



AlphaVM-Pro 1.6

DEC/Compaq/HP Alpha AXP whole system emulator

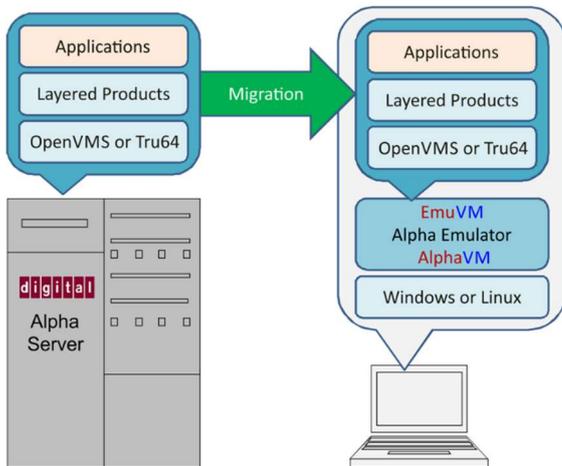
Product description

AlphaVM is a virtual machine that:

- emulates a whole DEC/Compaq/HP Alpha AXP system including the peripherals,
- is targeted to replace ageing Alpha systems,
- runs on a modern computer system with Linux or Windows,
- runs OpenVMS or Tru64/Digital UNIX

AlphaVM can be used to replace most Alpha AXP systems including but not limited to AS800, AS1000, AS2000, AS2100, AS4000, AS4100, DS10, DS20, ES40, DS15, DS25, ES45, ES47.

Migration Scheme



Host Hardware and OS Requirements

Host Hardware	A modern server based on Intel Xeon CPU.
Host CPU features	The CPU must have AVX instruction subset.
Host CPU frequency	The performance directly depends on the CPU clock frequency. Recommended minimum - 3.0GHz. For high-performance configurations - 3.5GHz or higher.

Number of host cores	For emulation of Alpha system with N cores the host is required to have 2*N cores.
Host memory size	If the emulated Alpha system have N GB RAM and M CPUs, the required host memory size is 2GB + N + M * 2GB.
Number of host NICs	If emulated Alpha system has N network cards, we advise N+1 host NICs.
Host disks	Host disks must be large enough to contain all required virtual disk container files.
Host OS	Windows Server 2019 and above, Linux Debian 11 and 12 AlmaLinux 9.5
Running on a hypervisor	Only supported for single CPU Alpha emulation.
Hypervisors	VMware starting from 5.0, Hyper-V 2019, ProxMox VE 5 or newer

It is possible to run multiple VMs on a single host without extra hypervisor layer. For multiple VMs running on a single host the requirements add up.

HPE DL20 Gen10 with Intel Xeon E-2274G CPU can be used for 1-2 CPU Alphas.

Emulated Systems and Components

Chipsets	Tsunami/Typhoon
Systems	DS10/466, DS10/616, DS10L/466, DS20/500, DS20E/500, DS20E/667, DS20E/833, DS20L/833, ES40/500, ES40/667, ES40/833, XP900/466, XP1000/500, XP1000/667, XP1000/750
CPU	EV6x, all instruction sets
Maximal number of CPUs	4, for systems that support it
Maximal RAM size	32GB

SCSI controllers	ISP1020, ISP1040
SCSI devices	<ul style="list-style-type: none"> Virtual disks and tapes Physical SCSI devices mapped via SCSI-pass-thru
NICs	Tulip DEC21x4x, 10 and 100 Mbit/sec. Network operates at the actual speed of the underlying NIC.
Serial lines	2 standard COM1/TTY0 and COM2/TTY1. <ul style="list-style-type: none"> Raw TCPIP connections Real physical lines with modem control
Graphics	Local VGA console is not supported. In most cases, a remote X-Windows or DEC-Windows session can be used instead of a local graphics console.

Basic	Performance level on the low-end EV4, Approx. 10% of JIT3
JIT1	Performance level of EV4x. 10-20% of JIT3.
JIT2	Performance level on high-end EV5x - lower end EV6x. The performance corresponds to Alpha systems in blue housing (AS800, DS10, DS20). The performance is 50% of JIT3.
JIT3	The fastest CPU. The performance corresponds to Alpha systems in black housing (DS25, ES47).

Supported Guest OSes

OpenVMS	7.1-2 and above
Tru64, Digital UNIX	4.0e and above

The minimal OS limit is determined by the implemented chipset.

Support of Clustering

AlphaVM supports LAN cluster interconnect. Usually, the interconnect can be changed to LAN during migration.

Product Features

- CPU idle detection. This feature enables the host CPU release when the guest CPU is idle. This feature is implemented for most supported OS versions. This feature enables power saving.
- Several VMs can be started on the same host.
- The VMs can be started automatically when the system starts.
- The VMs can be restarted automatically in case of failure.
- On Windows platform, the emulator has a launcher/configurator GUI. On Linux, only the command line interface is supported.

CPU Implementations

AlphaVM-Pro has several CPU implementations, which deliver different performance. JIT stands for Just-in-Time compilation technique used to achieve high performance in the CPU. JIT3 is recommended for most workloads.

Product Performance

AlphaVM performance depends on the host system performance. On modern and fast hardware, AlphaVM-Pro shows better or equal performance than any Alpha system with equal number of CPUs on most benchmarks. For more information, please visit <https://emuvm.com/support/benchmarks/>

Product Licensing

AlphaVM can be licensed using the following methods.

USB dongle	The license is encoded in a USB dongle. This is the main method for production licenses.
Network connection to our license server	The license is checked via a TCPIP connection to our licensing server license.emuvm.com:19991. This method is mainly used for evaluations.
Binding to the appliance	This licensing scheme can be used for AlphaVM running on a hypervisor. The license binds to the appliance ID and MAC addresses of all the appliance NICs.

The license price depends on the number of CPUs (1-4) and the memory size (1-32GB).