VMS Software

News from VMS Software Inc. (VSI)

February 2018 Business & Technical Update

Eddie Orcutt, VP Software Engineering

Terry R. Holmes, VP Sales & Marketing

Mission critical

"You will typically find OpenVMS in any environment that is serious about high availability, disaster tolerance, security, performance and scalability, especially when running real-time applications…

In short, anything that really has to work."

High availability

OpenVMS is renown for its 99.999% uptime reputation.

OpenVMS availability is measured in years, not weeks or months, as you would expect on other general purpose operating systems.

European railway company

17 years

highest recorded uptime without reboot

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Security by design

Security has been architected into the OS from the very beginning

Includes numerous features to restrict and control access to resources.
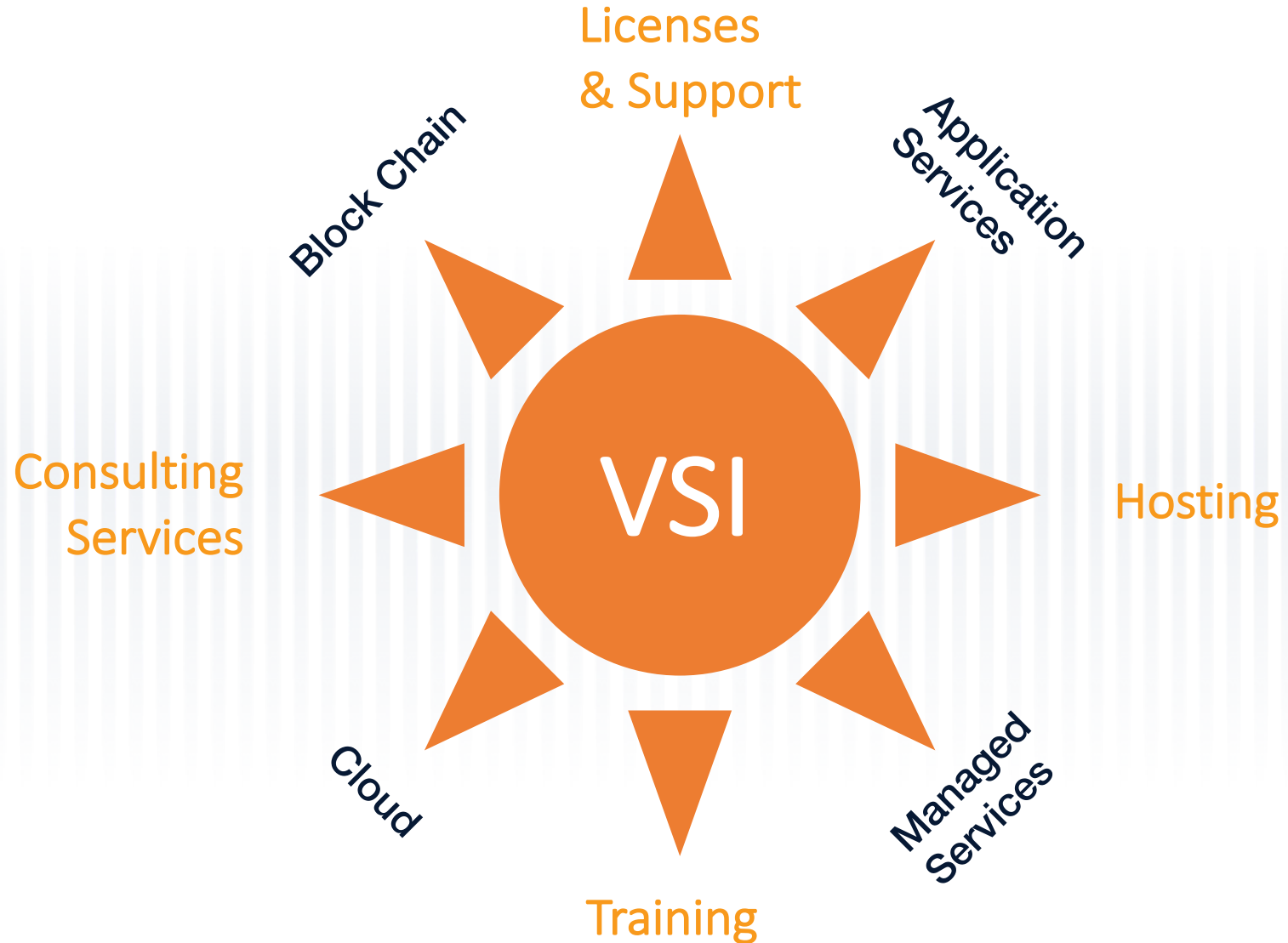
Security levels

73x
Fewer daily security vulnerabilities

10x
Lower security patch rate

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OpenVMS Clearinghouse

VSI Licenses:

- VSI is the exclusive company to develop new OpenVMS products since 2014.

- VSI is the only company who offers VAX, Alpha, and Integrity users a way to migrate to the x86 platform.

- VSI is the only company who can offer The Rights To New Versions at no extra cost provided you are on VSI Support.

Licenses

Best in Class Support

Support

- Only VSI support staff has first hand access to VSI OpenVMS development engineers and provides 90-Day Conformance Warranty.

- Only VSI provides 4 levels of "Best in Class" support.

- Only VSI supports some layered products previously unsupported.

- Only VSI provides Rights to New Versions (RTNV)
  - Receive free, automatic version updates during the term of your VSI support.
  - Receive free license upgrades for VSI during the term of your VSI support.

Official VSI OpenVMS Training

- Instructor Led
- Remote instructor Led
- Online Self Paced
- Custom Client Site

OpenVMS User

OpenVMS Systems Management

OpenVMS Programming

OpenVMS Certifications

Training

How is VSI doing?

- Business nearly doubled from previous year.
  - FY2018 looks very strong.
  - Customer transition well underway.
- 2018 - Stronger VSI Marketing and Partner Outreach.
- Make a Commercial Case to Customers
  - <u>VSI is the only company</u> who can offer OpenVMS V9.0 and higher including a clear x86 path for OpenVMS users. (RTNV, etc..) This includes Alpha and Integrity V9.2.
  - <u>VSI is the only company</u> who can offer Rights to New License Versions when customer buys VSI Support.
    - This includes Alpha, Integrity, and x86.

VSI Announcements

HPE Integrity i6 Server Supported

- Same server classes supported as on i4 and i2 generations
  - rx2800i6
  - BL860c i6
  - BL870c i6
  - BL890c i6

- Same I/O options plus newer
  - 16Gb FC HBA

- Supported with current OpenVMS V8.4-2L1
  - Plus 16Gb FC Patch kit on rx2800 i6

New VAX server Support Program

- Provides 24x7 OpenVMS technical support (L1/L2)

- Available on VAX models

- Priced by hardware tier
  - Workgroup
  - Departmental
  - Enterprise

Swirlds Hashgraph Partnership
"Next Generation of Blockchain Technology"

- Swirlds
    - Company that owns Hashgraph IP and implement Hashgraph platform.
    - Hashgraph is next generation distributed ledger.

- Swirlds is partnering with VSI to run Hashgraph on VSI OpenVMS.

- Support partners and customers to implement and operate next generation distributed applications.

- Partnership improves speed, security, costs and availability.

VSI Product Improvements Update

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VSI Improvements to OpenVMS

Licenses

6 versions

28 months

515 Defect Repairs

179 New Features

16 Open Source Releases

67 ISV Partners

65 Layered Products

2 Platforms *(IA64 & Alpha)*

Spectre / Meltdown Vulnerability

Plans

- Spectre/Meltdown Intel chip vulnerabilities

Schedule

- OpenVMS on Itanium
  - OpenVMS on Itanium is not susceptible.

- OpenVMS on Alpha
  - OpenVMS on Pre-EV6 Alpha is not susceptible.
  - OpenVMS on EV6-and-later Alpha, VSI has not reproduced behavior

- OpenVMS on x86-64
  - Early design decisions for the x86-64 port of OpenVMS have already mitigated the impact of the attacks on OpenVMS
  - OpenVMS on x86-64 is not susceptible to Meltdown
  - OpenVMS on x86-64 has limited susceptibility to Spectre. We will work diligently to eliminate susceptibility as we complete the port.

Bug Fixes – New Patches

Plans

- OpenVMS Security Bug CVE-2017-17482

- OpenSSL 1.02n

Schedule

- A patch kit (DCL100) is available for all VSI versions of OpenVMS

- Available now

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VSI OpenVMS Releases – To date

- 3 OpenVMS Integrity Releases

- V8.4-1H1 – Bolton

  - June 2015

- V8.4-2 - Maynard

  - March 2016

- V8.4-2L1 – Hudson

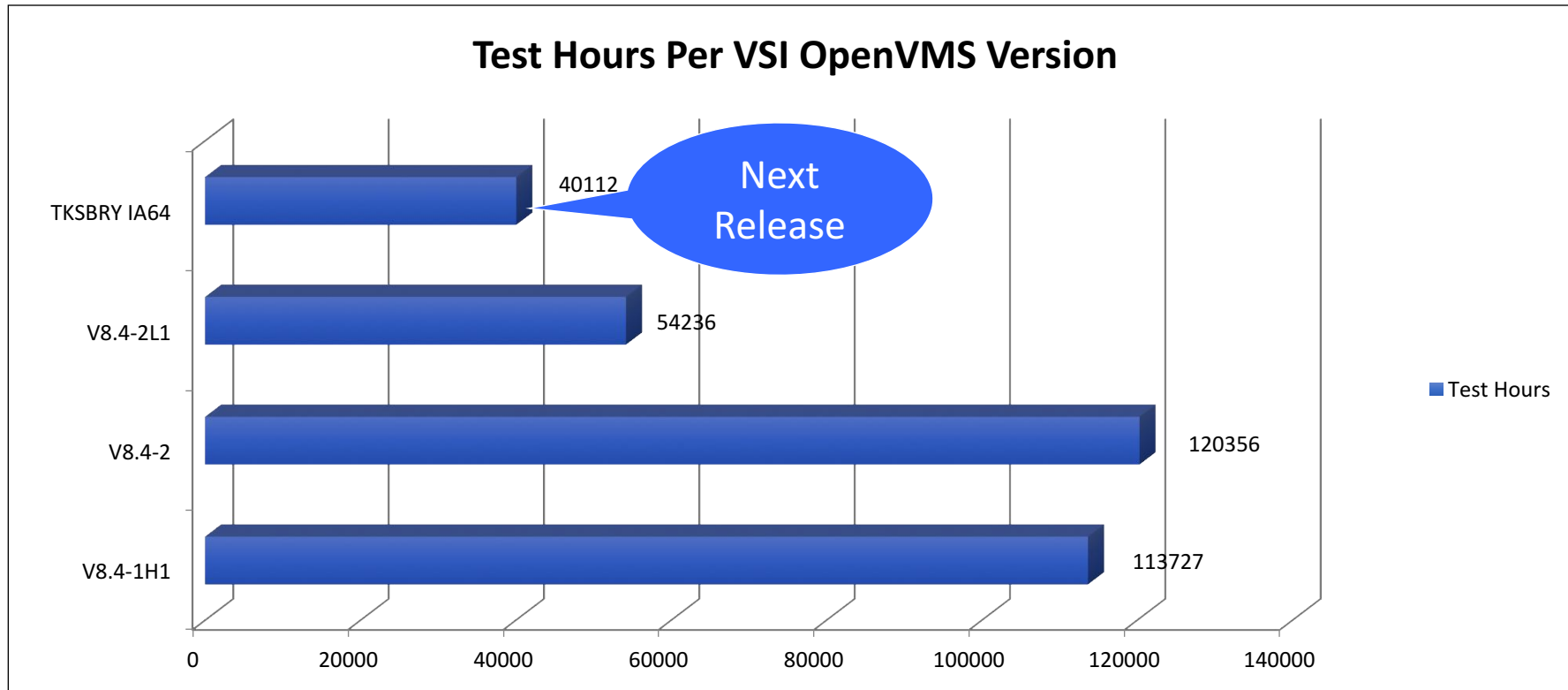 - August 2016

Plus …

Japanese Version
- DECforms V4.2
- DCPS V2.8
- FMS V2.6
- DECwindows Motif V1.7E

- 2 OpenVMS Alpha Releases

- V8.4-2L1 – February 2017

  - Standard OpenVMS Release (Hudson)

- V8.4-2L2 - April 2017

  - Performance Build - EV6/EV7 (Felton)

VSI OpenVMS Test Hours

(at Release)

OpenVMS Integrity Operating Environment

Released		Planned
BOE Components:	**HAOE Components**	**BOE Components**
• V8.4-2L1 operating system • ANT V1.7-1B • AXIS2 VB1.0-1 • CDSA V2.4-322A • CIFS V1.2ECO1A • CSWS V2.4-3G • CSWS_JAVA V8.5-4 • CSWS_PHP V5.2-17A • DCPS V2.8 • DECnet Phase IV V8.4-2L1 • DECnet Phase V V8.4I • DECram V8.4-2L1 • DECwindows Motif V1.7E • DCE (runtime) V3.2A • ENCRYPT V8.4-2L1 • Enterprise Directory V5.8 • Kerberos V3.2-260 • GNV V3.0-2	• NOTARY V1.0 • OpenSSL V1.02k • PERL V5.20-2A • TCP/IP V5.7-13ECO5F • The Data Collector V2.3-1220A • UDDI V1.0B • VSI Binary Checker V1.2 • WBEM/CIM V3.0-B151019 • WBEM providers V2.2-5D • WSIT 3.4-1 • XML C++ 3.0-1-1 • XML_JAVA V4.0-1	

HAOE Components	Planned BOE Components
• Availability Manager Base V8.4-2L1 • RMS Journaling V8.4-2L1 • Volume Shadowing V8.4-2L1 • OpenVMS Cluster Client V8.4-2L1 • OpenVMS Cluster Software V8.4-2L1 • RTR V5.3	• CSWS additional modules • GNV Updates • CIFS Update

OpenVMS Integrity Layered Products

Released		Planned

• ABS / MDMS V4.6
• ACMS dev, remote, runtime V5.2
• BASIC V1.8-4
• C V7.4-1
• C++ V7.4-6
• COBOL V3.1-7
• Datatrieve V7.4-1
• DECforms dev, runtime V4.2
• DECset V12.9-1
  (CMS, DTM, MMS, SCA, LSE, PCA)
• DFO V3.3
• DEC DFS V2.5
• FMS dev, runtime V2.6
• FORTRAN V8.3-3
	• Japanese VMS
	  - DECforms V4.2
	  - DCPS V2.8
	  - FMS V2.6
	  - DECwindows Motif V1.7E
	• MRU V1.9
	• PASCAL V6.2
	• SSM V1.9-1
	• TDMS dev, runtime V2.1-1
	• T4 V4.4D
	• DQS V1.4
	• GKS V7.3
		• OMNI V4.1
		• OSAP V4.1

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OMNI / OSAP Update

Plans

- Release OMNI on both Alpha and Integrity

- Release OSAP on both Alpha and Integrity

Schedule

- Q2 2018 release (looking for FT sites)

- Q2 2018 release (looking for FT sites)

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OpenVMS Integrity Open Source Products

Available	Investigating
• ActiveMQ V5.15.0A • cURL & libcURL V7.49.0A (OpenSSL 1.0.2h support) • Lua V5.2.3 • Mosquitto V1.3.5 (MQTT broker) • Paho-C V1.0.3 (MQTT client) • PHP V5.6.10B • Ruby V2.2.2I • SCALA V2.11.8 • Subversion V1.8-13 • SWIG V3.0.5 • Vgit2 V0.8 • ZeroMQ V4.1.2 • gSOAP V2.8.32 • GNUplot V5.0-2 • Maven V3.3-9 • syslog	• Erlang • Precision Time Protocol (PTP) • Python • R • Redis

OpenVMS Alpha – OS & Layered Products

Released			Planned
• V8.4-2L1/V8.4-2L2 OS	• RMS Journaling V8.4-2L2	• FMS dev, runtime V2.6-1	• OMNI V4.1
• CDSA V2.4-320A	• Volume Shadowing V8.4-2L2	• FORTRAN V8.3-3	• OSAP V4.1
• DCPS V2.8-1	• OpenVMS Cluster Client V8.4-2L2	• MRU V1.9-1	
• DECnet Phase IV V8.4-2L1	• OpenVMS Cluster Software V8.4-2L2	• PASCAL V6.2-125	
• DECnet Phase V V8.4D	• RTR V5.4-1	• SSM V1.9-1-2	
• DECram V8.4-2L1	• T4 V4.4D	• TDMS dev, runtime V2.1-2	
• DECwindows Motif V1.7F	• ABS / MDMS V4.6-1	• AM Base V8.4-2L1	
• DCE (runtime) V3.2B	• ACMS dev, remote, runtime V5.3	• AM Data Analyzer V3.2	
• ENCRYPT V8.4-2L1	• BASIC V1.8-5	• GKS V7.3	
• Enterprise Directory V5.8-2	• C V7.4-1		
• Kerberos V3.2-152B	• C++ V7.4-8		
• DQS V1.4	• COBOL V3.1-7		
• NOTARY V1.0	• Datatrieve V7.4-1		
• OpenSSL V1.02n	• DECforms dev, runtime V4.2-1		
• TCP/IP V5.7-13ECO5F	• DECset V12.9-3 (CMS, DTM, MMS, SCA, LSE, PCA)		
• The Data Collector V2.3-1220	• DFO V3.3-1		
• VSI Binary Checker V1.1A	• DEC DFS V2.5-1		
• AM Base V8.4-2L1			

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OpenVMS Alpha Open Source Products

Available	Investigating
• CIFS V1.2ECO1C • CSWS V2.4-3C • CSWS_JAVA V6.0-47A	• Mosquitto 1.3.5 (MQTT broker) • Paho-C 1.0.3 (MQTT client) • ZeroMQ 4.1-2

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TCPIP Update

VSI TCP/IP

Plans

- VSI will initially deliver a standalone VSI TCPIP PCSI kit for VSI OpenVMS V8.4-2L1

- VSI TCPIP will be integrated into future VSI OpenVMS releases

Schedule

- VSI TCPIP 10.5 Early Adopters Kit will be released in Q2 2018

- VSI TCPIP 10.6, with feature improvements, will be included in future VSI OpenVMS releases and also will be available as a standalone kit

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VSI TCPIP Future Plans

- Alpha and x86 support

- VSI TCPIP 10.5 is I64 only

- VSI TCPIP 10.6 will be I64 and Alpha

- Some features such as CKO may not be available on Alpha as they require NIC support which may not be available in old NICs

- We will have a later version of VSI TCPIP that runs on x86 for the Q4 2018 OpenVMS x86 Early Adopters Kit, V9.1

Upcoming VSI New Products

VSI OpenVMS Releases – Future

V8.5

- Q3 2018 Scheduled
  - VSI TCP/IP 10.6
  - CRTL: C99 features, header updates
  - ACPI
  - SSL 1.1x
  - Enhanced Password Management

V9.2

- Q1/2020
- Full Production Release
- Native Build
- Security
  - Secure Boot
  - Encrypted Crash Dumps
- Additional HPE & Dell Servers & I/O Devices
- And more

V9.x

- TBD

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VSI OpenVMS Alpha Service Roadmap
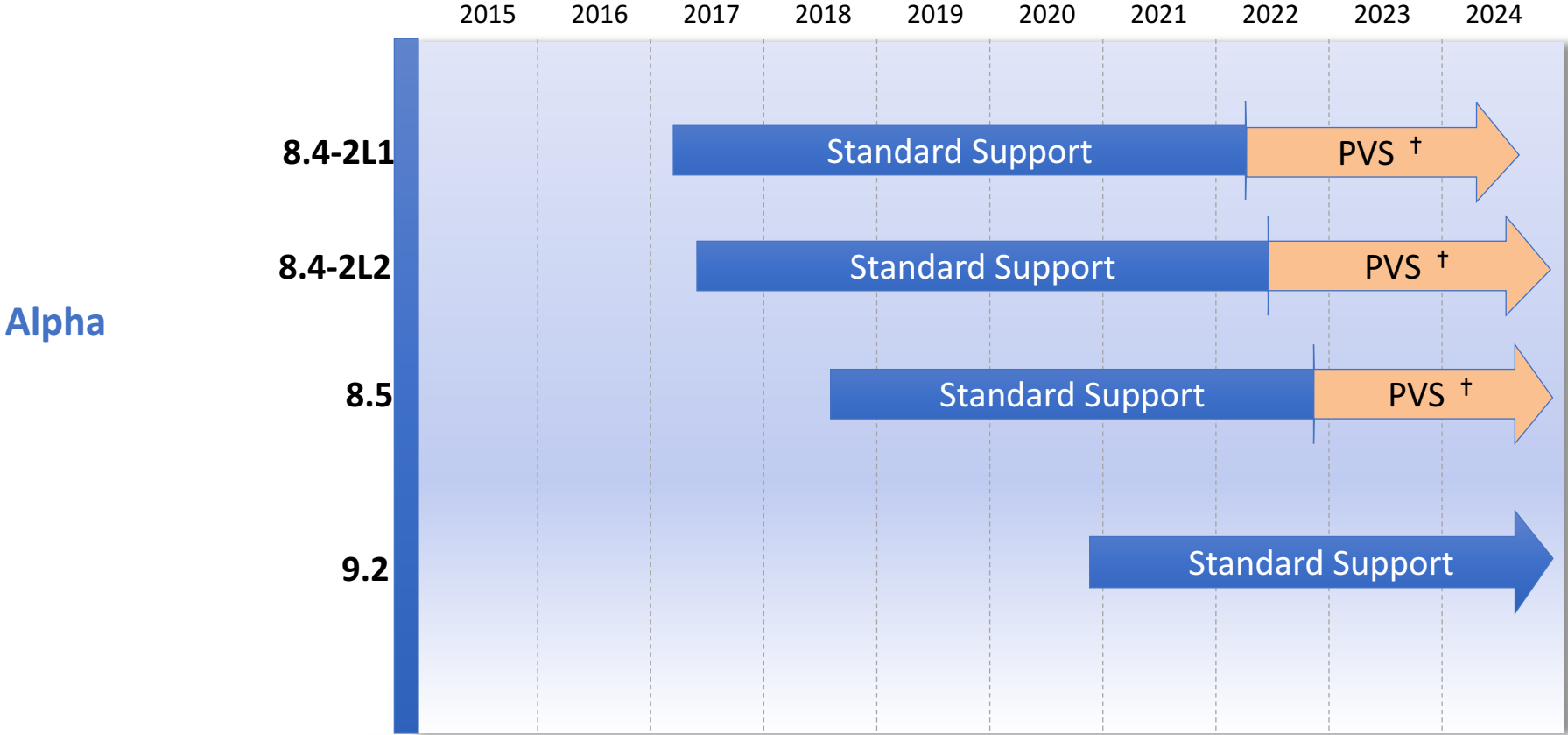
5 Year Standard Support + 2 Year PVS minimum

† PVS – Prior Version Support without Sustaining Engineering
24-month notice provided before support end. Also, Extended Engineering   Support (EES)
contracts are available.

VSI OpenVMS Service Roadmap
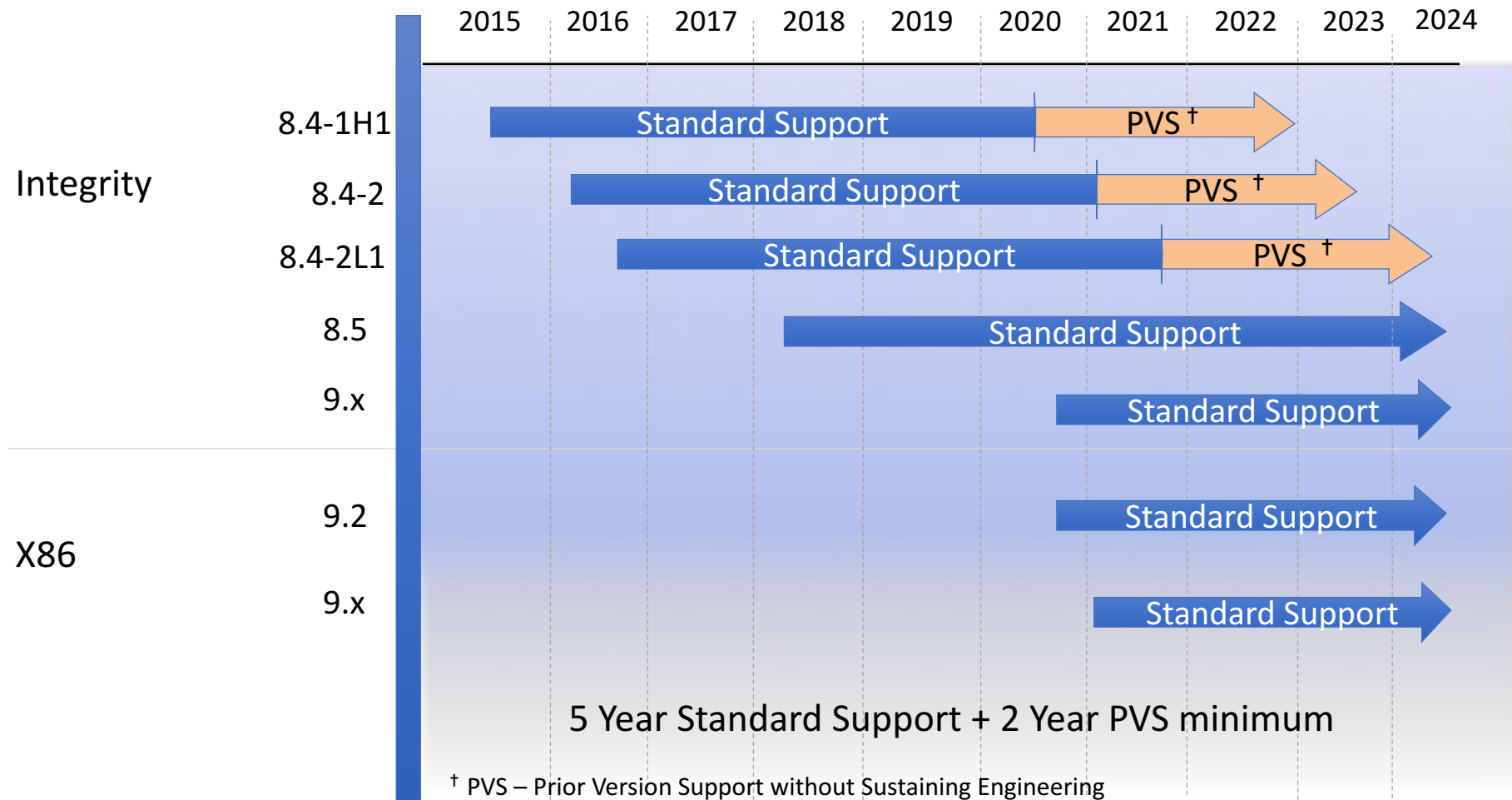

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24 Month notice will be provided before support is ended
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Storage

VSI SAN Storage Array Focus
(VSI HCL)

VSI Supported

In Progress

Status

Figure 1. Magic Quadrant for General-Purpose Disk Arrays

HPE Storage Array Models

MSA	EVA	XP	3PAR
MSA 2040 FC	EVA 4100 EVA 4000	9500	StoreServ 20000 (20450/20800/20840/20850)
P2000 G3 FC	EVA 6000 EVA 4400	24000	StoreServ 10000 (10400/10800)
P2000 G3	EVA 6400 EVA 6100	20000	StoreServ 8000 (8200/8400/8440/8450)
MSA 2300fc	P6350 FC P6300 FC	12000	StoreServ 7000 (7200/7400/7450)
MSA 1500 A/A	EVA 6000 EVA 4400	10000	StoreServ 7000 (7200c/7400c/7440c/7450c)
MSA 1000 A/A	EVA 4100 EVA 4000		

- The 3PAR OS used in VSI testing is version HPE 3PAR 3.2.2.

DELL/EMC Storage Array Models

VMAX 100k	VMAX 950
VMAX 100k	VMAX 950F
VMAX 200k	VMAX 950FX
VMAX 400k	
VMAX 250F	
VMAX 250 FX	
VMAX 450F	
VMAX 450 FX	
VMAX 850F	
VMAX 850FX	

- The 100k, 200k and 400k models use the traditional FC and SATA HDD devices, the hardware design of these three models is basically the same just that the size of these VMAX systems differ on size and maximum capacity. The VMAX 100k is just a smaller version of the 200k and the 400k, less drive and engines, analogous to a blade server containing different numbers of blades.

- The VMAX 250F, VMAX 250 FX, VMAX 450F, VMAX 450 FX, VMAX 850F, VMAX 850FX, VMAX 950FVMAX 950FX are all flash VMAX models also differing in capacity and size and also analogous to a blade server containing different numbers of blades. The xxxFX identified models just have more standard features than the xxxF models.

- All of the above VMAX models operate with the same Hypermax OS releases (microcode releases)

- Testing is starting for new future VMAX model as well as the DellEMC Unity storage systems very soon.

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Hitachi Storage Array Models

VSP
Hitachi VSP G200
Hitachi VSP G400
Hitachi VSP G600
Hitachi VSP G800
Hitachi VSP G1000
Hitachi VSP G1500
Hitachi VSP F400
Hitachi VSP F600
Hitachi VSP F800
Hitachi VSP F1500

- Management Controller: Hitachi Device Manager Storage Navigator - used for storage management
- Storage Controller: Active/Active storage
- Drive firmware: Storage Microcode version includes firmware for Disks

Infinidat Storage Array Models

InfiniBox F-series
F2K
F4K
F6K

Kove Storage Array Models

XPD
XPD L3

- Fibre Channel: Up to 6 ports - 2,4,8 Gbps per port
- 64GB — 1.5TB per 1U unit, mesh connectable for larger capacities

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Pure Storage Array Models

FA Series	//m Series
FlashArray FA-405	FlashArray //m10
FlashArray FA-420	FlashArray //m20
FlashArray FA-450	FlashArray //m50
	FlashArray //m70
	FlashArray //m10

- Purity code (firmware) needs to be at 4.7.6 or later.

X86 Port Update

Executive Summary – x86-64 Development Plan

- Strategic work areas for porting OpenVMS to x86-64 architecture systems

- As in any port to a new architecture, implementation includes a number of **architecture-defined interfaces** that are critical to the inner workings of the system.

- System components are being modified to implement the x86-64 AMD **calling conventions**.

- OpenVMS is currently built for Alpha and Itanium from **common source code** modules. x86-64 support is being added to that code base.

- Compilers
    - Creating a converter to connect DEC-created compiler front-ends to the **LLVM back-end code generator**
    - LLVM targets x86-64 as well as many other architectures, providing a direct path for porting to other architectures in the future

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Executive Summary – x86-64 Release Plan

- The Release Plan has multiple stages.

- V9.0: x86-64 Early Adopter Kit (EAK) – kick the tires
  - The EAK is for a selected set of partners, ISVs, and customers
  - The system will be less than complete
  - Content will depend, to a large degree, on the needs of the participants
  - Cross tools (run on Itanium, target x86) – compilers, linker, …..
  - Q4 2018

- V9.1: x86-64 General EAK Release – reasonably complete system
  - Available for all partners, ISVs and customers
  - Not for production
  - Native tools
  - Q3 / Q4 2019

- V9.2: x86-64 Production Release - complete system
  - Same features will be on Alpha and Itanium, where possible
  - Alpha and Itanium V9.2 releases will follow in a few months
  - 2020

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Why V9.2 on Alpha & Integrity?

- To have OpenVMS parity on Alpha, Integrity and X86 when released
- Easier for customers to migrate to X86

X86 Servers

x86 Server Roadmap
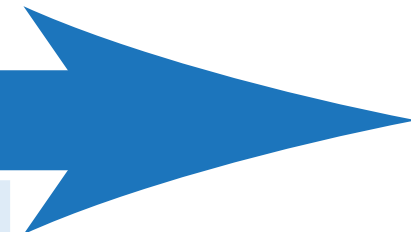
	2018	2019	2020
	OpenVMS V9.0 x86-64 Early Adopters Kit	**OpenVMS V9.1** x86-64 General EAK	**OpenVMS V9.2** X86-64 Production Release
HPE			
Rackmount			
• Gen 9, 10	√	√	√
Blade			
• Gen 9, 10			√
DELL			
Rackmount			
• Gen 12, 13, 14	√	√	√
Blade			
• Gen 12, 13, 14			√

HPE X86 Servers

Server Generations →

Gen 6		Gen 7		Gen 8		Gen 10			
DL160	ML330	DL165	ML110	DL160	ML310	DL20	ML10	DL120	ML110
DL170	ML350	DL360	ML350p	DL320e	ML350	DL60	ML30	DL160	ML350
DL180	ML370	DL380		DL360p		DL80	ML110	DL180	
DL320		DL385		DL380		DL120	ML150	DL360	
DL370		DL580		DL385p		DL160	ML350	DL380	
		DL585		DL560		DL180		DL560	
		DL980				DL360		DL580	
SL170s				BL660c		DL380			
SL390s						DL560		MicroServer	
		BL620c				DL580			
		BL680c		SL230s				MC 990X	
		BL685c		Sl250s				(4-32 Socket)	

Gen 9: ML310, ML350

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Dell X86 Servers

Server Generations

| Generation	14G	13G	12G		11G		10G	9G
Cloud Models	C6420	C4130 C6320	C6220 C6220 II	C8000 C8220 C8220X C8220XD	C410x C1100 C2100	C5000 C5125 C5220 C6100 C6105 C6145		
Modular Models		M630 M830	M420 M520 M620 M820		M610 M610x M710 M710HD	M910 M915	M600 M605 M805 M905	
Rack Models	R640 R740 R740xd R940	R930 R830 R730 R730xd R630 R530 R430 R330 R230	R220 R320 R420 R420xr R520	R620 R720 R720xd R820 R920	R210 R210 II R310 R410 R415 R510 R515	R610 R710 R715 R810 R815 R910	R200 R300 R805 R900 R905	1950 2950 2970 6950
Tower Models		T30 T130 T330 T430 T630	T20 T320 T420 T620		T110 T110 II T310 T410	T610 T710	T100 T105 T300 T605	1900 2900

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x86 HBA & USB Roadmap
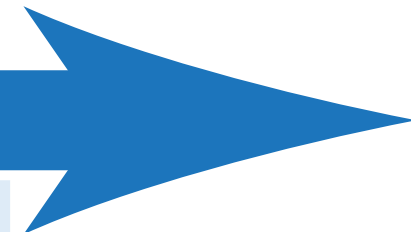
	2018	2019	2020
	OpenVMS V9.0 x86-64 Early Adopters Kit	**OpenVMS V9.1** x86-64 General EAK	**OpenVMS V9.2** X86-64 Production Release
SCSI	**Nemonix** NX10/11/12	**Nemonix** NX10/11/12	**Nemonix** NX10/11/12
SAS	**HPE** H221 (12Gbs) **DELL** HBA 330 (12Gbs)	**HPE** H221 (12Gbs) **DELL** HBA 330 (12Gbs)	**HPE** 24Gbs **DELL** 24Gbs
RAID	**HPE** SA Series	**HPE** SA Series	**DELL** Perc Series
FIBRE	**QLOGIC** 26601/2	**QLOGIC** 27401/2	**EMULEX** LPe16001/2 **EMULEX** LPe32001/2
USB*	**USB 3.1**		**USB 4.0**

- *Will support built-in USB on HPE and DELL servers.*
- *Support restricted to server-oriented devices.*
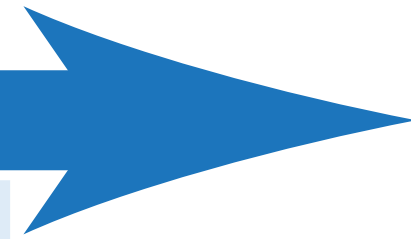
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x86 NIC Roadmap

	2018	2019	2020
	OpenVMS V9.0 x86-64 Early Adopters Kit	**OpenVMS V9.1** x86-64 General EAK	**OpenVMS V9.2** X86-64 Production Release
1Gb	**Intel**		
10Gb	**BROADCOM**		
20/40Gb	**EMULEX** (BE3)		**Intel** XL710
100Gb			**Intel** **Mellanox**

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Coming Attractions

- VSI Cloud Services

- WW OpenVMS Boot Camp – September 23-26

- Upcoming webinar series.
  - Schedule to be released on March 1.
  - Topic specific.

- Scheduling Regional Events

Thank You

To learn more please contact us:

vmssoftware.com
info@vmssoftware.com
+1.978.451.0110