Agenda

OpenVMS V8.4-1H1:

• What you will get
  – Features
  – Quality
  – Performance

• How you will get it
  – Media
  – Licensing
  – Support, Roadmap, Services
  – Future
This presentation contains forward looking statements and is provided solely for your convenience. While the information herein is based on our current thinking and best estimates, all information is subject to change without notice.
Brief History (Getting to Field Test in 8 Months)

• VSI Announcement Day July 31, 2014
  – CEO, VP Engineering, VP Customer Engagement
  – Engineering Manager, Director of R&D
  – 2 Engineers, 1 Lab Team Member
  – Working in a “big closet” at Nemonix Engineering

• Get the Code from HP VMS Team
• Add a Few People
• Start Working on a Complete VMS build from Sources
• Move to Bolton, MA facility
• Add a Few people
• Create New Lab (Engineering and QTV)
  – XVMS Development Cluster
  – 4 QTV Clusters
  – Exec, Networks, and Storage standalone developer systems

• Add More people
• Recreate Our Test and Evaluation Processes
Field Test Update

• Official Start – April 8
• Currently running on:
  – Supported: i2 & i4 BL8xx
  – Unsupported: rx6600, rx2620, rx2660, rx4640

• **Everything VSI ships must be rebranded.** The version number must be increased and the “producer” changed to VSI, replacing HP or DEC.
• The vast majority of incoming reports are about rebranding, kitting, licensing, and documentation. We made significant changes in these areas during the last two months.
Preliminary Performance Results

i2 vs. i4

• The following slides contain preliminary data on performance differences between selected i2 and i4 servers running OpenVMS E8.4-1H1.

• The data was generated from VSI-written programs used to measure certain aspects of system performance. The results shown here should not be used as a general characterization of overall system performance or as an indication of how any specific application may perform.
i2 vs. i4 Memory Bandwidth

![Bar Chart]

- **BL860c i2 (1.47ghz)**: 2968 MB/sec
- **BL860c i4 (2.4ghz)**: 5045 MB/sec
- **RX2800 i2 (1.73ghz)**: 2070 MB/sec
- **RX2800 i4 (2.67ghz)**: 4832 MB/sec
i2 vs. i4 Memory Latency

- **BL860c i2 (1.47ghz)**: 237 ns
- **BL860c i4 (2.4ghz)**: 196 ns
- **RX2800 i2 (1.73ghz)**: 243 ns
- **RX2800 i4 (2.67ghz)**: 108 ns
i2 vs. i4 Floating Point Performance

<table>
<thead>
<tr>
<th>Machine</th>
<th>Relative Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL860c i2</td>
<td>1.00 (1.47ghz)</td>
</tr>
<tr>
<td>BL860c i4</td>
<td>1.33 (2.4ghz)</td>
</tr>
<tr>
<td>RX2800 i2</td>
<td>1.14 (1.73ghz)</td>
</tr>
<tr>
<td>RX2800 i4</td>
<td>1.57 (2.67ghz)</td>
</tr>
</tbody>
</table>
i2 vs. i4 Integer Performance

<table>
<thead>
<tr>
<th>Hardware</th>
<th>i2 Performance</th>
<th>i4 Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL860c i2</td>
<td>1.00 (1.47ghz)</td>
<td>1.26 (2.4ghz)</td>
</tr>
<tr>
<td>BL860c i4</td>
<td>1.17 (1.73ghz)</td>
<td>1.49 (2.67ghz)</td>
</tr>
<tr>
<td>RX2800 i2</td>
<td>1.17 (1.73ghz)</td>
<td>1.49 (2.67ghz)</td>
</tr>
<tr>
<td>RX2800 i4</td>
<td>1.26 (2.4ghz)</td>
<td>1.49 (2.67ghz)</td>
</tr>
</tbody>
</table>
Foreword

VSI has licensed OpenVMS and associated layered products from HP. VSI will be developing new releases going forward. Given this, OpenVMS v8.4-1H1 is a VSI product and requires a VSI license, with program discounts - please see later slides, and VSI support services. HP has signed a reseller agreement with VSI so HP will resell VSI versions of OpenVMS and layered products along with support services.

The Right To New Version (RTNV) inherent in the HP support of HP versions of OpenVMS and layered products only applies to HP products, not VSI products. Support services of VSI products carry a Right To minor Version feature. Please see later slides for additional information.
OpenVMS Operating Environments

• Base OE (BOE)
  – An internet ready, feature rich product set for the price sensitive customer

• High Availability OE (HAOE)
  – Has the highest cost, but delivers the ultimate customer experience in terms of multi-system availability and security
### Base OE (BOE) Components

#### Q2 2015
- V8.4-1H1 operating system
- ANT
- AXIS2
- CDSA
- CIFS
- CSWS_JAVA
- DCPS
- DECnet Phase IV, & Decnet Phase V
- DECdfs
- DECram
- DECwindows Motif
- DCE (runtime)
- Encryption
- Kerberos
- PERL
- Secure Web Server
- SSL
- TCP/IP
- UDDI
- VSI Binary Checker
- WBEM/CIM
- WBEM providers
- WSIT
- XML C++

#### Q4 2015
- CSWS_PERL
- CSWS_PHP
- Enterprise Directory (LDAP)
- JAVA 1.8
- I18N
- Insight Management Agents
- OpenVMS Management Station
- Secure Web Browser
- The Data Collector
- XML Java

---

One DVD Media for all OEs
High Availability OE (HAOE) Components

Q2 2015

- V8.4-1H1 operating system
- ANT
- AXIS2
- CDSA
- CIFS
- CSWS_JAVA
- DCPS
- DECnet Phase IV, & Decnet Phase V
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- PERL
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- SSL
- TCP/IP
- UDDI
- VSI Binary Checker
- WBEM/CIM
- WBEM providers
- WSIT
- XML C++

Q4 2015

- Availability Manager
- RMS Journaling
- Volume Shadowing
- OpenVMS Cluster Client
- OpenVMS Cluster Software
- CSWS_PERL
- CSWS_PHP
- Enterprise Directory (LDAP)
- JAVA 1.8
- I18N
- Insight Management Agents
- OpenVMS Management Station
- Secure Web Browser
- The Data Collector
- XML Java
- RTR backend

NOTE: Items in BLUE are available as separately licensable products outside the OE package.

One DVD Media for all OEs
Separately Licensed Products

Q: Do I need to buy an HAOE if I only need a Cluster and Volume Shadowing License?
   - A: No, products within the BOE and HAOE, listed in BLUE on the previous slide, may be purchased separately

Example: A customer wants only a cluster license and volume shadowing license, so they purchase:
   - BOE and
   - VMScluster license and
   - Volume Shadowing license

Note: BOE is the smallest set of OpenVMS functionality for sale; so functions within BOE are not separately available
# OpenVMS Layered Products

<table>
<thead>
<tr>
<th>Q2 2015</th>
<th>Q4 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Layered Products DVD:</strong></td>
<td><strong>Layered Products DVD Additions</strong></td>
</tr>
<tr>
<td>➢ ACMS dev, remote, runtime</td>
<td>➢ ABS Client</td>
</tr>
<tr>
<td>➢ BASIC</td>
<td>➢ ABS Server</td>
</tr>
<tr>
<td>➢ C</td>
<td>➢ Datatrieve</td>
</tr>
<tr>
<td>➢ C++</td>
<td>➢ FMS Development</td>
</tr>
<tr>
<td>➢ COBOL</td>
<td>➢ FMS Runtime</td>
</tr>
<tr>
<td>➢ DECforms dev, runtime</td>
<td>➢ HSM</td>
</tr>
<tr>
<td>➢ DECset (CMS, DTM, MMS, SCA, LSE, PCA)</td>
<td>➢ RTR frontend</td>
</tr>
<tr>
<td>➢ DFO</td>
<td>➢ SSM</td>
</tr>
<tr>
<td>➢ DFS</td>
<td>➢ TDMS Development</td>
</tr>
<tr>
<td>➢ Fortran</td>
<td>➢ TDMS Runtime</td>
</tr>
<tr>
<td>➢ GNV</td>
<td>➢ X.25</td>
</tr>
<tr>
<td>➢ GNUpg</td>
<td></td>
</tr>
<tr>
<td>➢ MRU</td>
<td></td>
</tr>
<tr>
<td>➢ PASCAL</td>
<td></td>
</tr>
<tr>
<td>➢ STUNNEL</td>
<td></td>
</tr>
</tbody>
</table>

C++ - Pending license from Intel

LPs on one DVD Media
OE and Layered Products Media

• OE DVD Media
  – The OpenVMS Operating System
  – All layered products that make up the Base and High Availability OE Components
  – OE DVD updates ONLY when the OS revises (8.4-1H1, 8.4-1H2, 8.5)

• Layered Product Library Media
  – Library package of software layered products not included in the OE distributions
  – Includes on-line documentation
OpenVMS Media Kits

Operating Environment Media Kit

- OpenVMS OE Media
  - Base
  - High Availability
  - Contents: Both OE bundles
  - Media: DVD

- OpenVMS Doc Media
  - Contents: OE bundle Docs
  - Media:(13,10),(992,991)

- Layered Products Media
  - Contents: OpenVMS Layered Products
  - Media: DVD

- Freeware Media (Q4 2015)
  - Contents: Updated OE components
  - Media: CD

Quarterly Update Kit

- OE Delta Disk
  - Contents: Updated OE components
  - Media: DVD

- Layered Product Library
  - Contents: OpenVMS Layered Products
  - Media: DVD

Complete OpenVMS Media Kit
Software Licensing

• **Per-Socket (PSL)**
  – Very **flexible** licensing design
  – Purchase software based on the # of ** SOCKETS ** in a partition or system

• **Benefits of PSL**
  – **More granular** – customer pays for exactly what they need
  – **More flexible** – licensing is not per box, but per-socket so customer can move assets as needed
  – **Accommodates partitioning** – allows use of different types of OEs in different hardware partitions and different Operating Systems
  – **Expandable** – customers can purchase processors and software to meet needs over time
License Trade-in Policy

• A single cross platform license trade-in policy is introduced for customers migrating to VSI OpenVMS on Integrity servers. Cross platform trade-ins include:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP OpenVMS VAX</td>
<td>VSI OpenVMS on Integrity</td>
</tr>
<tr>
<td>HP OpenVMS Alpha</td>
<td>VSI OpenVMS on Integrity</td>
</tr>
<tr>
<td>HP OpenVMS Integrity</td>
<td>VSI OpenVMS on Integrity</td>
</tr>
</tbody>
</table>

If upgrading server to newer model: One (1) SOCKET on older server equals one (1) SOCKET on newer server when trading in a HP OpenVMS license for a VSI OpenVMS license.
Trade-in Policy
(Continued)

• HP OpenVMS Licenses are traded in for new VSI OpenVMS licenses at 50% discount (prior HP support not required)
  – Commitment to buy VSI OpenVMS support* on new licenses for one (1) year minimum

• Trade-in applies to ‘equivalent product’ or operating environment licenses

• Parallel usage of licenses on both platforms is allowed during transition

*Support = VSI Service contract with License to Use (LTU) Right to minor Versions (RTmV)
• **Example:** If a customer licensed 1 SOCKET in an AlphaServer DS20E and upgraded to an Itanium BL870c i4 and licensed 4 sockets, they will get a 50% trade-in credit on 1 SOCKET and pay list price for the 3 additional licensed SOCKETS.

• **Example:** If a customer licensed 1 SOCKET in an Itanium rx2600 and upgraded to an Itanium rx2800i4 and licensed 1 SOCKET, they will get a 50% trade-in credit on 1 SOCKET.
## Trade-in Policy (Continued)

<table>
<thead>
<tr>
<th>HP OpenVMS Alpha</th>
<th>VSI OpenVMS Operating Environment License</th>
</tr>
</thead>
<tbody>
<tr>
<td>OpenVMS Base</td>
<td>Base Operating Environment (BOE)</td>
</tr>
<tr>
<td>OpenVMS SMP</td>
<td></td>
</tr>
<tr>
<td>OpenVMS User</td>
<td></td>
</tr>
<tr>
<td>Enterprise Integration Package</td>
<td></td>
</tr>
<tr>
<td>DECram</td>
<td></td>
</tr>
<tr>
<td>RMS Journaling</td>
<td></td>
</tr>
<tr>
<td>Volume Shadowing</td>
<td>High Availability Operating Environment (HAOE)</td>
</tr>
<tr>
<td>VMSClusters</td>
<td></td>
</tr>
</tbody>
</table>

**Example:** Trade-in Base, 3 SMPs, Users and EIP from a four CPU server and receive credit for 4 BOE PSL licenses on the Target server

**Example:** Trade-in all of the above plus 2 of the 3 HAOE products and receive credit for 4 BOE PSL licenses

**Example:** Trade-in all of the above plus VMSClusters and receive credit for 4 HAOE PSL licenses

All license trade-ins require Proof of License for license being traded-in.
Trade-in Policy
(Continued)

HP OpenVMS Integrity
Pre v8.4

FOE
• DECram
• OpenVMS Management Station

EOE
• Availability Mgr
• OVPA
• RMS Journaling
• Volume Shadowing

MCOE

VSI OpenVMS Operating Environment License

VSI OpenVMS Operating Environment License

Base Operating Environment (BOE)

High Availability Operating Environment (HAOE)
How is Trade-in Credit Applied

**Example:** Customer trades-in a single SOCKET OpenVMS Alpha operating system, Volume Shadowing and RMS Journaling licenses for the High Availability Operating Environment (HAOE) with a single SOCKET licensed on a 4 SOCKET server

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Product Number</th>
<th>License or credit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOE for Integrity 4 socket</td>
<td>M1J87AC #848</td>
<td>$ 3,080.00</td>
</tr>
<tr>
<td>PSL Trade-in Credit for 4 SOCKET server</td>
<td>M1J87ACN #848</td>
<td>($ 1,540.00)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Net $ 1,540.00</strong></td>
</tr>
</tbody>
</table>

When a license is traded-in, the equivalent new license(s) is added to the order along with the applicable credit product number option.
## Layered Product Equivalency Map

### License for License Trade-in

<table>
<thead>
<tr>
<th>HP OpenVMS VAX</th>
<th>HP OpenVMS Alpha</th>
<th>VSI OpenVMS Integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAXCluster</td>
<td>VMSCluster</td>
<td>VSI VMSCluster</td>
</tr>
<tr>
<td>Fortran VV</td>
<td>Fortran VA</td>
<td>VSI Fortran</td>
</tr>
<tr>
<td>C VV</td>
<td>C VA</td>
<td>VSI C</td>
</tr>
</tbody>
</table>

All license trade-ins require Proof of License for license being traded-in

**Example:** Trade-in VAXCluster from OpenVMS VAX and receive 50% credit for VSI VMSCluster on VSI OpenVMS

**Example:** Trade-in Fortran from OpenVMS Alpha and receive 50% credit for VSI Fortran on VSI OpenVMS

**Example:** Trade-in C from OpenVMS Alpha and receive 50% credit for VSI C on VSI OpenVMS
Quote Policy

• If an HP part number exists for a product, then VSI will quote the HP part number so customers and partners see a consistent part number scheme.

• HP will not sell all VSI products in all variants. VSI will quote VSI part numbers only when there is not an HP equivalent. HP will not sell the following:
  – VSI OpenVMS and layered products on non-i4 servers
  – VSI Open source services
  – VSI Professional services
  – VSI Campus wide Software License Grant (CSLG)
Pricing Policy

• Not to increase the price for OpenVMS or layered products over current HP pricing levels
  – VSI Pricing on i4 is equivalent to the HP price for equivalent software on I2 servers
  – VSI pricing on i2 is equivalent to i4 price
  – For previous (pre-i2) generations Itanium servers (1 and 2 core servers) a 15% discount is provided off of VSI OpenVMS and layered products i2/i4 list price (before trade-in credits, if any)

• VSI services do not have trade-in credits, full list price applies
Other Pricing Programs

• **VSI CSLG**
  – To be eligible for the CSLG program, Integrity systems using OpenVMS are required to have a valid Base Operating Environment (BOE) at the appropriate number of processors.
  – Annual renewal
  – RTmV included

• **VSI Education License Program (work in progress)**
  – Free license for classroom teaching
  – Annual renewal

• **VSI Hobbyist (work in progress)**
  – Free license for non commercial, non business use
  – Annual renewal

Consult program License Terms and Conditions when available
## V8.4-1H1 Supported Platforms

### Version 8.4-1H1 Initial Support

<table>
<thead>
<tr>
<th>Platform</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rx2800 - i2, i4</td>
<td></td>
</tr>
<tr>
<td>BL860c - i2, i4</td>
<td></td>
</tr>
<tr>
<td>BL870c - i2, i4</td>
<td></td>
</tr>
<tr>
<td>BL890c - i2, i4</td>
<td></td>
</tr>
</tbody>
</table>

### Under Investigation for Future Support

<table>
<thead>
<tr>
<th>Platform</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>rx1600</td>
<td></td>
</tr>
<tr>
<td>rx2600, rx2620, rx2660</td>
<td></td>
</tr>
<tr>
<td>rx3600</td>
<td></td>
</tr>
<tr>
<td>rx4640</td>
<td></td>
</tr>
<tr>
<td>rx6600</td>
<td></td>
</tr>
<tr>
<td>Rx7620, rx7640</td>
<td></td>
</tr>
<tr>
<td>Rx8620, rx8640</td>
<td></td>
</tr>
<tr>
<td>Superdome SX1000/SX2000</td>
<td></td>
</tr>
</tbody>
</table>
Server Support Matrix

<table>
<thead>
<tr>
<th>Server Name</th>
<th>Max Number of Sockets</th>
<th>VSI Support Date</th>
<th>HP Support Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>rx1600</td>
<td>2</td>
<td>July 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>rx2600</td>
<td>2</td>
<td>July 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>rx2620</td>
<td>2</td>
<td>July 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>rx2660</td>
<td>2</td>
<td>July 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>rx2800i2</td>
<td>2</td>
<td>June 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>rx2800i4</td>
<td>2</td>
<td>June 2015</td>
<td>June 2015</td>
</tr>
<tr>
<td>rx3600</td>
<td>2</td>
<td>July 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>rx6600</td>
<td>4</td>
<td>July 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>rx7640</td>
<td>8</td>
<td>July 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>rx8640</td>
<td>16</td>
<td>July 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>BL860c i2</td>
<td>2</td>
<td>June 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>BL870c i2</td>
<td>4</td>
<td>June 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>BL890c i2</td>
<td>8</td>
<td>June 2015</td>
<td>Check with HP</td>
</tr>
<tr>
<td>BL860c i4</td>
<td>2</td>
<td>June 2015</td>
<td>June 2015</td>
</tr>
<tr>
<td>BL870c i4</td>
<td>4</td>
<td>June 2015</td>
<td>June 2015</td>
</tr>
<tr>
<td>BL890c i4</td>
<td>8</td>
<td>June 2015</td>
<td>June 2015</td>
</tr>
</tbody>
</table>

- VSI will support OpenVMS 8.4-1H1 on the servers listed in the chart.
- Please check with your HP sales representative for the official HP support policy.
OpenVMS Rolling Roadmap

**OpenVMS V8.4-1H1**

**Architecture: Itanium**

**Itanium® Processor 9500 series**

**HP Integrity System Support**
- rx2800 i4
- HP Integrity Server Blades
  - BL860c i4
  - BL870c i4
  - BL890c i4
- i2 versions of the above
- Blades FlexFabric LAN support

**Software**
- Improved performance over i2
- Availability Manager – update to 64-bit desktop

**OpenVMS V9.0**

**Architecture: Common**

**New File System**
- Eliminate 2TB volume size limit
- Improved performance

**Architecture: Integrity**

Additional servers & I/O, depending on feedback

**Architecture: X86-64**
- Selected HP servers
- OpenVMS as a VM guest
- Binary Translator
- Updated Language Standards
  - C
  - C++
  - FORTRAN

**Q2 2015**

**Q4 2015**

**Q3 2016**

**Q3 2017**

Two releases are planned between V8.4-1H1 and V9.0. The order in which work makes it into these releases will be determined by readiness, HW availability, and customer feedback.
These roadmaps contain forward looking statements and are provided solely for your convenience. While the information in this roadmap is based on our current best estimates, such information is subject to change without notice.
VSI OpenVMS Service Roadmap

These roadmaps contain forward looking statements and are provided solely for your convenience. While the information in this roadmap is based on our current best estimates, such information is subject to change without notice.
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These roadmaps contain forward looking statements and are provided solely for your convenience. While the information in this roadmap is based on our current best estimates, such information is subject to change without notice.
Support Service Note: A minor version is a dot (.) release of a VSI product e.g. V8.4-1H1 or V8.5 are all minor releases to the major version V8. Once OpenVMS V9.0 is released, a new licensing paradigm will be in place and licenses must be renewed at that time.
Future Directions - Strategic Areas

- Security
- Processor Architectures
- Hardware Platforms
- Virtual Machine Hosts
- New File System
- Performance
- Up-to-Date Compilers
- Up-to-Date Open Source
- Porting Applications to/from VMS
- Networking
- System Management (installation/upgrade, licenses, applications)
- Investigations
  - Containers
  - Graphics
  - OpenStack
  - Big Data
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Questions?