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# OpenVMS Alpha - migration to VSI

OpenVMS Bootcamp 2017

Pre-conference seminar content

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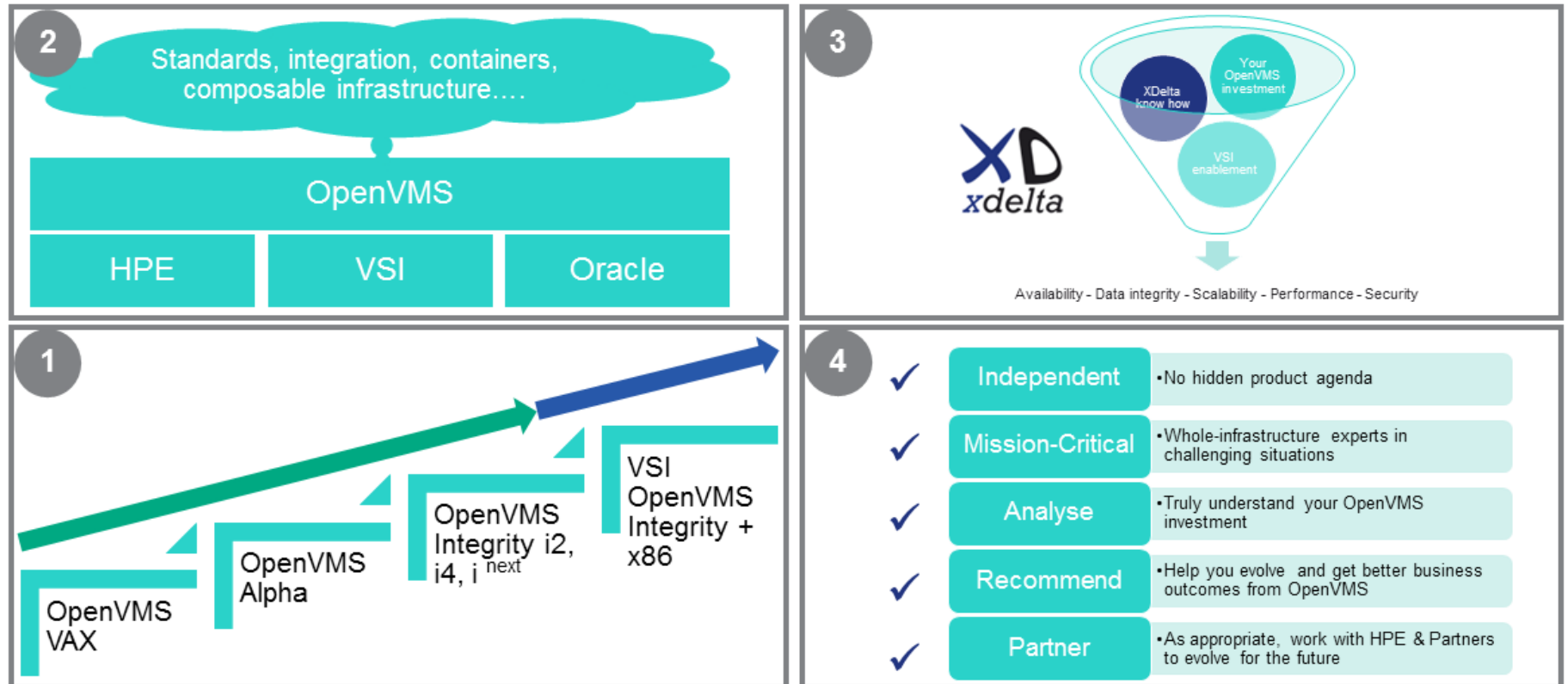
[www.xdelta.co.uk](http://www.xdelta.co.uk)

# XDelta: Who we are



- VSI Professional Services Alliance member
- Independent consulting engineers since 1996:
  - UK based with international reach
  - Delivering OpenVMS based systems for 30+ years
- Technical leadership for business-critical systems
  - Design, planning and implementation
  - Mentoring and skills transfer
  - Systems engineering background
- Gartner (2009):
  - Identified XDelta as one of few companies world-wide capable of OpenVMS platform migration projects

## XDelta - a trusted advisor to advance your critical OpenVMS application infrastructure



 Hewlett Packard Enterprise

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# Agenda

- OpenVMS on Alpha
- Goals:
  - Minimising risk
  - Extending supported lifetime
  - Improving overall performance
- Options
- Experiences

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# Part 1: OpenVMS Alpha migration

- Background
- Typical projects

# OpenVMS on Alpha:

Most OpenVMS systems purpose written:

- Tight integration with operating system and infrastructure
- Multi-site mission-critical capabilities
- Stable - running 24x7 with minimal disruption
- Often first implemented long ago, gradually evolved

Well engineered operating system:

- Well structured and documented
- Scales well from small to large implementations

# OpenVMS Alpha: What to do ?

Where are you starting from ?

Where do you want to get to ?

There is a range of solutions, for example:

- Update to VSI OpenVMS Alpha release
- Interim port to Integrity, then to x86
- Wait for x86 to be ready
- Run unsupported systems
- Update to latest available Alpha hardware

# OpenVMS Alpha: Consider your options

Evaluate your options:

- Changing platform is something you do infrequently
- New platform has to be stable for many years
- You will probably change platform again
- OpenVMS has a great track record of platform support
- What level of support do you need for h/w and s/w ?

An inherent conflict:

- Customers need stability of their chosen platform
- Customers need new hardware and new features without breaking stuff they rely on
- Computer industry wants to keep selling new stuff
- Computer industry doesn't like supporting old stuff



# OpenVMS Alpha: How to proceed ?

- Understand systems so they can be updated or migrated with minimal disruption
- Don't rush, get started early
- Define criteria for success and how to meet them
- Design, plan and implement
- Test and demonstrate
- Transition
- Data migration

# Rationale for VSI OpenVMS on Alpha

- Need supported systems and want to stay on Alpha
- Need Alpha because of specific hardware interfaces
- Imminent end of support in a regulated industry
- Migration away from OpenVMS didn't succeed
- Migration to OpenVMS Integrity is running very late
- Chose not to migrate to Integrity
- Direct path to OpenVMS on x86-64

# Common issues

- Increasing workloads
- Fibrechannel limited to 2Gbps (4Gbps with Nemonix)
- 100Mbps isn't always "auto", so set speed & duplex
- No support for Pathworks on Integrity
- Dying systems and infrastructure hardware
- Constraints on other data centre activity
- Difficulty of obtaining spares and hardware support
- Rapidly increasing support costs
- Inaccurate information

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# Typical risks

- Systems in 24x7 use
- Scared of disruption
- Poor documentation
- Little knowledge left in-house
- Unwilling to change
- Don't want to spend money

# VSI OpenVMS Alpha to the rescue!

- Move to supported OS without changing hardware
- Clean code base (master pack) without side builds
- Move to later hardware (or emulator) and supported OS without changing applications or overall system structure
- Increased performance on EV6 and later
- Can now drive 10GigE Xframe cards (PCI 133MHz limit)
- Buys time for migration to newer platform
- Get up to date on Alpha ready for x86-64
- Reduces business risk in the short-term

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# OpenVMS Alpha: VSI releases

- V8.4-2L1 – all AlphaServers
- V8.4-2L2 – EV6 or later AlphaServers
- Simplified licensing

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## Part 2: Experiences with Alpha migration

- HPE OpenVMS Alpha to VSI OpenVMS Alpha
- HPE OpenVMS Alpha to VSI OpenVMS Integrity

# General approach before you migrate

- Don't do everything at once, else you will not know where to look if there are problems
- Six P!
- Make a thorough audit
- Consolidate and simplify
- Know how to restore to the original state
- Identify problems, then fix, bypass or migrate them
- Test everything thoroughly – before and after
- Identify how you will demonstrate success
- Document it!



# HPE OpenVMS Alpha to VSI OpenVMS Alpha

- Proof-of-concept gives better performance with V8.4-2L2:
  - About 15 to 20% overall improvement
- Discovered several areas for improvement along the way:
  - Performance - installed images, XFC size, RMS global buffers, process quotas, sysgen parameters, application improvements, locking, fastpath
  - Consistency in DCL, especially startup sequence
  - Consistency of network configuration
  - Consistency of common files and “hot files”
  - Updates and patches, especially TCPIP and security

# HPE OpenVMS Alpha to VSI OpenVMS Alpha

- Consider updating to later Alpha hardware or emulator
- Hardware rationalisation (eg: LAT devices)
- Improved maintenance schedules
- Better documentation
- Increase level of understanding
- Means of testing operational procedures
- More thorough testing
- Better separation of environments (live, test, dev.)
- Low risk – not changing platform

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# HPE OpenVMS Alpha to VSI OpenVMS Alpha

- Live demo:
  - Partitioned ES40 (Galaxy) with FC storage
  - HPE OpenVMS Alpha V8.4 to VSI OpenVMS Alpha V8.4-2L2
  - Simplified licensing

# OpenVMS Alpha to VSI OpenVMS Integrity

- Need all the source code
- Need to build new system platform
- Improved consistency:
  - Device naming
  - Node naming
  - System parameters
  - Process quotas
  - DCL command files, especially startup sequence

# OpenVMS Alpha to VSI OpenVMS Integrity

- Small Integrity is far more powerful than small Alpha
- Check hardware build, configure NUMA & hyperthreading
- Testing under load for locking / contention / synchronization issues which may lead to corrupted data
- Consider turning cores off (stop/cpu)
- Data migration from old media
- Do not blindly copy UAF etc. – different values needed!
- Make use of hardware capabilities:
  - Multiple network interfaces (LAN failover)
  - Local SAS array (page / swap / dump / “maint boot” / etc.)

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# OpenVMS Alpha migration: Discussion

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