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Systems Integration Specialists

vtVAX Bare Metal

Overview

vtVAX software is a cost-effective replacement for almost any DEC VAX server or workstation. This VAX virtualization software runs on modern x86-64 hardware, virtual machines, or the Cloud.

OpenVMS operating system, user interface, and layered applications run unmodified on vtVAX without source code conversion, recompiling, relinking, or end-user retraining.

Compatibility of vtVAX with VAX hardware has been tested using the DEC VAX diagnostics and architecture verification tools. Real-time process control applications in industrial environments are preserved because of this compatibility with legacy DEC physical devices, including SCSI disks and tapes, serial ports (including full modem control) and Ethernet cards.

vtVAX allows clients to take advantage of the significantly improved CPU, disk, and networking performance of modern architectures, improving user response times. The Instruction Caching (IC) option dramatically improves the performance of CPU-intensive applications such as floating point, statistical analysis, and data warehouse business analytics.

Table 1—vtVAX Product Offerings			
Product	**CPUs**	**Memory**	**VAX Model**
vtVAXStation VMS 4.3–7.3	1	128 MB	MicroVAX II VAX Server 3600/3900
vtVAX VMS 4.3–7.3	1	128–512 MB	MICROVAX II VAX 3100-90/95 VAX 4000-90 VAX 4000-100/105/200 VAX Server 3600/3900
vtVAX IC Instruction Caching VMS 4.3–7.3	1	128–512 MB	MICROVAX II VAX 3100-90/95 VAX 4000-90 VAX 4000-100/105/200 VAX Server 3600/3900
vtVAX 76X0 VMS 5.5-2–7.3	1–6	3.5 GB	VAX 66X0/76X0

Graphics

When emulating a Qbus-based system, a single virtual VCB02 graphics controller can be configured, allowing the host monitor to be used as the display device for the virtual VAX.

System Management

vtVAX includes an intuitive, browser-based management interface, allowing authorized admins to manage all of bare metal virtual VAXes and Alphas from any PC in a network.

System administrators can quickly create and change vtAlpha or vtVAX configurations as well as manage the host environment.

Network Subsystem

vtVAX supports virtual DELQA, DEQNA, SGEC or DEMNA Ethernet interfaces, depending on the processor model being emulated. A maximum of four DELQA/DEQNA adapters or one SGEC adapter may be configured (all five may be configured when emulating a vtVAX 4000 system). vtVAX 76X0 systems may be configured with up to four virtual DEMNA adapters.

All VAX supported network protocols (TCP/IP, DECnet, LAT, MOP, etc.) run on vtVAX. Each virtual Ethernet adapter is mapped to a dedicated physical Ethernet interface on the host system. On the Bare Metal platform, virtual switches may be configured to allow sharing of physical network interfaces, provide redundant network connectivity, or to connect multiple virtual VAX and Alpha systems running on the same host without connecting to the physical network. Care should be taken to prevent saturation of lower speed physical interfaces which are shared by multiple virtual adapters. The virtual network switches support both VLANs and Spanning Tree Protocol. Network interfaces are not limited by the 10 Mbps, half-duplex limitations of a physical VAX system. The physical interfaces can be configured in any mode supported by host computer, typically 1 or 10 Gbps. In most cases this allows the virtual VAX system to achieve much higher network throughput than the VAX it replaces.

OpenVMS: when downtime is not an option.

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Storage System

vtVAX has the capability to configure virtual disks, CD-ROM drives and tape devices. The virtual devices may be mapped to storage devices or container files on the host system. These container files may be located on any type of storage attached to the host: SCSI, SATA, SAS, USB, SSD, CD/DVD, iSCSI, NAS, NFS or SAN. Emulated Qbus-based systems allow for the configuration of four virtual MSCP disk controllers, each supporting 32 drives (DI, DK, and DU devices). One virtual tape controller may be configured with up to 16 tape drives.

vtVAX systems that support SCSI controllers. Each bus supports eight Target devices and seven LUN devices (1-7). vtVAX uses Target ID 6 or 7, for its SCSI ID. So each SCSI bus can support up to 56 usable SCSI devices. vtVAX systems running VMS V5.5-2H4 and higher can support two SCSI buses for a total of 112 usable SCSI devices.

vtVAX also supports a feature known as *SCSI Passthru* that can be connected to special SCSI devices such as Tape Library with a Robot, GPIB, and other SCSI devices. Multiple container files may be stored on a single PC drive, providing for storage consolidation without changing the OpenVMS file system. VAX tape operations using logical tape drives and transfer data at disk speeds without the physical media errors often experienced with tape storage.

vtVAX 76X0 systems may be configured with up to eight DSSI controllers. Each DSSI controller has 32 devices, which can be virtual and physical disks, tapes and CDrom drives, for a total of 256 devices.

Serial Lines

vtVAX emulates the DHQ11, DHV11, CXA16, CXB16, and CXY08 serial interfaces; up to a maximum of 32 ports. Each configured serial port requires a dedicated connection on the host: a serial COM port (on-board or PCI serial interface) or a Telnet connection. Telnet connections are presented as virtual devices. Only the virtual ports in use must be configured.

Serial ports can be Physical Serial devices, using PCIe controllers or USB to serial devices.

vtVAX can also use virtual serial ports that can be used with an Ethernet to Serial converter to create an IP tunnel that allows remote serial devices such as PLCs and other serial devices to be connected to vtVAX.

Clustering

vtVAX brings OpenVMS Clusters' well deserved reputation for high-availability and reliability into the modern data center, providing flexible, cost-effective disaster recovery options for small businesses as well as global enterprises. vtVAX can be configured as VAX-cluster or OpenVMS Cluster member using Ethernet (NI) or emulated DSSI (shared disk) interconnects. The Maintenance Operations Protocol (MOP) is supported for maintenance operations and remote booting.
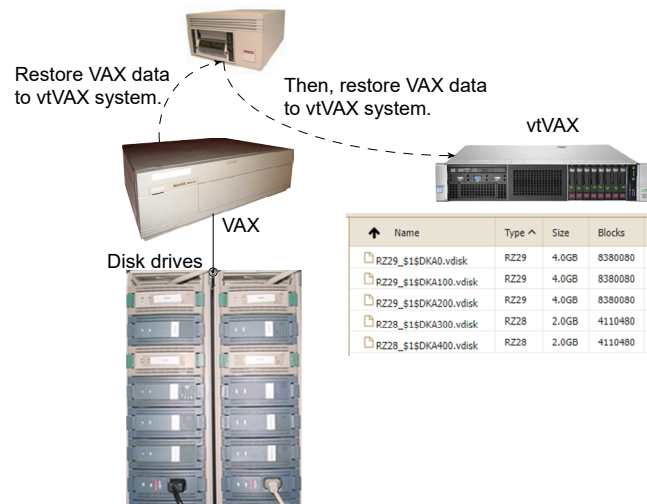
Security

vtVAX ships with only three open ports: http, https, and license key. vtVAX provides a configurable environment by the system manager to meet a company's security needs.

Highlights:

- Access roles and configurable security levels.
- Secure communication protocols.
- Encrypted environment in the Cloud.
- Event logging and alerts (configurable).

Figure 1—Data Migration of VAX or Alpha Disk to Container Files on Virtual Disk