012
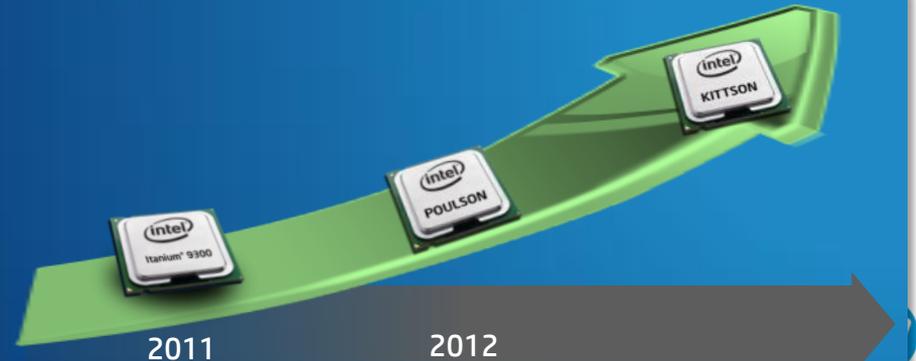
OpenVMS V8.4 on BL8x0c i2 servers

New Integrity systems accelerate IT effectiveness

Scale up, out, and within

to meet any business demands with maximum flexibility & offering industry's first 8 socket scale-up server blade

- Overall savings of 55% over 3 years
- 2x performance boost on database workloads
- Up to 20x more networking bandwidth, reduce cabling by 97%, eliminate admin tasks by 60% and save up to 40% in CapEx with Virtual Connect

Always-on resiliency

keeps businesses running without interruption

- 2x the CPU core reliability than industry volume processors
- 17x higher reliability than single-chip spare with Double-chip spare
- Up to 100% application availability

Industry-leading integrated infrastructure management

save time, conserve valuable IT resources, and simplify daily operations

- Reduce costs, increase flexibility and deploy faster with HP Virtual Machine
- 3x faster virtual media performance with Integrated Lights Out 3

VC Flex-10 for mission-critical integrity

Increased network scalability, configuration flexibility and networking bandwidth

Enabling workload mobility for <u>any</u> mission critical application

20X — Up to 20 times higher bandwidth

4X — Four times more connections

20% — Up to 20% less power per core

Oracle, SAS

	BL860c i2	BL870c i2	BL890c i2
Built-In Flex-10 VC module + VC 3.0 FW	16 FlexNICs	32 FlexNICs	64 FlexNICs
Add Flex-10 Capable mezz cards	24 FlexNICs	48 FlexNICs	64 FlexNICs

OpenVMS supports up to 52 NICs on a Blade system

Wire-once and change data center connections on the fly with up to 128 FlexNICs scalability

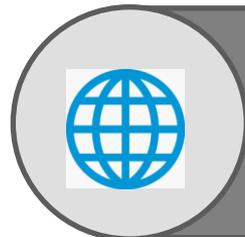# OpenVMS V8.4 on rx2800 i2 servers

COMPACT SCALING
- Run OpenVMS workloads with outstanding performance, scale, and resiliency in a 2U footprint
- Up to 9x performance boost vs. previous generation servers

OUT-OF-THE-BOX SAVINGS
- Maximize resources with up to 58% lower TCO
- Lower power usage and advance energy efficiency with ENERGY STAR® compliant server

OPERATIONAL EXCELLENCE
- Increase productivity with industry-leading IT tools
- With new remote management, control servers from anywhere, at anytime

OpenVMS V8.4 on rx2800 i2 Servers

Migrate to Integrity

Transition from AlphaServers to Integrity

Need for migration to Integrity

More integrated, simplified mission-critical at an attractive TCO

- Enables you to keep your HP OpenVMS environment current
- Leverages the advancements in OpenVMS V8.4
- Better protects your mission-critical workloads
    - Higher availability
- Reduce TCO and save money by migrating now
    - Meet financial goals by saving more than 50% on total IT costs *
    - Receive free migration and TCO assessments

From HP AlphaServer to HP Integrity servers

Make your move

AlphaServer
GS1280

AlphaServer
ES45

AlphaServer
DS25

AlphaServer
ES80

BL890c i2

rx2800 i2

BL860c i2

Integrity Servers for better performance & TCO

Tests show that BL8x0c i2 and rx2800 i2 provides

up to **10.4** times increase in max throughput

95% better throughput with Apache

2x number of transactions with Oracle Rdb

Upgrading Alpha GS1280 to BL890c i2

69% Energy Reduction — Savings of $759,000 over 3 years

Upgrading Alpha ES80 to BL860c i2

85% Energy Reduction — Savings of $162,000 over 3 years

10 Alpha DS25 consolidation onto 1 BL870c i2

75% Energy Reduction — Savings of $412,000 over 3 years

4 ES45 consolidation onto 2 rx2800 i2

80% Energy Reduction — Savings of $ 328,000 over 3 years

Source: http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-3322ENW.pdf

HP AlphaServer DS25 to HP Integrity BL860c i2 Server

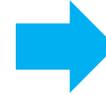54% total IT costs savings with HP Integrity servers

Outstanding savings

- 79% on server costs*
- 34% on IT operation and administration staff*
- 54% on facilities*
- 97% hardware, software, support and maintenance*

And a payback period of only nine months
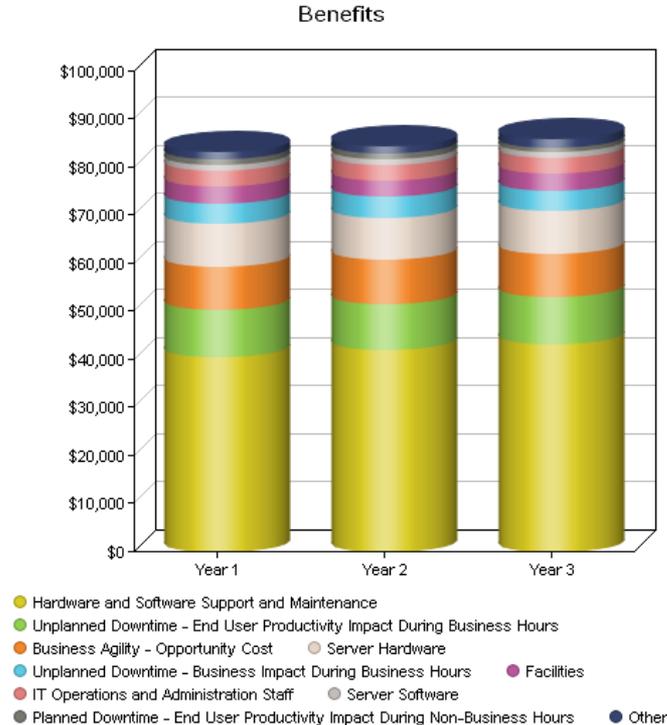
5 x HP AlphaServer DS25

**2 x HP BL860c i2
Server Blades running
HP OpenVMS V8.4**

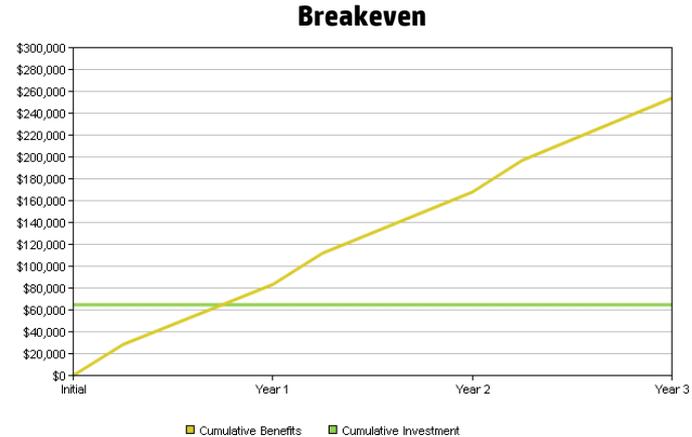*Based on 3-year cumulative results using Alinean, Inc. TCO/ROI tools

Financial analysis

Transitioning from AlphaServer DS25 to HP Integrity BL860c i2

Benefits

ROI	292%
Risk Adjusted ROI	228%
NPV Savings	$147,296
IRR	117%
Payback period (including 3-mo. deployment period)	9 months

Breakeven

*Based on HP results using Alinean, Inc. TCO/ROI tools.

Simplicity and Ease of Migration

Did you know?

- Transition tools and porting experts are available to help (openvms.programs@hp.com)
- Many transitions are completed within days or weeks
- To ease your transition, you can:
  - Run a mixed cluster of AlphaServers and HP Integrity servers
  - Get a free stack assessment
  - Get free access to sandbox hardware
  - Work with HP to design a right-fit, trade-in, or leasing program

Customer successes

HP OpenVMS on Integrity customer successes

Manufacturing and Automotive
- ABF - voestalpine
- Fraport AG

Financial
- Australian Securities Exchange
- Deutsche Börse
- International Securities Exchange

Healthcare
- Quest Diagnostics Inc.
- UK National Health Service – Blood and Transplant

Summary

HP COMMITMENT	INVEST	UPGRADE

Continue development of Integrity servers with OpenVMS

Protect your investment with HP

Smooth migration from Alpha to Integrity

Thank You

Q&A