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# Digital Equipment Corp. MicroVAX: Product Profile

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**System Overview**

The MicroVAX Family is Digital's low-end multiuser VAX system. MicroVAX systems are targeted toward departmental, workgroup, and branch office computing, and feature full software compatibility with the entire VAX Family in either the proprietary VMS or the UNIX-based ULTRIX-32 operating environment.

The MicroVAX Family comprises the MicroVAX 3100 Model 10e and 20e, and 3300.

**Competition**

IBM AS/400 and 9370, Hewlett-Packard HP 3000 and HP 9000, and NCR Tower Systems.

**Vendor**

Digital Equipment Corp.  
146 Main Street  
Maynard, MA 01754-2571  
(508) 493-5111

**Price**

List prices range from \$8,925 to \$105,105.

**GSA Schedule**

Yes.

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Managing Editor

# Characteristics

See Table 1 for a comparison of system characteristics for the DECsystem models.

## Peripherals

Peripherals communicate with the MicroVAX 3100 systems via a Small Computer System Interface (SCSI). The MicroVAX 3100 Model 10e can support up to three internal storage devices and the Model 20e up to five, and both systems support four external devices. The MicroVAX 3300 systems incorporate the RF-Series Integrated Storage Element (ISE) and employ the Q-bus. Many of the system components are integrated on the CPU module, which frees up the Q-bus for improved system I/O throughput. In a MicroVAX 3300 dual-host configuration, two VMS systems are linked by the Digital Storage Systems Interconnect (DSSI) bus. Through that link, each system can access all of the ISEs on the bus, regardless of the enclosure on which they reside.

## Mass Storage

The MicroVAX 3100 Model 10e enclosure provides space for up to three half-height storage devices. The larger Model 20e enclosure can contain up to five half-height storage devices. With the maximum external storage, the Model 10e can support up to 4.2G bytes and the Model 20e up to 4.8G bytes of disk storage.

The MicroVAX 3300 enclosure can house two half-height ISEs and one tape drive. Additional half-height or full-height ISEs are housed in expansion enclosures. Each system supports two disk adapters/controllers (the embedded DSSI adapter and one other). A maximum of 14 ISEs are supported in a fully configured system, with a maximum capacity of 13G bytes of storage.

See table 2 for specifications on available mass storage devices.

## Tape Drives

See Table 3 for tape drive specifications.

For distribution and loading of software, the RRD40 compact disk provides 600M bytes of storage. Average access time is 0.5 seconds and average data transfer is 150K bytes per second.

**Table 1. System Comparison**

Model	MicroVAX 3100 Model 10e	MicroVAX 3100 Model 20e	MicroVAX 3300
<b>System Characteristics</b>			
Min./Max. Memory (bytes)	4M/32M	4M/32M	4M/52M
Expansion Increments (bytes)	4M, 8M, 32M	4M, 8M, 32M	4M, 8M, 32M
Min./Max. Storage (bytes)	104M/4.8G	150M/4.8G	150M/13G
Number of serial/parallel I/O ports	4-12 serial, 2 synchronous	40 serial w/modem control, 80 without	40 serial w/modem control, 80 without
Number of backplane slots	none	none	6
Number of Workstations	48 active	48 active	48 active
Date of introduction	10/90	10/90	10/88
<b>Central Processing Unit &amp; Memory</b>			
Microprocessor Model	CVAX 90	CVAX 100	CVAX 100
Microprocessor cycle time (ns.)	MV2000, MicroVAX II, PDP-11	MicroVAX II, PDP-11	MicroVAX II, PDP-11
Upgradable from	Not applicable	Not applicable	Not applicable
Upgradable to	DDCMP; Ethernet; SNA; X.25; 2780/3780; TCP/IP; 3271; LU6.2; X.400	DDCMP; Ethernet; SNA; X.25; 2780/3780; TCP/IP; 3271; LU6.2; X.400	DDCMP; Ethernet; SNA; X.25; 2780/3780; TCP/IP; 3271; LU6.2; X.400
<b>Communications Protocols</b>			
Basic Configuration			
Purchase Price (\$)	From 7,404	From 8,979	From 14,000

**Table 2. Mass Storage Devices**

Model	RA90/92	RF71/72	RZ23/24	RZ55	RF30/31
Type	Integrated	Integrated (ISE)	Integrated (ISE)	Integrated Winchester	Integrated Winchester
Size (inches)	9	5¼	3½	5¼	5¼
Number of surfaces	13/drive	—	—	—	—
Formatted capacity per drive (bytes)	1.2G/1.5G	400M/1000M	104M/209	332M	200M/381M
Interface/controller	—	NA	—	—	DSA
Number of drives per interface/controller	1	NA	—	—	1
Average access time	—	29.3 ms.	33.4 ms./24.3 ms.	24.3 ms.	29.3 ms.
Data transfer rate (bytes/second)	2.8M	1.5M	1.25M	1.25M	1.5M
Bytes per sector/track	512/sector	512/sector	512/sector	512/sector	512/sector
Supported by Models	MV 3300	MV3300	MV3100	MV3100	MV3300
Purchase price (\$)	27,500/ 26,584	9,500/13,000	1,500/3,000	5,500	3,250/6,500

Note: A dash (—) in a column indicates that the information is unavailable from the vendor.

### Terminals/Workstations

The MicroVAX systems support all of the Digital VT3XX, VT4XX, and the VT X Windows terminals. A console is required to run the system.

### Printers

A variety of line and serial printers is available for the MicroVAX systems. Line printers attach to the systems via asynchronous line. The MicroVAX 3300 allows a maximum of two parallel printers per LPV11 controller; maximum two controllers per system which require one Q-bus slot each.

### Communications

*Protocols Supported:* TCP/IP.

*Network Applications Supported:* DECnet, NFS.

*LANs Supported:* Ethernet.

### Operating Environment

The MicroVAX systems can operate between 50 and 104 degrees Fahrenheit and within a humidity range of 10 to 80 percent (noncondensing). The physical and electrical specifications of the MicroVAX systems are highlighted in the following tables.

#### Electrical Specifications

Model	Voltage	Amperage	Power Consumption (kVA)
3100 10e	120/240	2.8/1.5	190
3100 20e	120/240	4.5/2.3	300
3300	120/240	4.4/2.4	340

#### Physical Specifications

Model	Height (in.)	Width (in.)	Depth (in.)	Weight (lb.)
3100 10e	4.1	18.3	15.5	25
3100 20e	5.9	18.3	15.6	45
3300	27	13.6	17.8	85

### Software

#### Operating System

Operating systems for the VAX systems are the general-purpose VMS and ULTRIX-32, Digital's version of Berkeley UNIX.

*VMS* (also known as VAX/VMS) is a general-purpose operating system that provides the environment for the concurrent execution of multiuser timesharing, batch, and time-critical applications. It also contains special features for VAXcluster support and provides programming tools, scheduling services, and protection mechanisms for multiuser program development.

**Table 3. Tape Drives**

Model	TK30	TK50	TK70	TLZ40	TU81
Type	Streaming	Streaming	Streaming	Digital audio	Tape subsystem
Tape Width	—	—	1/2"	4 mm.	1/2"
Capacity (bytes)	95M	95M	296M	1.2G (max.)	145M (GCR)/40M (PE)
Interface/controller	SCSI	SCSI	—	SCSI	—
Read/Write Speed	75 ips	75 ips	100 ips	—	75 ips
Peak Data transfer rate (bytes/second)	62.5K	62.5K	90K	183K (max.)	468K
Supported by	5100	5100	All	All	5500, 5800 Series
Purchase Price (\$)	1,800	3,738	4,600	5,500	35,543
Comments	Integrated storage option	Cartridge unit available in expansion box	49-track; 10,000 bpi; features ECC, CRC, & a read-after- write procedure	Primary use is backup	256KB cache buffer

Note: A dash (—) in a column indicates that the information is unavailable from the vendor.

The VMS operating system for the MicroVAX systems (formerly called MicroVMS) is the same as that which runs on the VAX superminis. Consequently, the MicroVAX computers can run the same system and applications software as the larger VAX computers without recompilation or relinking, subject to the limitations of peripheral support.

**ULTRIX-32** is Digital's native-mode implementation of the UNIX operating system. It is based on the University of California at Berkeley's Fourth Berkeley Software Distribution (4BSD) and is compatible with AT&T's UNIX System V, Release 2.0. It does not comply fully with AT&T's System V Interface Definition (SVID).

ULTRIX-32 cannot yet be used on VAX symmetric multiprocessor systems. Depending on the application, ULTRIX-32 can support over 64 users.

### Communications

The variety of communications interfaces supported by the VMS operating system allows VAX systems to be connected to other VAX systems, to other Digital systems, and to other manufacturers' computer systems. Synchronous, point-to-point, and multipoint connections are supported for interprocessor communications.

The MicroVAX systems also participate in LAVCs as either boot or satellite members. Up to 96 MicroVAX and VAXstation Family members (satellites) are interconnected through ThinWire Ethernet to two central MicroVAXs, VAXservers, or other VAX systems acting as servers (boot nodes). The servers manage system software, applications, and a shared common file system. Satellite members share system resources.

Like the larger VAX systems, the MicroVAXs support the *Digital Network Architecture (DNA)*, a set of protocols governing the format, control, and sequencing of message exchange for all DECnet implementations.

### Other Software

**Database Management.** The MicroVAXs employ the VAX database management or information management architecture, which is arranged in layers above the operating system.

Digital's DBMS products figure prominently in *DECtp*, a largely software-based systems environment that integrates facilities for developing distributed transaction processing applications: databases, storage systems, data interoperability products, transaction processing monitors, and support programs. These products run on most MicroVAX (including VAXstation) and VAX Systems.

*Languages:* Programming languages available for the MicroVAXs include Ada, APL, Basic, Bliss-32, C, Cobol, Dibol, Digital Standard Mumps (DSM), Fortran, OPS5 (for artificial intelligence applications), Pascal, PL/1, RPG II, and Lisp.

**Sample Configuration Pricing**

The MicroVAX systems come in various packaged system configurations. Customers may also configure their own systems; however, packaged systems are generally priced less than the individual components. Sample DECsystem packaged systems and prices are outlined below.

<b>MicroVAX 3100 Model 10e</b>		
<b>Description</b>	<b>Product ID</b>	<b>Price (\$)</b>
Packaged System	DV-31DTI-AA	10,077 (1)
CPU	CVAX	Bundled
Main Memory	4M bytes	Bundled
Console	VT420 mono-chrome	629 (1)
I/O Ports	ThinWire/Thick Wire Ethernet	Bundled
Disk Controller	SCSI controller	Bundled
Disk Drive	RZ23 104M bytes	Bundled
Tape Controller	SCSI controller	Bundled
Tape Drive	TZ30 95M bytes	1,800
Monthly Maintenance	Basic System Support	76
Operating System	ULTRIX-32	Bundled
Languages	VAX C	1,960
<b>Total</b>		<b>14,542 (1)</b>

(1) Standard Warranty Price. Includes Basic hardware and software support. List prices are slightly lower.

<b>MicroVAX 3100 Model 20e</b>		
<b>Description</b>	<b>Product ID</b>	<b>Price (\$)</b>
Packaged System	DV-31ET4-AA	16,673 (1)
CPU	CVAX	Bundled
Main Memory	8M bytes	Bundled
Console	VT420 mono-chrome	629 (1)
I/O Ports	ThinWire/Thick Wire Ethernet	Bundled
Disk Controller	Two SCSI controllers	Bundled
Disk Drive	209M-byte SCSI drive	Bundled
Tape Controller	SCSI	Bundled
Tape Drive	95M-byte cartridge tape	Bundled
Monthly Maintenance	Basic System Support	118
Operating System	ULTRIX-32	Bundled
Languages	VAX C	1,960
<b>Total</b>		<b>19,380 (1)</b>

(1) Standard Warranty Price. Includes Basic hardware and software support. List prices are slightly lower.

<b>MicroVAX 3300 System</b>		
<b>Description</b>	<b>Product ID</b>	<b>Price (\$)</b>
Packaged System	DV-330T4-A2	39,718 (1)
CPU	CVAX on KA640 CPU complex	Bundled
Main Memory	12M bytes	6,426
Console	VT420 mono-chrome	629 (1)
I/O Ports	ThinWire/Thick Wire Ethernet	Bundled
Disk Controller	KDA50 controller	7,309
Disk Drive	RF71 400M bytes	9,500
Tape Controller	TK50Z	3,850
Tape Drive	TK50 95M bytes	3,306
Printer	LA75	835
Monthly Maintenance	Basic System Support	283
Operating System	VMS	Bundled
Languages	VAX C	3,920
<b>Total</b>		<b>75,147 (1)</b>

(1) Standard Warranty Price. Includes Basic hardware and software support. List prices are slightly lower. ■