Thanking our Sponsor
Server revolution meets OpenVMS revolution
What you can expect in the next five years

Ken Surplice  Category Manager, Mission Critical Solutions HPE EMEA
Ray Turner  Senior Consultant, Mission Critical Solutions HPE EMEA
October 2017 (VMSfest)
Introduction
Connect OpenVMS Vienna

Ken Surplice, HPE Mission Critical Solutions EMEA
Category manager
- Integrity/Itanium: rack rx2800, Blades, Superdome 2, OpenVMS, HP-UX
- X86: Superdome X 2-16s, MC990 X 4-32s, Serviceguard for Linux

Ray Turner, HPE Mission Critical Solutions EMEA
Consultant
- OpenVMS
Topics for today

- OpenVMS platforms today and future
- Server evolution
- Memory revolution
- Servers go modular
- Automation revolution
- Photonics
- Support lifecycle
- Your questions
- OpenVMS in the new world
HPE update

- PCs, printers
- Services
- Software
Customers made HPE the #1 data center infrastructure vendor

- More than 1,000,000 customers over the last 25 years
- 100,000 trusted partners in our ecosystem
- 5 servers sold per minute
- ~40M servers sold to date
- 30% x86 Servers share
- #1 Total Disk Storage
- Only Major Vendor to Gain Share 2yrs
- #2 Networking 4QCY15 Market Share

Source: 1CQ16 IDC Disk Storage System Tracker
Last week

Agility is impaired by the mass of solutions and providers.

You need a solution that supports a ruthless focus on simplicity.

Hewlett Packard Enterprise
Innovation to help customers progress toward the future

On Premise Data Center
- Multi-purpose & Secure
- Mission Critical

Cloud
- Workload specialized
- Software defined
- Composable Infrastructure
- Hyper Converged

Internet of Things
- Edge computing
- Campus Infrastructure

Future
What does today’s HPE do?

The world will be **Hybrid**

The **Intelligent Edge** is going to unleash an industrial IoT revolution

**Services** are going to be even more critical
What is hybrid IT?

Hybrid IT

The secure consumption of services from two or more sources, including private cloud, public cloud, or traditional IT, to enable any or all of the following:

- **Integration** of applications, data, and/or services
- **Composition, orchestration and management** of workloads
- **Portability** of data and applications

Choose the right mix for your business
Demand for data center infrastructure is growing

- Massive data explosion
- Need for analytics expanding
- Compute end points exploding
- Technology and consumption shift
- Emerging applications
Innovation to address evolving consumption patterns

IT consumption choices

- Edge/Campus
- On-premise Data Center
- Public Cloud

Projected % of total Compute spend (2019)

- ~25%
- ~50%
- ~25%

Data center Management choices

HPE offerings

- IoT, Networking
  - Aruba
  - Edgeline
- Specialized
  - Apollo, HPC
  - Object Storage (Scality)
  - Mission Critical
  - SAP Hana
  - Flash Storage
  - HC 380 / HC 250 (virtualization)
- Generic
  - ProLiant Rack
  - ProLiant Tower
  - BladeSystem
  - Cloudline
  - DC Networking
  - 3PAR
- Composable
  - Synergy
- Outsourced
  - Partnership with Microsoft Azure
  - HPE “Sell to”
Our strategy is to build specialized solutions for target customer segments.
The next five years for OpenVMS users

1977-2020
- OpenVMS defines the machine environment you run on

2020 -
- OpenVMS runs alongside everything else, wherever you like

OpenVMS
- Be on VSI OpenVMS

Integrity Itanium
- i4 support to at least 2023
- i6 support to at least 2025

Mission critical x86
- Modular revolution
- Smaller-bigger
- Life gets easy

Big memory; low price or high performance
- NVMe
- 3D XPoint NVMe
- 3D XPoint DIMMs

VMS Software Inc
- x86 support <=2020
- Access to self provisioning
- Access to in-memory
- Access to photonics

Photonics
- Optical connections
- Gen-Z
- Regular servers
- The Machine

http://genzconsortium.org/

Gen-Z: An open systems Interconnect designed to provide memory semantic access to data and devices via direct-attached, switched or fabric topologies.
OpenVMS
Be on VSI
OpenVMS

Hewlett Packard Enterprise

Latest server i2
Java 8

2020
Patching to here

Support to here
2025

Latest server i4; soon i6; later x86
AlphaServer support and innovation
Itanium innovation
Java 8
New TCP/IP stack
Updated open source components
Innovation, support, services

Innovation, patching and support to here

VMS Software

16
Integrity Itanium

- i4 support to at least 2023
- i6 support to at least 2025

plus more transition time, from HPE and from VSI

### VAX

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### Support Types

- MPS w/o SE: Mature Product Support Without Sustaining Engineering
- PVS w/o SE: Prior Version Support Without Sustaining Engineering
- PVS w/ SE: Prior Version Support With Sustaining Engineering
- MPS w/o SE: MPS Without Sustaining Engineering
- PVS w/o SE: PVS Without Sustaining Engineering
- MPS w/ SE: MPS With Sustaining Engineering
- PVS w/ SE: PVS With Sustaining Engineering

Plus more transition time, from HPE and from VSI.
HPE Integrity

i6 for OpenVMS

(2018 support)

Lower-platform TCO

Long-term support

Achieve continuous operations
Realize better economics
Reduce your business risk
Intel Itanium® 9700: Trusted Foundation for the Mission Critical Enterprise

**World-Class resiliency**
Intel Instruction Replay Technology, End-To-End Error Detection, Intel Cache Safe Technology

**Scalable performance**
High Performing 8 Cores, Advanced EPIC parallelism with Massive On-Die Cache, Large Memory addressing, 32 socket scalability with Node Controller

**Business continuity**
Three generations of Itanium can co-exist within same enclosure

Itanium® 9700 delivers proven IT stability with enterprise performance and mainframe class resiliency
What’s new with HPE Integrity i6 servers
Mission-critical computing continuity through 2025

Intel Itanium 9700 series processor
– Up to 2.66GHz frequency
Support for i2, i4 and i6 processors in same enclosure

Integrity options update
– Memory refresh for 8GB and 16GB
– New HPE Storage, IO support*
– Platform for future enhancements*

HPE Integrity Rack rx2800 i6 Server

HPE Integrity BL8x0c i6 Blade Server
**HPE Integrity i6 value at i4 prices**

HPE Integrity i6 new SKUs – only processor SKUs change

<table>
<thead>
<tr>
<th>SKU</th>
<th>Long Description</th>
</tr>
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<tbody>
<tr>
<td>AM382B</td>
<td>HPE BL8x0c i6 Itanium 9760 (2.67GHz/8-core/32MB/170W) Processor Kit</td>
</tr>
<tr>
<td>AM383B</td>
<td>HPE BL8x0c i6 Itanium 9740 (2.13GHz/8-core/24MB/170W) Processor Kit</td>
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<tr>
<td>AM384B</td>
<td>HPE BL8x0c i6 Itanium 9750 (2.53GHz/4-core/32MB/170W) Processor Kit</td>
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<tr>
<td>AM385B</td>
<td>HPE BL8x0c i6 Itanium 9720 (1.73GHz/4-core/20MB/130W) Processor Kit</td>
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<tr>
<td>AT104B</td>
<td>HPE rx2800 i6 Itanium 9720 (1.73GHz/4-core/20MB/130W) Processor Kit</td>
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<tr>
<td>AT105B</td>
<td>HPE rx2800 i6 Itanium 9740 (2.13GHz/8-core/24MB/170W) Processor Kit</td>
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<td>AT138B</td>
<td>HPE rx2800 i6 Itanium 9750 (2.53GHz/4-core/32MB/170W) Processor Kit</td>
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<td>AT106B</td>
<td>HPE rx2800 i6 Itanium 9760 (2.67GHz/8-core/32MB/170W) Processor Kit</td>
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<tr>
<td>AT121B</td>
<td>HPE Superdome 2 CB900s i6 Itanium 9760 (2.67GHz/16-core/32MB/170W) Cell Blade</td>
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<tr>
<td>AT122B</td>
<td>HPE Superdome 2 CB900s i6 Itanium 9740 (2.13GHz/16-core/24MB/170W) Cell Blade</td>
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<tr>
<td>AT123B</td>
<td>HPE Superdome 2 CB900s i6 Itanium 9760 (2.67GHz/16-core/32MB/170W) iCAP RTA Server Blade</td>
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<td>AT124B</td>
<td>HPE Superdome 2 CB900s i6 Itanium 9740 (2.13GHz/16-core/24MB/170W) iCAP RTA Server Blade</td>
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<td>AT126B</td>
<td>HPE Superdome 2 CB900s i6 Itanium 9760 2.67GHz 32MB iCAP RTU Server Blade</td>
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<td>AT125B</td>
<td>HPE Superdome 2 CB900s i6 Itanium 9740 2.13GHz 24MB iCAP RTU Server Blade</td>
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**Same price as i4**

Announced: May-2017  
Shipped: Jun-2017
This is a rolling (up to three year) Statement of Direction and is subject to change without notice.
Mission critical x86 → Modular revolution → Smaller-bigger → Life gets easy

rack → blades → modular rack

flexibility available → flexibility used
Mission critical x86

Modular revolution

Smaller-bigger

Life gets easy

2-16 sockets in a modular chassis

I ♥ Superdome X. High up-front cost

Scales up to 8 chassis 32 socket

5U, 4-socket chassis
Big memory; low price or high performance

NVMe  3D XPoint NVMe  3D XPoint DIMMs

**Memory today**

**Itanium**
- rx2800  384GB max, 16GB DIMMs
- bl890  1.5TB max, 16GB DIMMs

**Memory today**

**x86**
- Superdome X  48TB max, 128GB DIMMs
- MC990 X 48TB max, 64GB DIMMs

**What next**

**Outlook**
- 128GB DIMMs stay expensive
- Xeon Skylake half DIMM slots of Broadwell
- Why?
Big memory; low price or high performance

- NVMe
- 3D XPoint NVMe
- 3D XPoint DIMMs

NVMe exceeds expectations today
- Non-volatile PCI Express slot
- Simplified software stack

3D XPoint next year
- Non-volatile, faster, bigger PCI Express slot
- DIMMs
Convergence of Memory and Storage Technologies

Persistence Memory = Performance of memory, persistence of Storage

Memory

Persistent Memory

Storage

Hewlett Packard Enterprise
Workload acceleration with Non-Volatile Memory technology
Ongoing system-level innovations for HPE Integrity i6 systems

Enhancing System and Application Performance

- Increases system performance with improvements in I/O latency & IOPS
- HP-UX software enhancements enable applications to take advantage of the improved system performance seamlessly*

Usage  Workload
---  -------
High Speed Block Storage  Generic applications
High Speed Temporary Storage  Analytics and Telco Applications
Transaction Acceleration  Databases
Read or Write Cache  IO intensive applications

Integrity System Performance

* For select workloads in specific configurations

This is a rolling (up to three year) roadmap and is subject to change without notice
Integrity I/O on HPE Integrity i6 servers
Accelerate workload performance with NVMe

Workload Accelerator for Itanium servers:

– Workload Accelerator for HP-UX/i6 servers is an IO Accelerator Solution based on NVMe technology that will offer enhanced Application Performance and Responsiveness

– Planned to be supported with rackmount and SD2 Itanium servers.

Increasing capacity and speed

Decreasing cost and energy consumption

PHASE 1
Implement NVMe Infrastructure

- Enhanced Agility
  - P 3700 NVMe SSD PCIe adapter
  - Same performance on the server as all flash SSD arrays such as 3PAR 7450

PHASE 2
Accelerate with 3D Xpoint

- Increased Performance
  - 3D XPoint based adapter
  - 1.5x to 2x expected performance improvement
Deploy Infrastructure Faster

Simplify Lifecycle Operations

Increase Productivity

The infrastructure automation engine built with software-defined intelligence

- **Online VC Migration** – Migrate from VC to HPE OneView with no downtime; support 8 Flex NICs on c-Class
- **c-Class ToR Network Mgmt** – Monitoring and basic downlink provisioning for Cisco 5k/6k switches
- **Virtual Connect 16Gb FC Support** – provision 16Gb modules with the same ease as the rest of the portfolio.

Remote Support for Servers – Phone home HW failure events to HP for expedited part replacement

Global Dashboard – Unify views across multiple HPE OneView appliances.

FW Data Collection and Reporting – full FW inventory collection and reporting

HPE OneView supported on BladeSystem, ProLiant DL, Apollo, Superdome X servers
The first Composable Infrastructure

Industry leading technology

A single infrastructure for both traditional and cloud native apps

HPE Synergy
Your infrastructure as code

What’s new for Enterprise Servers?
Accelerating Data Center Modernization

HPE OneView Composer
Integrated software-defined intelligence

Image Streamer:
Instantly provision operating environments on stateless infrastructure

Composable Storage
High-density integrated storage Compose any compute with any storage (SDS, DAS, SAN)

Composable Frame
Scaling simple and automated at rack/row scale
Photonics and memristor ready for investment protection

Composable Compute
Provides the performance, scalability, density and configuration flexibility
HPE Synergy: The first platform architected for composability
Your infrastructure as code (programmable infrastructure)

**REDUCE**
over-provisioning and CapEx

**DEPLOY**
at cloud-like speed

**SIMPLIFY**
with frictionless IT

**DEVELOP**
more apps, faster
HPE Synergy: driving digital transformation in a Hybrid IT world

Composer powered by HPE OneView and Image Streamer

Composable Fabric
Rack scale multi-fabric connectivity eliminates standalone TOR switches

Composable Compute

Composable Storage
High-density integrated storage to compose any compute with any storage (SDS, DAS, SAN)
HPE Synergy unique innovations enable the composable experience
Private bare metal cloud ready to run any application and delivered as infrastructure as code

Single Management Interface:
One interface to discover, compose, update, and troubleshoot

Image Streamer:
Instantly provision operating environments on stateless infrastructure

Template Based Composition:
Templates composes the infrastructure to match the workload’s needs

Frictionless Operations:
Firmware and driver updates delivered seamlessly as one

Unified API:
Operations changes can be easily automated and Developers can program the infrastructure as code

Developer Portal:
Presents a private bare metal cloud through unified API & SDK
Transformational power of HPE Synergy
Single infrastructure for your traditional and cloud-native workloads

**VDI / CAD applications**
run during the day

**Modeling & Analytics**
Run at night

**VSI VMS**
Runs all the time [Ken 😊]

**SAP HANA**
for running production mission-critical workloads

**App Dev/Test** environment
is needed now that peak season is over

and **Oracle database**, on OpenVMS, naturally
## The next five years for OpenVMS users

<table>
<thead>
<tr>
<th>Year</th>
<th>Photonics</th>
<th>Optical connections</th>
<th>Gen-Z</th>
<th>Regular servers</th>
<th>The Machine</th>
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<tbody>
<tr>
<td>2017</td>
<td>Get up to date</td>
<td>Move to VSI OpenVMS</td>
<td>Budget for refresh</td>
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<tr>
<td>2018</td>
<td>Stay up to date</td>
<td>Research in-memory</td>
<td>Monitor mission critical x86</td>
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<td>2019</td>
<td>Evaluate OpenVMS on x86</td>
<td>Monitor composable infrastructure</td>
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<td>2020</td>
<td>Move to OpenVMS on x86</td>
<td>Integrate into x86 infrastructure</td>
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Gen-Z: An open systems Interconnect designed to provide memory semantic access to data and devices via direct-attached, switched or fabric topologies.

http://genzconsortium.org/
Data Center of the Future, with OpenVMS

Hybrid IT Wins

Software-defined Everything

New Memory, Security, Photonics

Energy efficient IT
Questions ?