VMS Software

VMS Software Webinar Update

July 2021

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Agenda

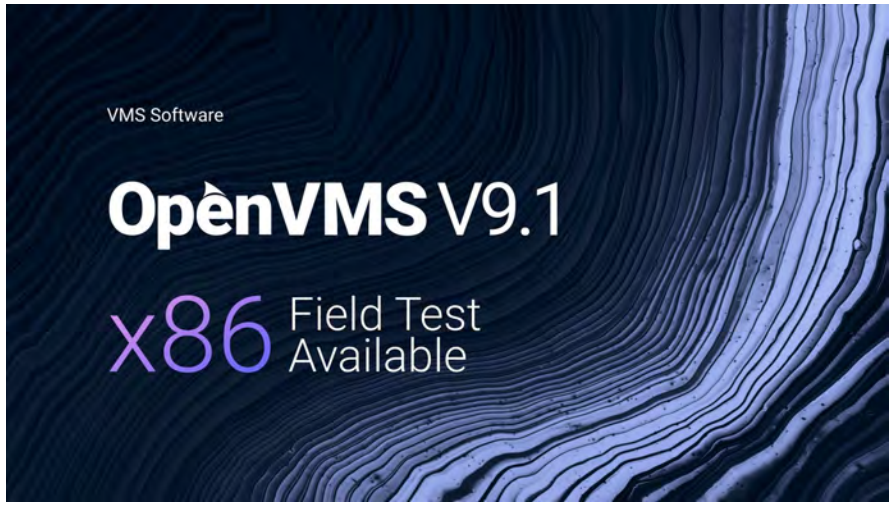
- Introduction
- Roadmap review (the path to 9.2)
- 9.1 overview
- Some new(ish) things
- Migration
- Summary and questions

Introduction

- Busy, busy!

- OpenVMS 9.1 x86-64 field test released end of June
  - Major milestone
  - Main focus
  - Still plenty more to do

- But we've also been working on a few other things
  - Open source
  - Portal
  - New products and enhancements
  - The Atom project
  - Services
  - …



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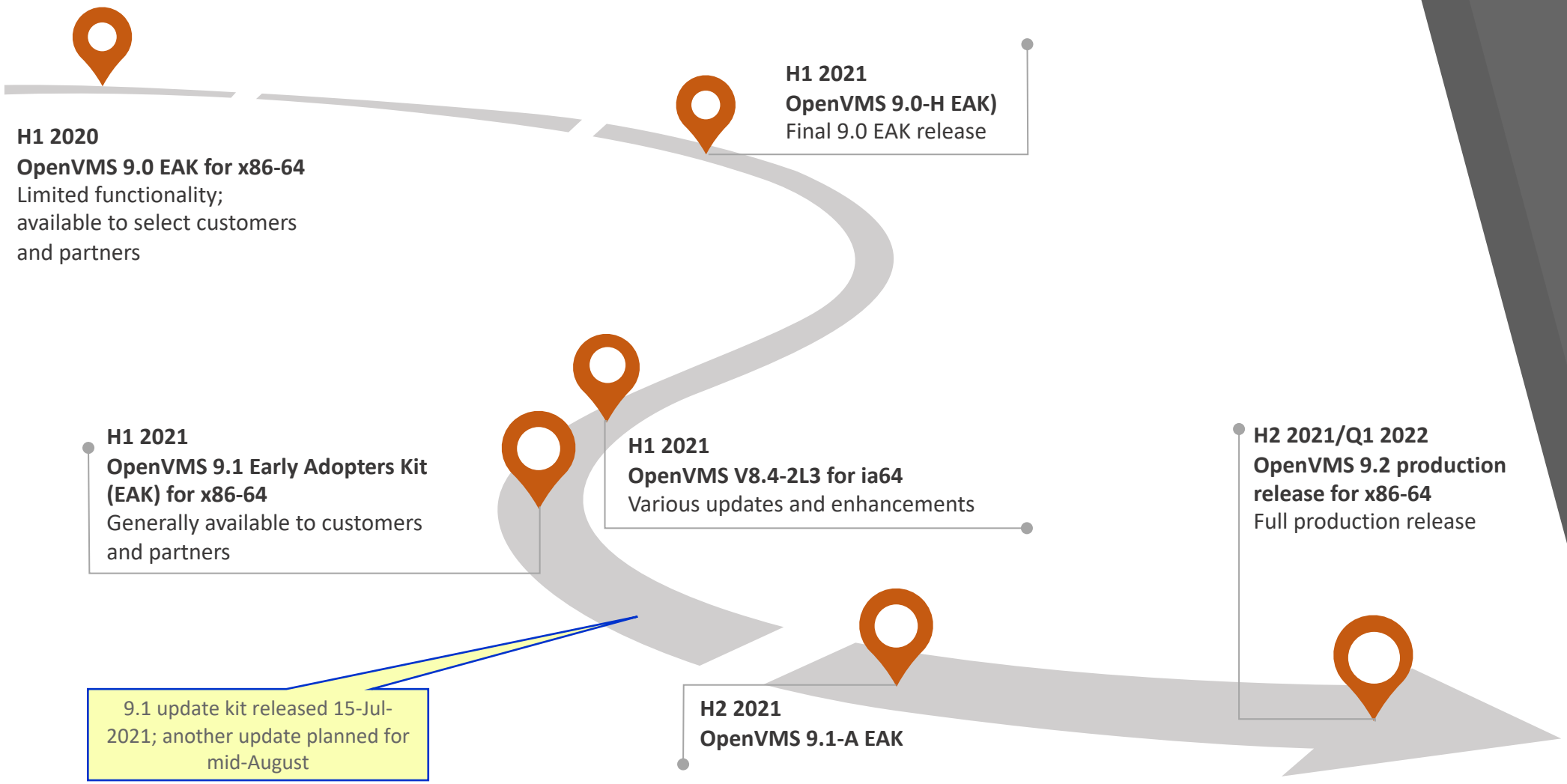
Roadmap review - timeline



Roadmap is based on current best estimates and is subject to change at any time, without notice.

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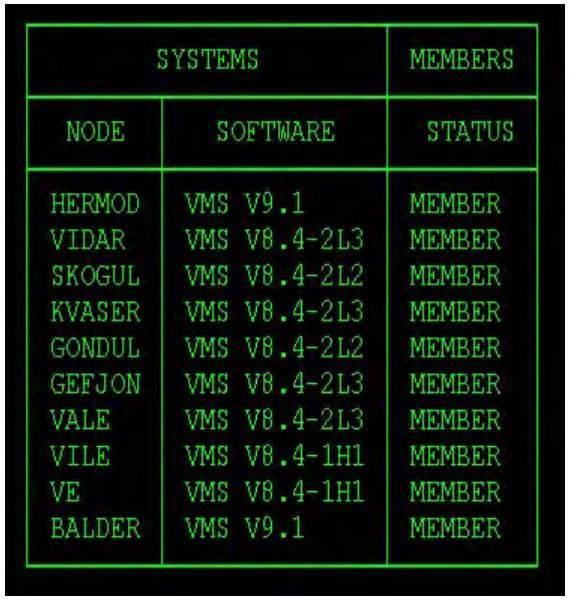
9.1 overview – what to expect

- Bare metal support (limited)
  - DL380 Gen9 and Gen10 with fibre channel shared storage and Smart Array
  - A “buyer’s guide” will be provided
- ISO installation (no more appliances)

Didn't quite make it into 9.1 (some driver issues) and will be made available just as soon as ready, most likely 9.1-A.

- More applications added to TCP/IP Services
  - BIND
  - NTP4 will come later
  - OpenSSH (Beta)
- Cross-compiler updates
- More layered and open source products (see subsequent slides)
- x86-64 licensing
  - License database will be preloaded for V9.1
  - Temporary PAKs
- Security server
- Assorted general improvements and bug-fixes
- Documentation updates



SYSTEMS		MEMBERS
NODE	SOFTWARE	STATUS
HERMOD	VMS V9.1	MEMBER
VIDAR	VMS V8.4-2L3	MEMBER
SKOGUL	VMS V8.4-2L2	MEMBER
KVASER	VMS V8.4-2L3	MEMBER
GONDUL	VMS V8.4-2L2	MEMBER
GEFJON	VMS V8.4-2L3	MEMBER
VALE	VMS V8.4-2L3	MEMBER
VILE	VMS V8.4-1H1	MEMBER
VE	VMS V8.4-1H1	MEMBER
BALDER	VMS V9.1	MEMBER

9.x overview – layered products

- **9.1**
  - CMS
  - DFO
  - DTM (Digital Test Manager)
  - FMS
  - RTR
  - SSM
  - VSI TCP/IP Services 6.0 (partial)

- **9.1-A**
  - BASIC cross compiler
  - C++
  - DCPS (DECprint Supervisor)
  - DECnet Plus (maybe)
  - T4

- **9.2**
  - ABS/MDMS
  - MMS
  - PCA
  - SCA
  - LSE
  - DECWindows/Motif (partial)
  - DQS
  - TDC
  - PERFDAT

- **9.2-1**
  - ACMS
  - ACMSDI (TP Connector for ACMS)
  - Availability Manager
  - DATATRIEVE
  - DECForms
  - GKS
  - X.25

9.x overview – layered products

- **9.2-X**
  - DFS
  - DECnet Plus - FTAM
  - DECnet Plus - OSAK
  - DECnet Plus - VT
  - MDMSView
  - MRU (Media Robot Utility)
  - OMNI API
  - OSAP/H1
  - TDMS

- Native compilers will *start* to become available 9.1-A timeframe
- Debugger likewise

9.x overview – open source

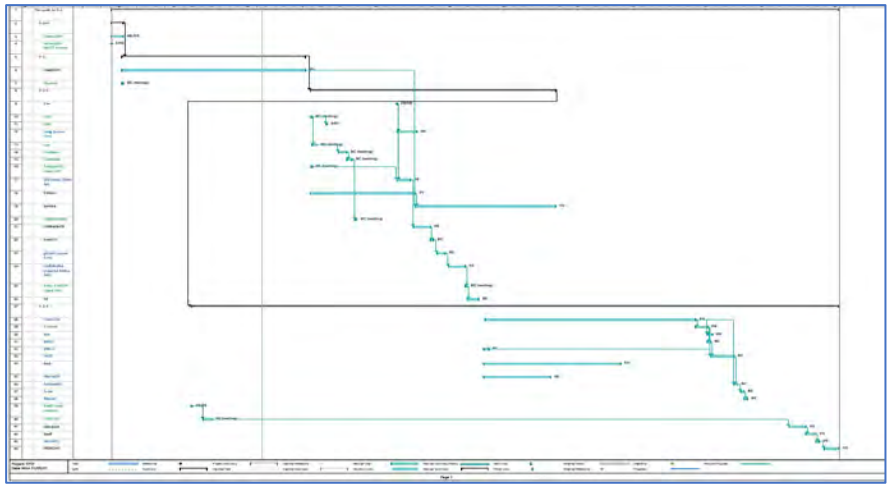
- **9.0-H**
  - OpenSSL 1.1.1k
  - OpenLDAP
  - Mosquitto MQTT broker
  - CSWS
  - Kerberos
- **9.1**
  - OpenSSH (Beta)
  - Stunnel

- Still some work to do on OpenSSH, but looking good
- OpenLDAP and several others require a fix to pthreads
- WebUI ~~might~~ will be available for 9.1

- **9.1-A**
  - Vgit
  - cURL and libcURL
  - Swig
  - Lua
  - CivetWeb
  - PostgreSQL client API
  - SQL Relay client API
  - Python
  - Samba
  - LibRabbitMQ
  - LibMariaDB
  - gSOAP
  - LibRdKafka (Apache Kafka API)
  - Paho-C MQTT client API
  - WebUI

9.x overview – open source

- **9.2+**
  - OpenJDK
  - Tomcat
  - Ant
  - AXIS2
  - XML-C
  - WSIT (not open source)
  - PHP (new version)
  - MariaDB
  - ActiveMQ
  - Scala
  - Maven
  - Redis (new version)
  - HAProxy
  - GNUplot
  - Xpdf
  - ZeroMQ
  - …



- Many open source products already ported
- Need C++ compiler and DECWindows to complete the job
  - Aiming for Q3
- Will be new versions of some products

- Yes, the above project plan needs to be updated ☺

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Some new(ish) things

- SQL Relay
- WebUI
- Services portal
- ACMS integration (any platform, any language… almost)
- WSIT updates
- IDE
- Looking beyond x86-64
- A few other things
- …

SQL Relay

The Oracle announcement…

October, 2020

Dear Oracle Database 11g on OpenVMS Customers,

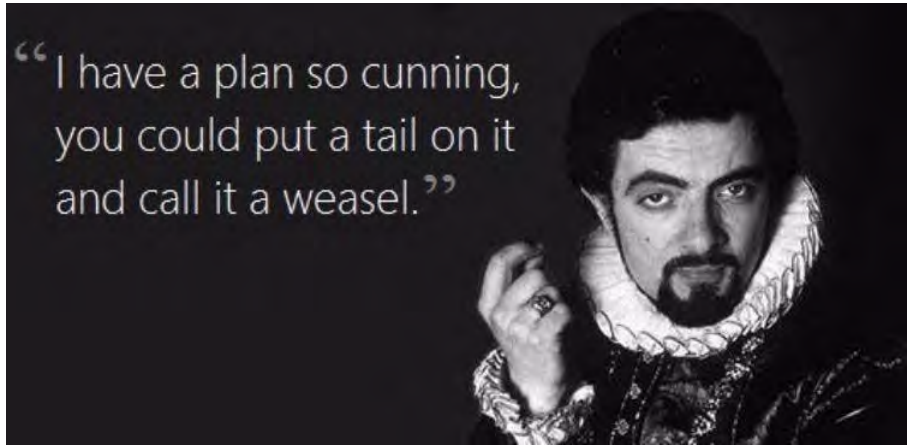
We are writing to inform you that Oracle Database 11.2.0.4 will be the terminal Oracle Database release offered on the OpenVMS platform. MOS DOC ID 742060.1 has recently been updated to reflect this development.

Oracle 11.2.0.4 is currently in Extended Support (ES) until December 31, 2020 and there is an ES fee waiver in place until that time as described in Oracle Software Technical Support Policies: (see http://www.oracle.com/us/support/library/057419.pdf).

These changes only apply to Oracle Database on OpenVMS; the Oracle Rdb database product release and support plans are not affected by this announcement.

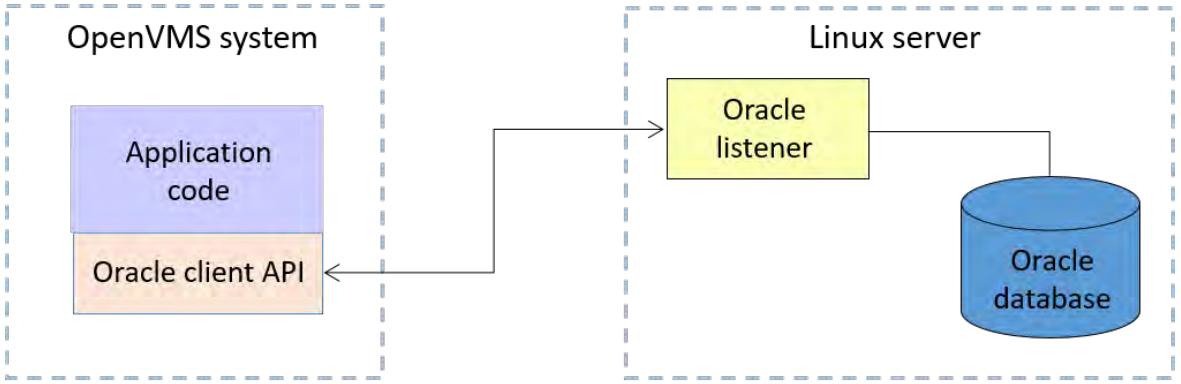
SQL Relay – a cunning plan

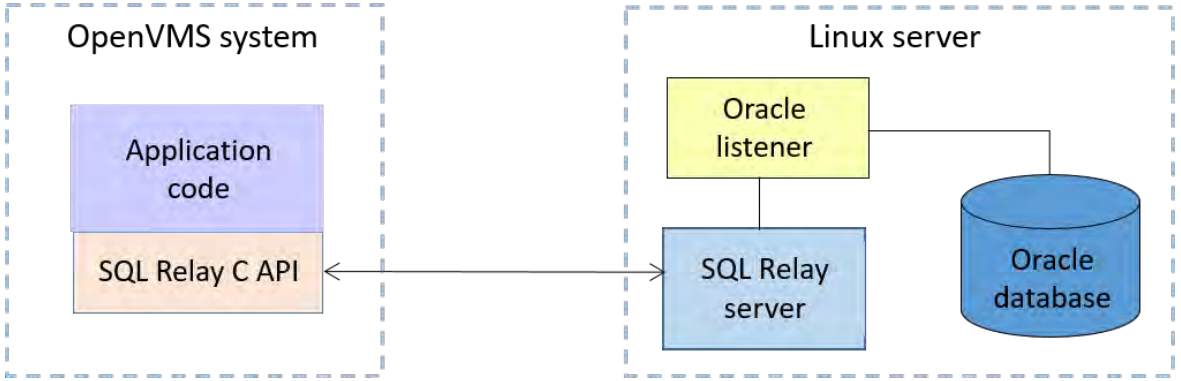
- SQL Relay
- See http://sqlrelay.sourceforge.net/
- Provides database access to unsupported platforms (and does other stuff as well)



Run the Oracle database on another platform (maybe it is already on another platform) and access it from your OpenVMS applications with few if any code changes... just a recompile and link… that's the theory ☺

SQL Relay





The database-agnostic SQL Relay client API has been ported to OpenVMS (Alpha and Itanium). This communicates with the SQL Relay server process, which can be configured to work win a number of databases, including Oracle.

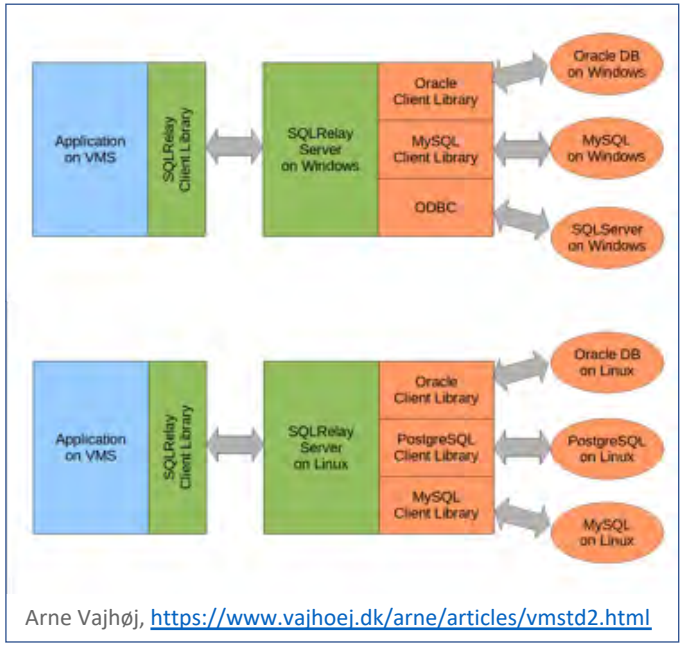
SQL Relay

- Oracle client API on OpenVMS is replaced by the SQL Relay client API
- SQL statements are passed by the SQL Relay client across the network to the SQL Relay server
- The SQL Relay server interacts with the Oracle database via the Oracle OCI API
- Potentially no code changes should be required to the OpenVMS application code (in theory)
- SSL/TLS support

- Several command line tools
  - Command line tool similar to Oracle SQL*Plus (limited functionality)
  - Simple database import/export tools

- Some limitations
  - Cannot be used if application code uses raw OCI routines
  - No SQL*Loader replacement

- Supports other databases in addition to Oracle
  - DB2, Firebird, Informix, MySQL, ODBC (generic), Oracle, PostgreSQL, Sybase/SAP



Arne Vajhøj, https://www.vajhoej.dk/arne/articles/vmstd2.html

SQL Relay

- Have ported the SQL Relay client C/C++ API to OpenVMS
- Tested with Oracle and with MariaDB

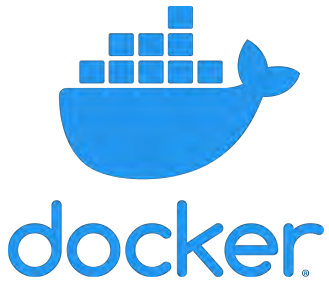
- Implemented OpenVMS-friendly wrapper API
  - Makes it easier to use the SQL Relay client API with languages other than C/C++

- Working on embedded SQL pre-processors (Beta)
  - Focussing on C and COBOL first, followed by FORTRAN
  - Then other languages

- JDBC support with OpenJDK

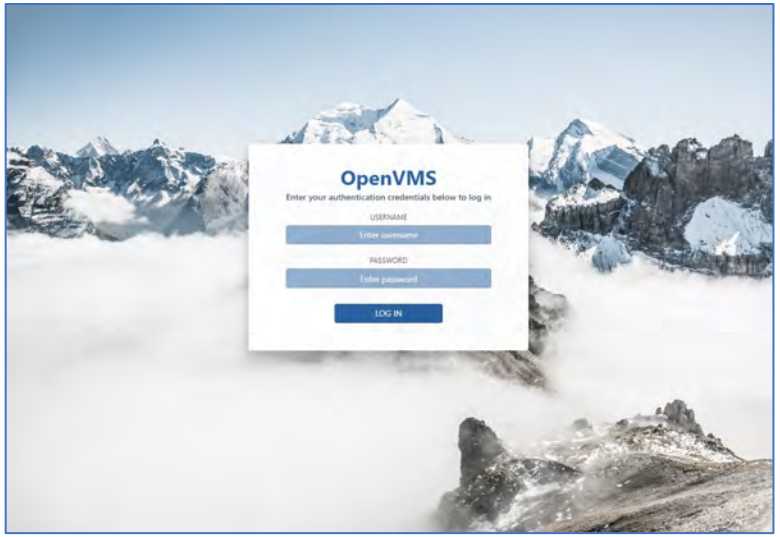
- Docker container running SQL Relay server and Oracle Instant Client
  - Simplifies deployment
  - Works very well

- And we'll provide services to help you move ☺



WebUI

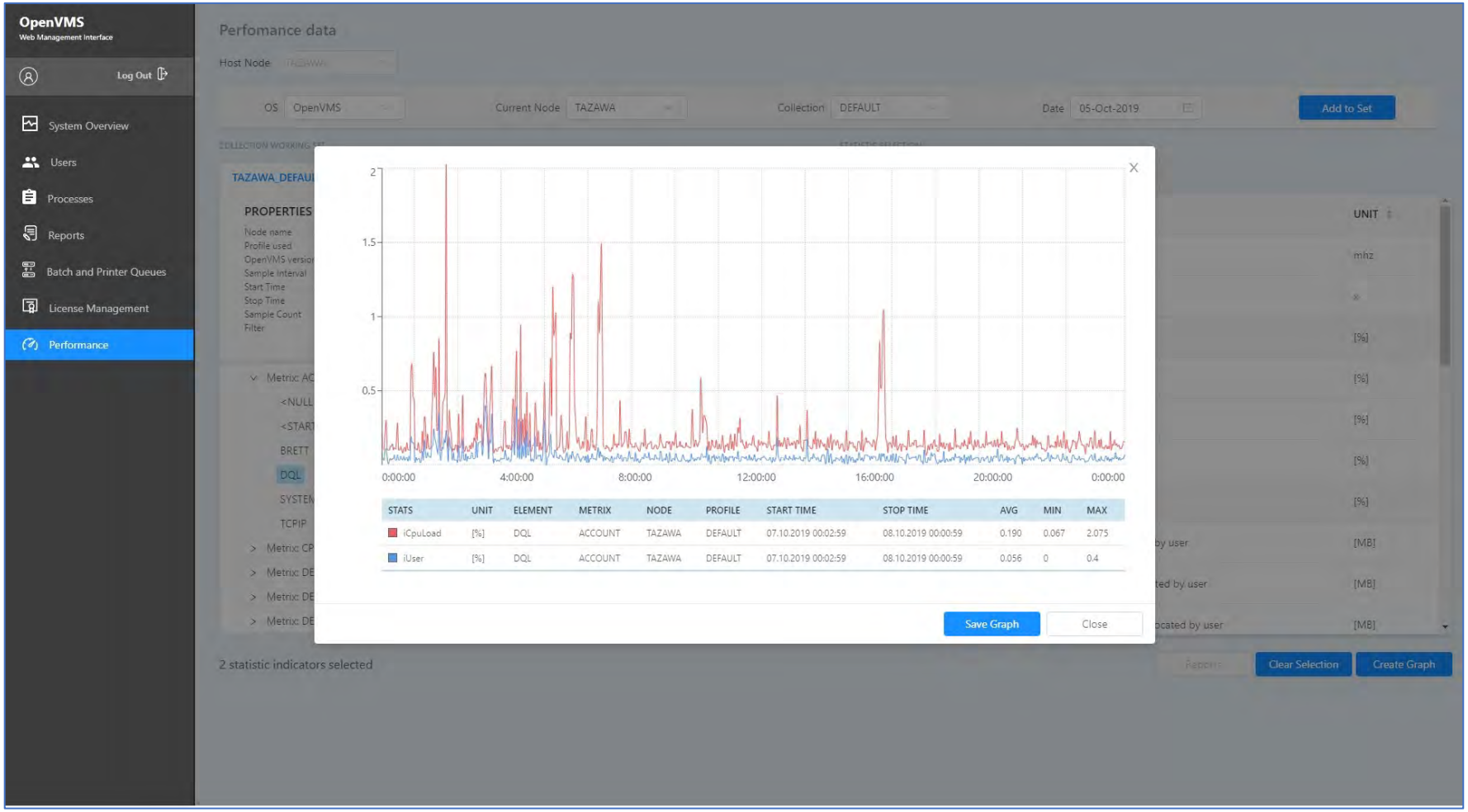
- RESTful OpenVMS management interface
- Bowser-based UI



- User management and identifiers
- Process management
- Batch and printer queues
- File systems/disks
- CPU and memory usage
- Installed products
- Monitoring/alerts (device errors, intrusions, …)
- License management
- System parameters
- TCP/IP configuration management
- Reports (system health check, user-written scripts)
- Support for plugins
- Performance monitoring via an optional plugin component for PERFDAT
- REST API

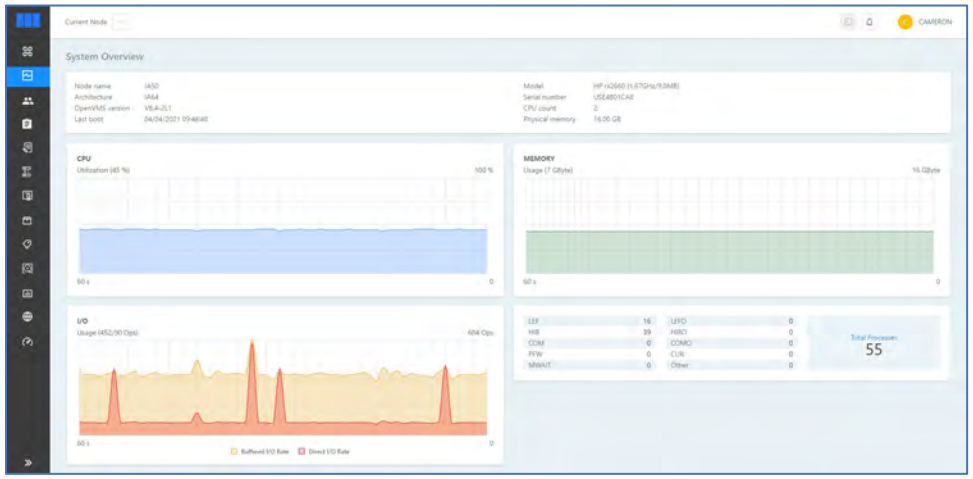
- Basic idea is to provide a web-based interface to various OpenVMS functions
- Would primarily be used for system management
- May be used to help facilitate remote management of systems

WebUI

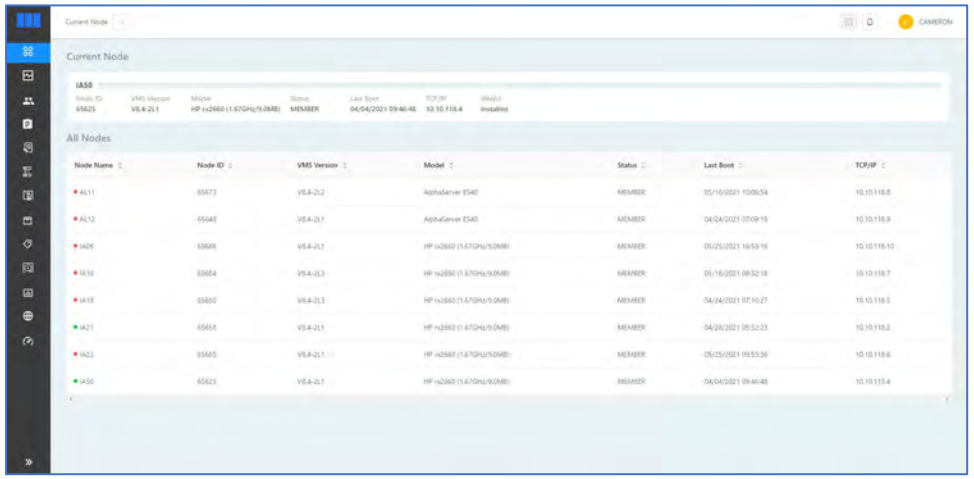

OpenVMS
Web Management Interface
Log Out
System Overview
Users
Processes
Reports
Batch and Printer Queues
License Management
Performance
Perfomance data
Host Node
OS
OpenVMS
Current Node
TAZAWA
Collection
DEFAULT
Date
05-Oct-2019
Add to Set
PROPERTIES
UNIT
2 statistic indicators selected
Clear Selection
Create Graph
Save Graph
Close
STATS
UNIT
ELEMENT
METRIX
NODE
PROFILE
START TIME
STOP TIME
AVG
MIN
MAX
iCpuLoad
iUser

WebUI

System overview:



Cluster overview:



Next release will include XFC data, WebSockets-based terminal interface, and assorted other new features, along with a bit if an update to the UI look and feel.

WebUI

Python bindings for the WebUI REST API (scripted management of various OpenVMS facilities from any platform)

Get Users

```
c = pywebui.Connector('http://10.11.102.21:8082')
c.login('testuser', 'testuser')
print(c.get_users())
```

Get User Details

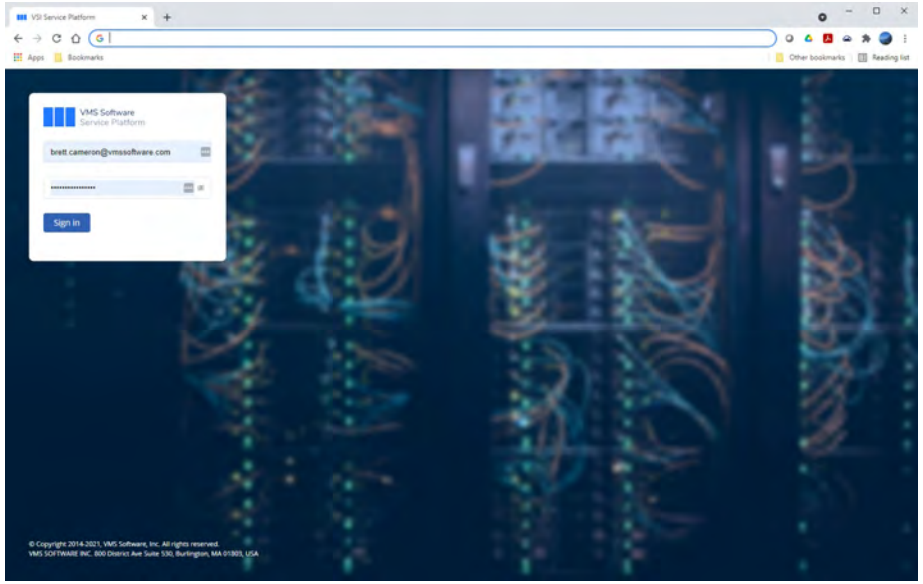
```
c = pywebui.Connector('http://10.11.102.21:8082')
c.login('testuser', 'testuser')
print(c.get_user('testuser'))
```

Create User

```
c = pywebui.Connector('http://10.11.102.21:8082')
c.login('testuser', 'testuser')
c.create_user(
    defprives = ["NETMBX","TMPMBX"],
    device = "SYS$SYSDEVICE",
    directory = "[testuser1]",
    flags = ["DISUSER"],
    owner = "testuser1",
    password = "asd123asd123",
    pwd_expired = 0,
    prives = ["NETMBX","TMPMBX"],
    username = "testuser1",
    uic = ["310","77"]
    # account = "testuser1",
)
```

Services portal

- Cloud-based service platform
- To provide an evolving set of tools to help customers, partners, L2 support, and sales
- Will be available to all support customers and partners
- Solid infrastructure in place
- Basic services available
- Production release to coincide with OpenVMS 9.1 release
- Being trialled by some customers for downloads
- Will evolve over time
- …



Services portal

- Primary users:
  - Customers
  - Partners/ISVs
  - L2 support team
  - Sales (future)

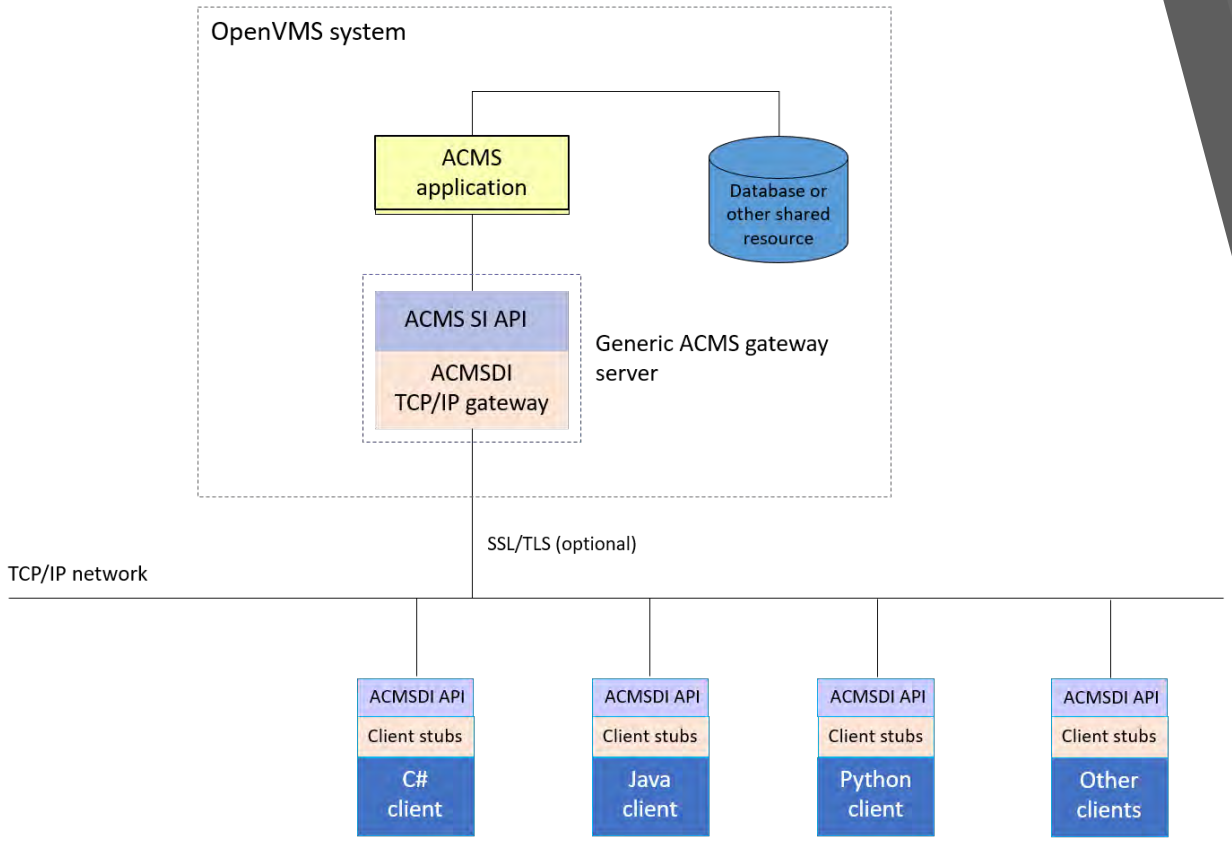
- Core components:
  - Cloud-based service platform
  - Web-based UI
  - OpenVMS-based CLI tool

- Core functions:
  - User registration
  - Authentication/authorization
  - Auditing
  - Impersonation

- Higher-level services (current):
  - T4 data analysis
  - SHC analysis
  - Package management
  - Basic problem-reporting interface
  - Partner interface
  - Node registration
  - …

ACMS integration

- Updated ACMS gateway
- Much like old ACMS Desktop Connector (TPware)
- SSL/TLS support
- Powerful code generation facilities
- Multi-platform
  - Windows
  - Linux
  - macOS
- Multiple client languages
  - C/C++
  - C#
  - Python
  - Java
  - …



WSIT updates

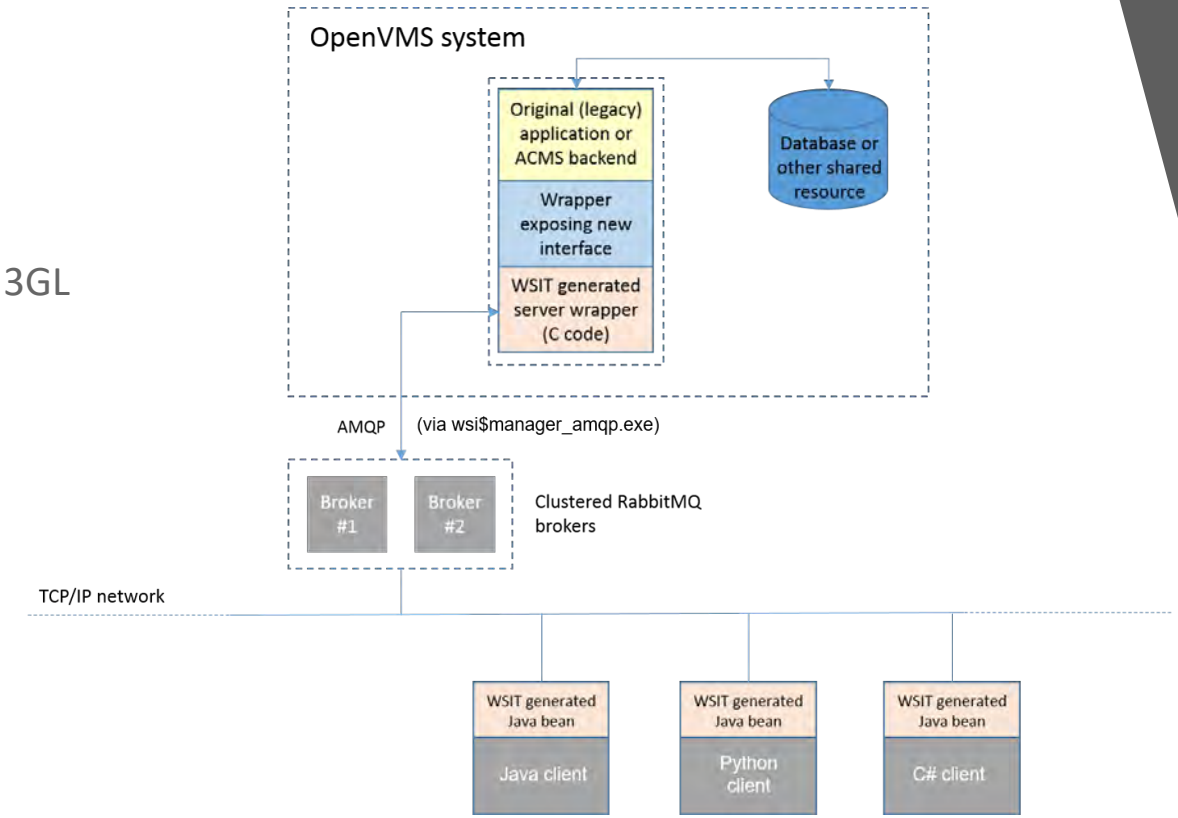
- Web Services Integration Toolkit
- An extensible API-level integration technology
- Facilitates the integration of new or existing code written in 3GL languages with Java
- Really nothing to do with web services

- Very powerful code generation facilities
- Efficient runtime
- Understands OpenVMS datatypes and argument passing mechanisms

- But there is/was a catch…
  - IPC with the out-of-process deployment model uses the ICC protocol
  - Very efficient but OpenVMS –only
  - Not possible to use generated code on another platform
  - Not possible to use the generated code from another OpenVMS system that is not part of the same cluster

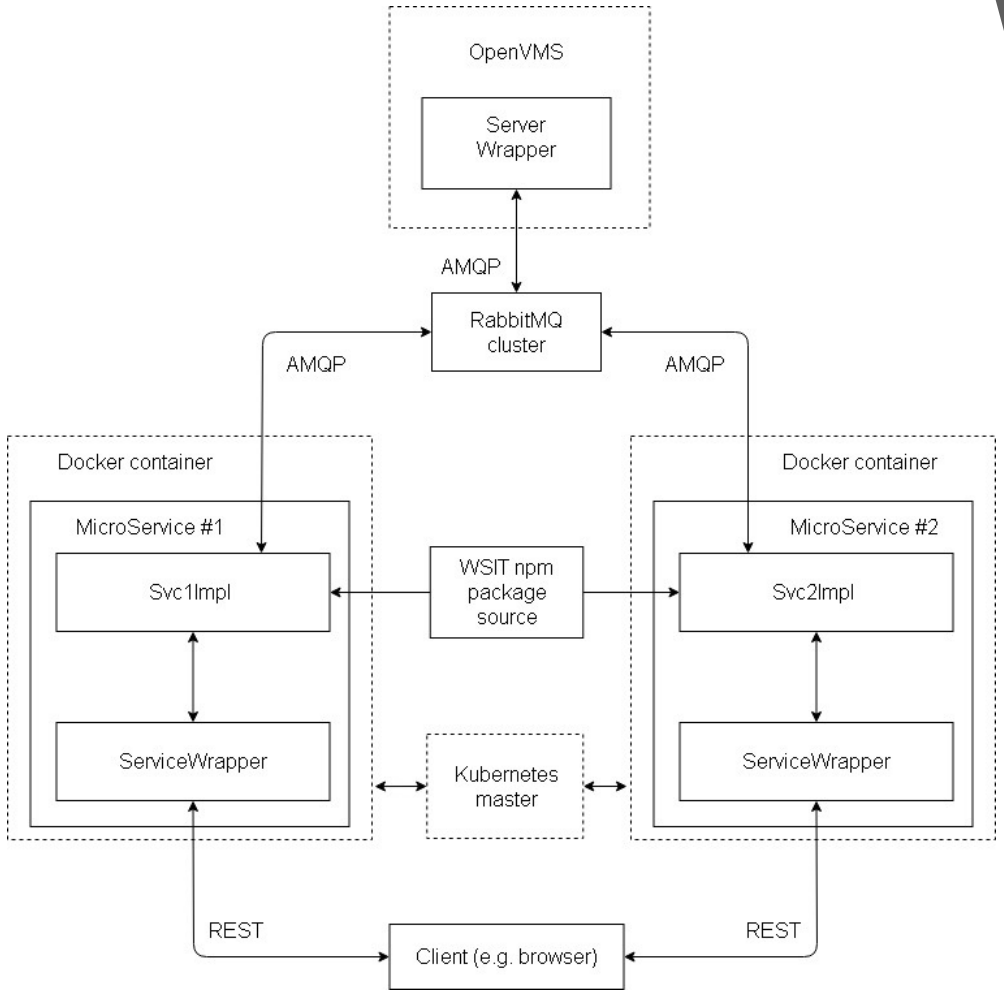
WSIT updates

- Additional language bindings
  - C#
  - Python
  - JavaScript
- Additional protocols
  - AMQP with RabbitMQ
  - …
- Seamless integration with legacy OpenVMS 3GL and ACMS applications
  - Windows
  - Linux
  - macOS
  - …

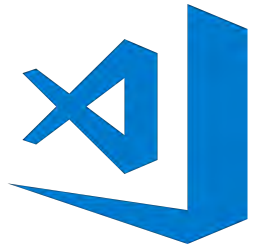


WSIT updates

- Microservices-based application modernisation strategy
- Code generation
- RESTful client interface
- Node.js
- Docker containers
- Kubernetes
- AMQP-based RPC interface to legacy application
- Scalable, performant, robust
- Cloud-focussed
- ...



VSC IDE extension

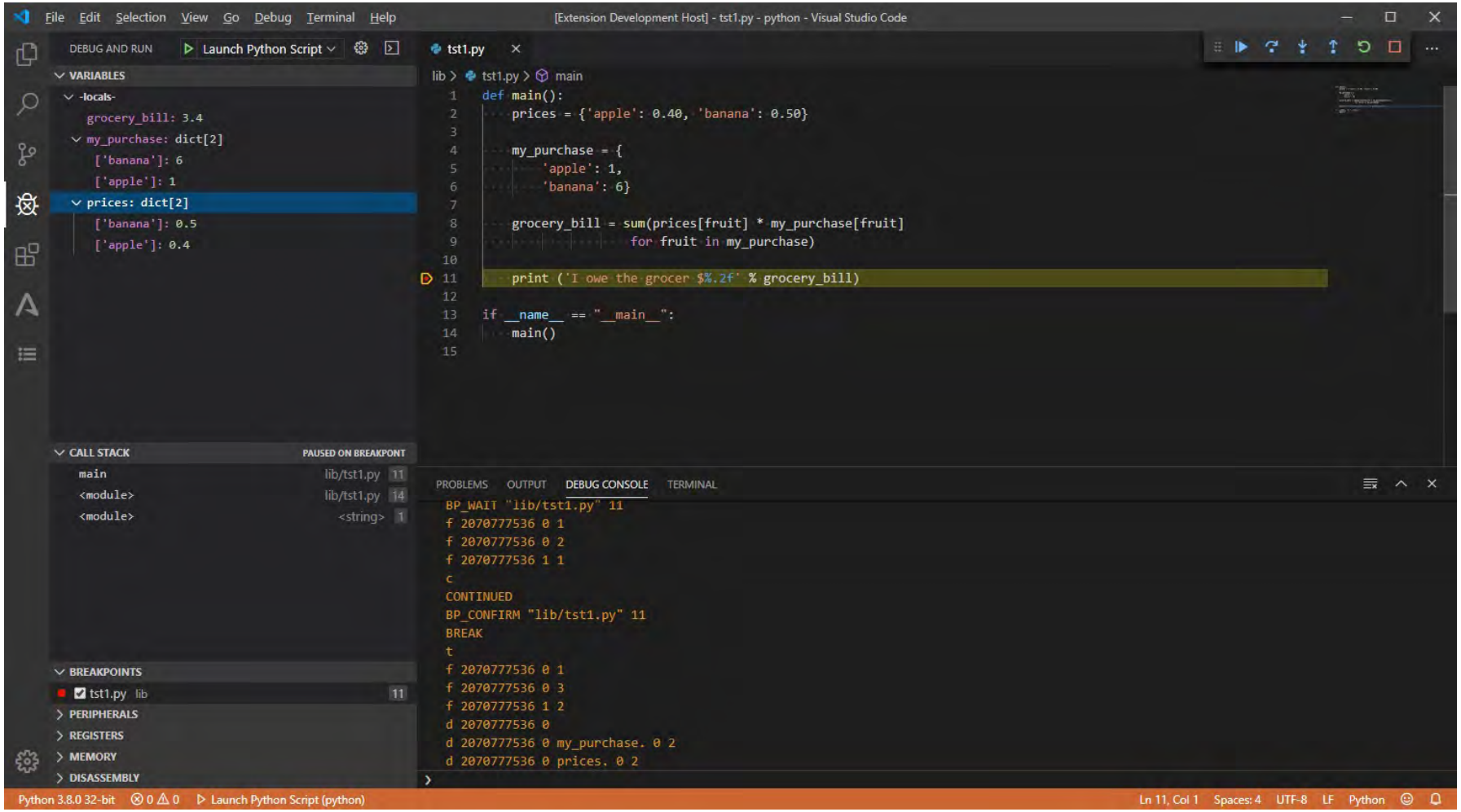


- Based on Microsoft Visual Studio Code
- Freely available
  - Download extensions from Microsoft Marketplace
  - https://marketplace.visualstudio.com/items?itemName=VMSSoftwareInc.vms-ide

- Source code synchronization between the local machine and OpenVMS system
- SSH connection setup to the remote OpenVMS system
- Debugger for OpenVMS 3GL, JVM, and Python projects
- Syntax highlighting for MMS, CLD, MSG, and 3GL languages
- Currently supported languages C/C++, Fortran, COBOL, Pascal, BASIC, BLISS (sort of), Python, and Java
- Will work with Alpha, Integrity, and x86-64
- Will work with HP and VSI versions of OpenVMS

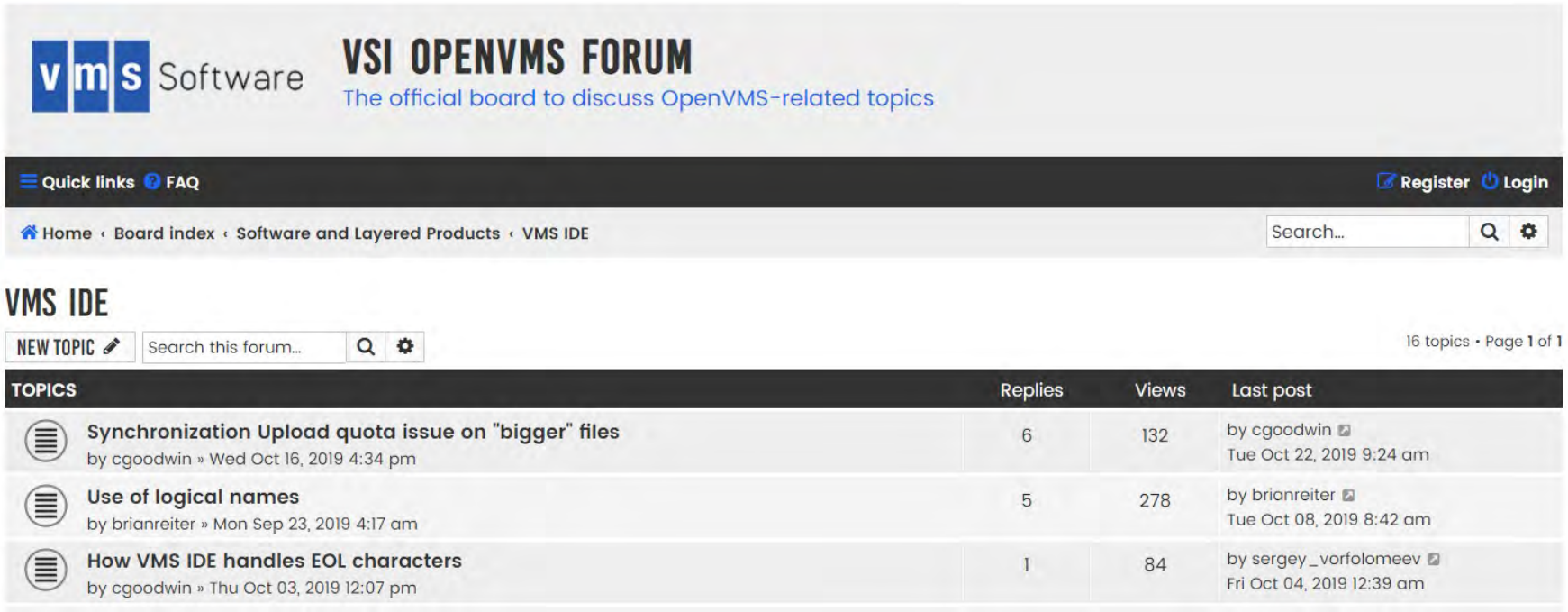
- Being used internally for a several projects (particularly popular with our young graduates)
- Can be used on Windows, Mac, and some Linux
- Works with VSCodium and other Visual Studio Code variants

VSC IDE extension



VSC IDE extension

- https://www.vmssoftwaretraining.com/wiki/VMS_IDE
- Videos… https://www.youtube.com/watch?v=Ib1Fo6cG1Vs&list=PLewDXk9a8laO3cAZFPyZ4bbgcKsJ1qgPo&index=1
- Discussion forum https://forum.vmssoftware.com/viewforum.php?f=29



A few other things

- Ansible for OpenVMS
  - Open source IT automation system
  - https://www.ansible.com/
  - Configuration management
  - Application deployment
  - Cloud provisioning
  - Ad-hoc task execution
  - ...
- CRTL updates
  - Ongoing programme of work
  - Released updates for C99
  - Bug fixes
  - Numerous enhancements
  - …
- New OpenSSL versions available
  - Aiming to keep up to date with OpenSSL releases (efficient process)
  - Currently OpenSSL 1.1.1K
  - Older OpenSSL 1.0 and 0.9 version no longer supported
  - Working with OpenSSL team around OpenSSL 3.0.0 and FIPS 140-2 compliance
- New ACME LDAP
  - Will be released very soon
  - Uses OpenLDAP 2.4.53 and OpenSSL 1.1.1k
  - Significantly revised documentation

A few other things

- OpenSSH (Beta)
  - https://www.openssh.com/, https://github.com/openssh/openssh-portable
  - Open Source (BSD licensed)
  - Complete implementation of the SSH protocol (version 2)
    - Secure remote login
    - Remote command execution
    - File transfer
  - Installed as a separate product
  - Supersedes SSH services previously provided by TCP/IP Services

- New CSWS
  - Based on Apache HTTPD 2.4.48
  - OpenSSL 1.1.1k
  - Authentication using SYS$ACMW
  - LDAP-related modules use new OpenLDAP client API
  - Redis-based shared object cache
  - Some minor performance enhancements

Despite the focus very much being on getting 9.1 across the line, we managed to get a few other bits and pieces out the door and are working on some other cool new projects!

A few other things - vgit

- Enhancements to vgit…
  - New commands and updates to existing commands
  - Still nowhere near a full git implementation
  - But most bases covered

```
$ vgit2
Usage: DSA20:[BIGGLES.vgit]vgit2.exe;98 <command> [options] [arguments]
Command summary:
        add [-s] [-v] [-u] <file> ...
        archive --format=<format> --output=<file> <commit>
        blame [-L <line-range>] [-F] [-M] [-C] [<commit-range>] <path>
        branch [[-a] | [-d <branch-name>] | [-f] <branch-name> [-t <remote>]]
        checkout [-f] [-b] [branch_name] [-- <file> ...] [-t <tag-name>] [-c <commit-id>]
        clone [-q] [-b <name>] <uri> [<path>]
        commit [-S] [-a] [-m <message> | -F <filename>]
        config user [-s global | local] [-n <username>] [-e <email>]
        config http.proxy [-s global | local] <url>
        diff [-s] [-c] [-w] [-e] [-i] [<commit> <commit>] [--] [<path>...]
        fetch [-t] [<remote>]
        for-each-ref [<ref-pattern>] [--format=<format>]
        init [-b] [-q] [-s true | false | group | all | world | umask] [-t <file>] [-n (no initial commit)] [<path>]
        ls-remote <repository> [-h | -t <reference-name>]
        ls-remote --get-url <name>
        log [<options>] [<revision-range>] [-- <path>...]
        merge [-s safe | create | force]
        pull [-t] [r]
        push [-t | <refspec>]
        rebase [<branch>]
        remote [add | set-url] <name> <uri>
        remote show
        rev-parse <name>
        rm [-b] [-s <stage>] <file>
        show-index
        show-ref
        stash [push | pop | drop | clear]
        status [-b] [-f short | long | porcelain]
        tag -d <tag-name> | [-s] [-f] [-m <message>] <tag-name> [<commit> | <object>]
        tag list [-l <number>] [pattern]
        reset [--soft | --mixed | --hard] [<commit>]
        verify-commit <commit>
        verify-tag <name or id>
        version

        Repositories and your login directory must be on an ODS-5 file systems
        Files must be stream-lf
        SSH requires rsa or ed25519 keys in pem format
```

Our teams are using vgit internally for a number of projects, which is helping to drive evolution of the tool.

A few other things

PERFDAT:

- Acquired from HPE a little while back
- Integrated performance monitoring, management, and capacity planning solution for OpenVMS
- Standalone product, pricing per-server or enterprise
- Alpha and Integrity... and eventually x86-64
- Being integrated with the new WebUI
- Powerful alerting capability
- Associated services
  - Capacity planning
  - Performance troubleshooting
  - ...

OpenVMS Service Control (OSC):

- Acquired along with PERFDAT
- Makes non-cluster aware applications more highly available
- Heavily based on Veritas Cluster Server for Linux
- Standalone product, pricing per-server or enterprise
- Support and services are available (for a fee)
- Alpha and Integrity... and eventually x86-64

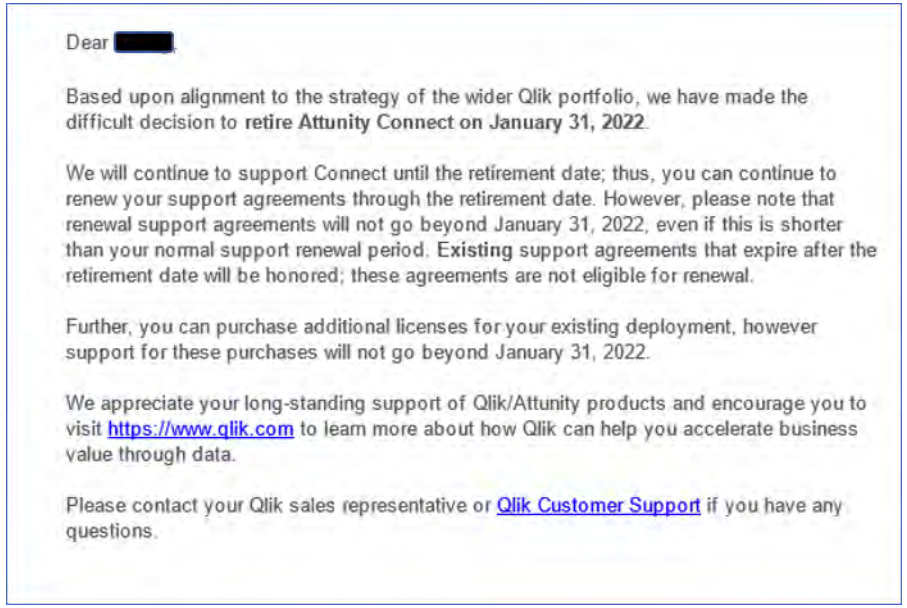
ADA compiler for OpenVMS x86-64:

- Looking into it
- Trying to determine customer interest
- Significant investment
- ROI needs to stack up

Attunity/Qlik Connect support

- Qlik acquired Attunity May 2019
- At the end of July 2020 Qlik announced that they are ending support for the Connect product on OpenVMS
- Customers asked if we could help
- Talked with Qlik
- Happy for us to provide L1/L2 support

We are also investigating several similar arrangements relating to other ISV software products.



Dear [redacted],

Based upon alignment to the strategy of the wider Qlik portfolio, we have made the difficult decision to **retire Attunity Connect on January 31, 2022**.

We will continue to support Connect until the retirement date; thus, you can continue to renew your support agreements through the retirement date. However, please note that renewal support agreements will not go beyond January 31, 2022, even if this is shorter than your normal support renewal period. **Existing** support agreements that expire after the retirement date will be honored; these agreements are not eligible for renewal.

Further, you can purchase additional licenses for your existing deployment, however support for these purchases will not go beyond January 31, 2022.

We appreciate your long-standing support of Qlik/Attunity products and encourage you to visit https://www.qlik.com to learn more about how Qlik can help you accelerate business value through data.

Please contact your Qlik sales representative or Qlik Customer Support if you have any questions.

Looking beyond x86-64

- Virtualization and cloud deployment
- Alternative hardware platforms
- Small/embedded devices
- Interaction with cloud-based services
- More open source products and tools
- More programming languages and development tools
- More services and solutions
- …

The Atom project

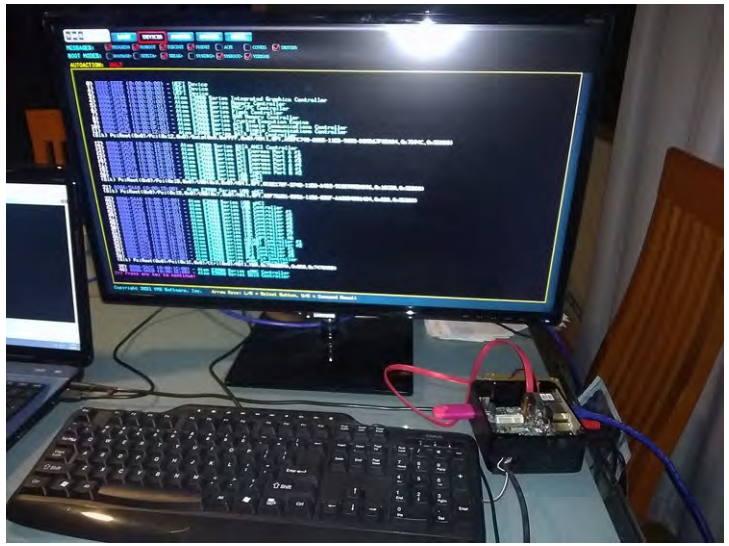
- VSI OpenVMS running on a UP^2 Atom device
- See https://www.youtube.com/watch?v=3H6AJigJnNs (some excellent viewing and narrative)
- Not an official project (not on the roadmap)
- Done in (precious) spare time
- Wanted to see whether it would work... after some effort the answer was "*yes*“
- Helped the team to identify and fix some important issues with the port

- https://up-shop.org/up-squared-edge-series.html
- A lot of bangs for your buck…
  - Intel© Atom© x7-E3950 processor (up to 2.0Ghz)
  - 8GB or 4GB LPDDR4 memory
  - 32GB-128GB eMMC storage
  - 2 x Gigabit LAN
  - 1 x HDMI
  - 3 x USB 3.0, 1 x USB 3.0 OTG
  - 40-pin GPIO, 60-pin EXHAT
  - And plenty more… all for less than $300 USD

The Atom project

"New from the VSI Advanced Software Group, a project to boot OpenVMS on an Atom processor based device. Originally designed to see if OpenVMS would run on a low powered/footprint device, the team are now looking at ways to further develop this concept".

https://twitter.com/VMSSoftware/status/1399730982060793862, 02-Jun-2021



- May look to build a community project
- Drivers
- SDK's
- Ideas
- Break out the soldering iron, have some fun, see where it goes ☺

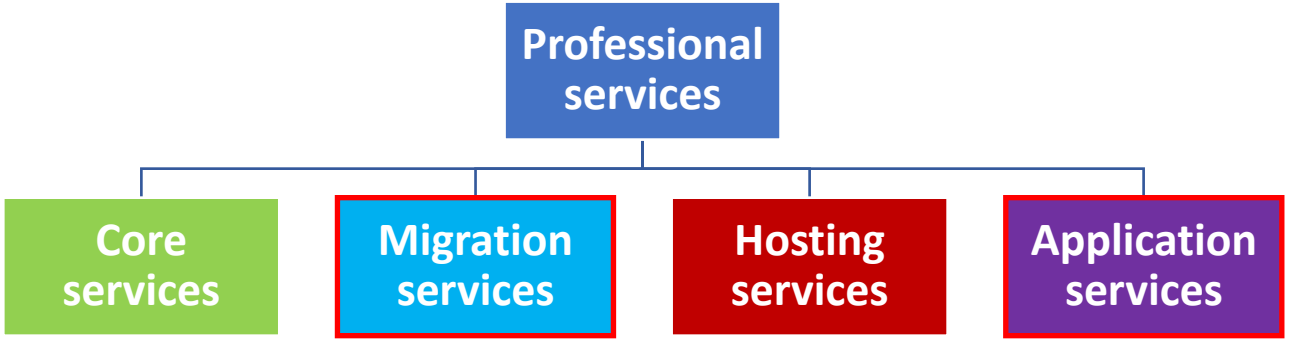
Agenda

- Introduction
- Roadmap review (the path to 9.2)
- 9.1 overview
- Some new(ish) things
- Migration
- Summary and questions

Services portfolio

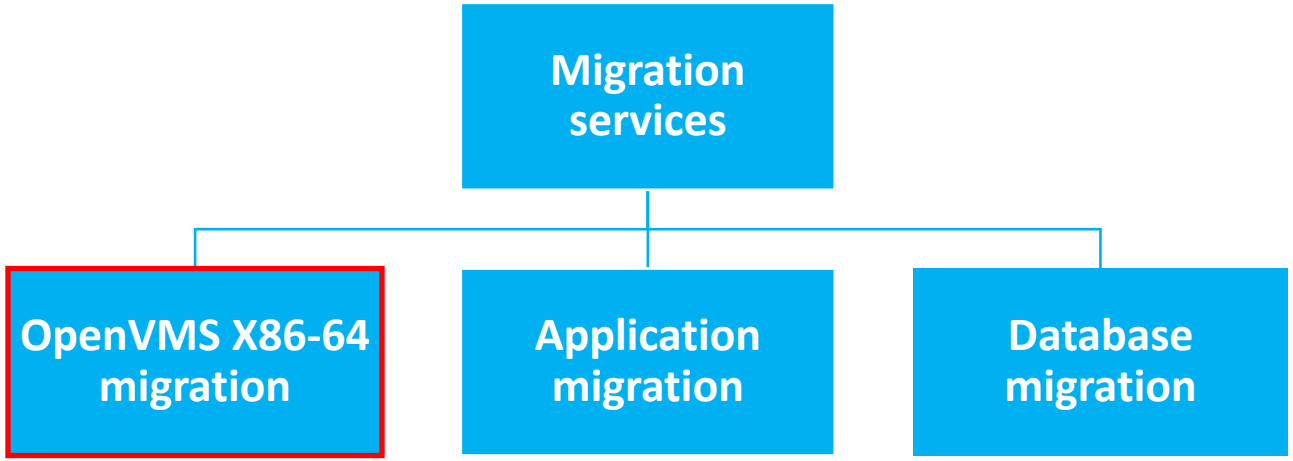
- Training
- Porting assistance (particularly relevant for x86-64)
- Workshops (review current environment)
- Introduction of new software technologies (modernization)
- Migrations and upgrades
- Performance tuning and system health checks
- Remote monitoring
- Remote management
- Systems administration
- Application maintenance and support
- Managed services and hosting
- Compliance reviews
- Patch analysis and updates
- …

If it involves OpenVMS in any way, we're here to help, in conjunction with our partners!



Migration services

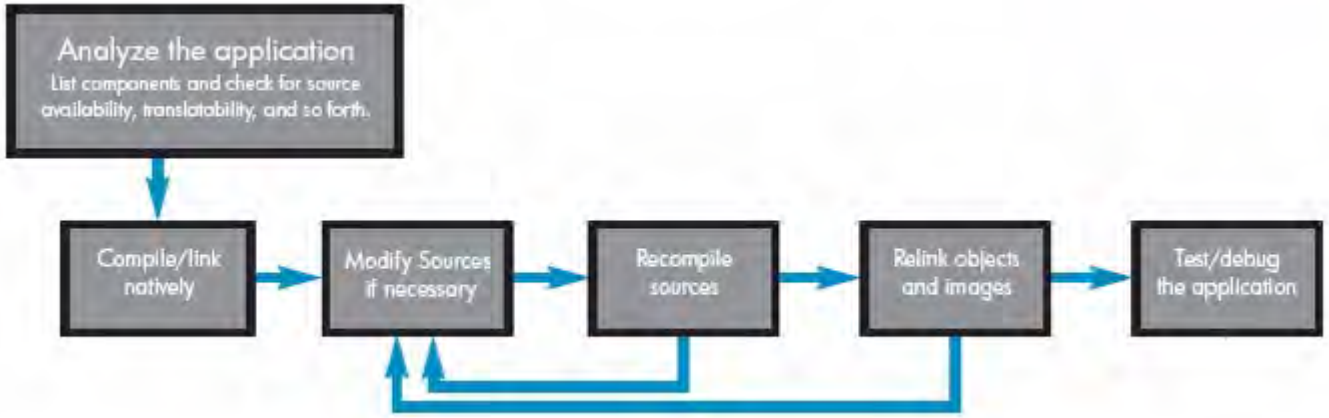
- Migrations from OpenVMS Alpha to Itanium
- Migrations from OpenVMS Alpha and Itanium to OpenVMS x86-64
- Database migration
- …



Application migration to x86-64

- Porting applications to OpenVMS x86-64 is easy... you just…
  - Recompile
  - Relink
  - Test and deploy

- Sure!
- Certainly that will be true in a good number of cases, but definately not all
- Sometimes a bit more work might be required…
- Start thinking about it now!

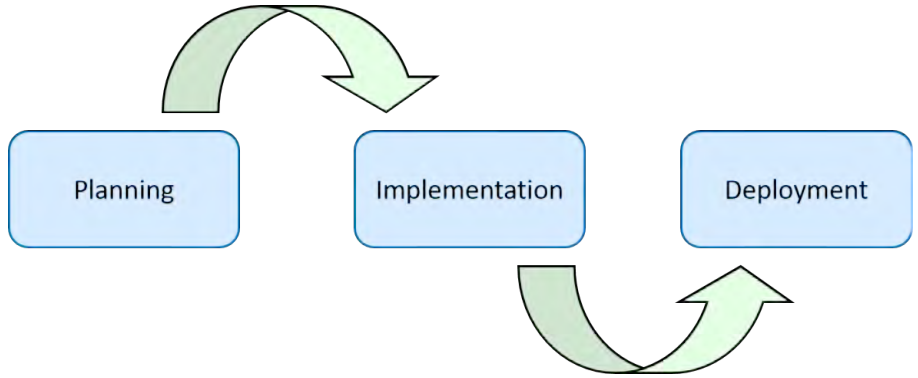


Application migration service

- Comprehensive service to help customers move their applications from Alpha and Itanium to OpenVMS x86-64
- Phased approach to minimize risk and deliver the best possible solution
  - Discovery (migration assessment)
  - Elaboration
  - Pilot
  - Migration
  - Deployment

- Tailored to address the specific needs of each project
- Predicated on helping customers preserve and enhance their investment in OpenVMS technology

Migration projects to OpenVMS x86-64 are likely to range in scale from a few days of effort to many months of effort, depending on scale, complexity, and various other factors. For smaller projects, a rigorous methodology is generally not required; however for the larger projects a formal and methodical approach will be essential to ensuring a successful result.



Application migration

- If you're thinking about migrating to OpenVMS on x86-64...
  - Start your planning now
  - Contact us if you want help

- Do you have all the code?
- Can you rebuild everything?
- When was the last time you rebuilt everything?
- Are there any unsupported 3rd party products to deal with?
- How will you test the port?
- ...

"VMS Software Inc. appreciates that there are many OpenVMS customers running large, complex, business-critical custom written software applications. Whilst these applications continue to serve the business very well, many of them now need to interoperate and exchange data with external systems and applications running on other operating systems. The options available are to replace the existing OpenVMS-based system or to modernize it in some way so that it can continue to operate in a modern heterogeneous computing environment."

Agenda

- Introduction
- Roadmap review (the path to 9.2)
- 9.1 overview
- Some new(ish) things
- Migration services
- Summary and questions

Summary

- There's been a lot going on over the past few months, but still plenty to do…
  - 9.1 is out
  - 9.1-A is on the way (will address a few remaining big-ticket items)
  - Then onward towards 9.2

- We haven't been entirely focussed on x86-64…
  - Open source
  - Product enhancements
  - New products and services
  - Thinking about life beyond 9.2

- A few other existing things in the pipeline
- Watch this space!

"*From the field to the cloud*"