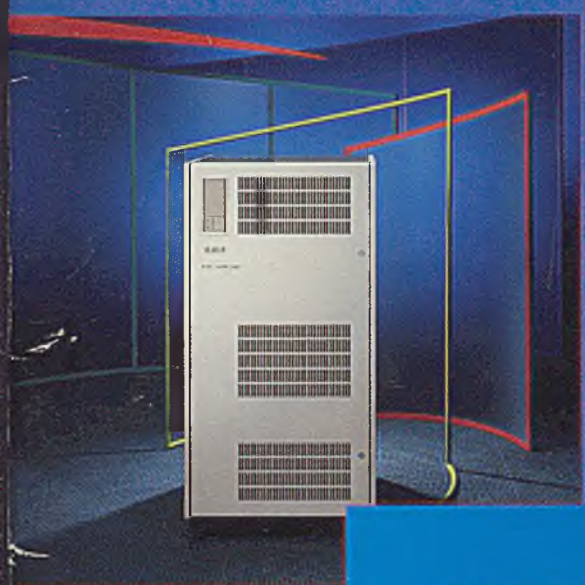
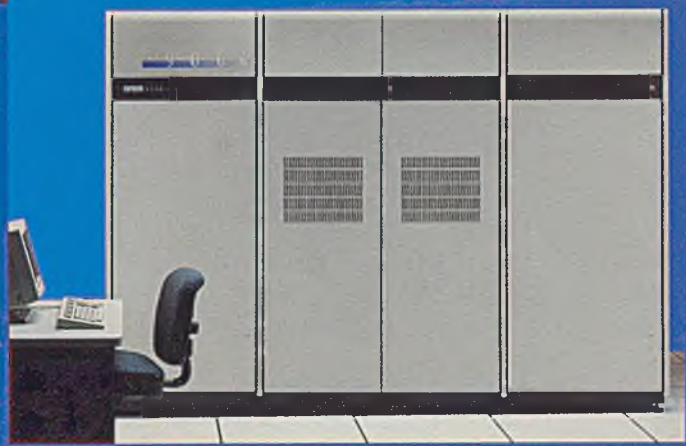


VAXX

digital



- MicroVAX and VAX 4000 Systems
- VAX 6000 Systems
- VAX 9000 Systems
- VAXcluster Systems
- VAXft 3000 Systems
- Digital Servers
- VAXstations
- DECstation Workstations
- DECstation PCs
- Terminals and Printers
- Software
- Storage

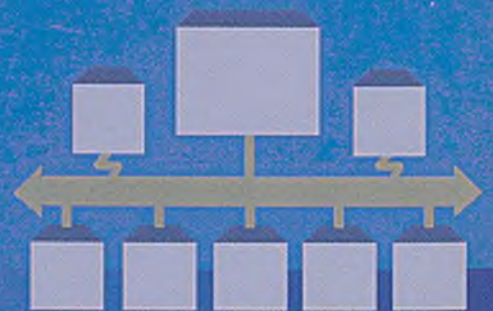


CORPORATE PROFILE

Digital Equipment Corporation is the world's leading manufacturer of networked computer systems and associated peripheral equipment. It is the leader in systems integration with its networks, communications, services, and software products.

A Fortune 27 company, Digital employs over 124,000 people worldwide.

Digital's business runs on the world's largest private data network, connecting over 46,000 computer systems. Digital's network provides voice and data services to over 100,000 users in 498 worldwide locations. This network integrates all levels of Digital employees in all departments, allowing them to exchange information instantaneously across the entire enterprise.



Executive Summary

Dependable Systems for Total Data Protection

VAX systems and servers provide the dependability, reliability, and peace-of-mind you need in a system that supports your business-critical applications. You can count on a VAX system to protect your data anywhere—on the desktop, in the department, or in the computer room. The inherent reliability of VAX hardware combined with the data protection features of the VMS operating system create a computing environment you can depend on now (see page 2).

Broad Range of Systems with Exceptional Growth

With a VAX system you can choose the best system for your organization today with the knowledge that it will still be the best system for your organization tomorrow. While building upon the strengths of the broad, compatible range of VAX systems, Digital will actively develop new technology that will keep you and your VAX systems on the cutting edge for years to come (see page 4).

Performance Leadership in Open Networks

Digital offers exceptional networking products for local and wide area networking with systems from Digital and other vendors. Our network management products ensure that your networks operate at peak performance, distributing business-critical data throughout your enterprise (see page 6).

Open Computing Through Standards

Through standards and Network Application Support (NAS) services, Digital enables more computers and people to work together, so your organization is productive and competitive. We now tie together applications running across the widest range of desktops, operating systems, and large-system resources from a variety of vendors. And we will provide maximum applications portability for VAX/VMS systems through the support of POSIX and X/Open's XPG3 (see page 8).

Over 10,000 Applications and the Best Tools to Write Your Own

VAX systems today run well over 10,000 applications. These applications offer solutions for offices, data centers, factories, laboratories, and engineering departments. For writing your own applications, Digital provides a CASE environment so rich in development tools that programming time is often cut in half (see page 9).

Exceptional Reliability, Quality, and Service

The quality that Digital designs and builds into every VAX system and server translates into maximum system uptime and availability. The hardware design is inherently reliable, and the software design ensures that your data is safe. A Digital service partnership covers every aspect of planning, installation, implementation, and maintenance worldwide (see page 10).

**Providing Large
System Resources
to the World's
Desktops**



Put a VAX system to work and you've got a trusty workhorse—robust, reliable, and dependable down to the last transaction.

You need this reliability for your system because the mission-critical applications that you rely on to run your business are too important to trust to just any computer system. They demand the dependability of a VAX system. With a VAX system running the VMS operating system, you get an industrial strength system with availability, data protection, and integrity features that no business can afford to be without.

High Availability for Critical Applications

A system with high availability offers high uptime and protects your data. The VMS operating system provides VAX systems with an inherently high level of system availability that your critical business applications demand. You can also increase availability in the following three ways:

- Dual-host systems allow two MicroVAX or VAX 4000 systems to share one another's disks. If one system goes down, the other can still access the disks on both systems.
- VAXcluster systems connect up to 96 VAX systems and storage devices to offer high uptime. VAXcluster systems offer efficient, economical resource sharing and expand easily when you upgrade or add new systems.
- VAXft 3000 fault-tolerant systems offer the highest levels of system availability wherever you need it. These systems have a fully redundant implementation of the VMS operating system and no single point of hardware failure.



Data Protection You Can Count On
VMS Volume Shadowing increases data availability by duplicating all data on up to three disks. Your work is never interrupted by a disk failure because if one disk fails, the system automatically uses the other. Thus, information is always accessible and a major cause of downtime and lost data is eliminated.

Not even a power failure can harm or destroy data on a VAX system. The RMS Journaling feature speeds recovery time by recording all transactions and storing them in a journal file. Should a failure occur, the journaling feature can efficiently redo or undo a series of file operations to restore a file to its original state.

A Complete Production Environment
VAX systems provide complete data and transaction integrity for both distributed and centralized production environments. The VMS operating system supports several transaction monitors, database management systems, and interconnect products. And, embedded within the VMS operating system is the DEC Distributed Transaction Manager (DECdtm). DECdtm implements an optimized two-phase commit protocol that allows multiple resources to be updated as an indivisible unit. Database integrity is ensured and application performance is increased.

Digital's DECtp transaction processing offers an unbeatable combination of fault-tolerant computing and distributed transaction processing with scalability, networking, application development, and system management. Customers in areas such as healthcare, telecommunications, manufacturing, retail, and finance can reap the benefits of transaction processing applications from Digital and prominent third-party vendors.

Managing Your System for Top Performance and Tight Security

Keeping a system tuned for top performance is a requirement in production environments. Digital offers an extensive portfolio of software products and service offerings to help with all aspects of system management including operations, data center administration, media and file management, security, and network management.

VAX systems offer security features that support your organization's need for privacy, confidentiality, integrity, and accountability. The VMS operating system includes user-identification and access control lists, audit trails, and a 40,000-word password dictionary that inhibits break-ins.



VAX systems have a history of delivering the right solutions. A VAX system coupled with the VMS operating system provides just the right balance of CPU power, I/O throughput, and storage to handle your toughest jobs. And it brings total data protection to the computing style that fits your business—whether it's timesharing, client/server, fault tolerance, centralized, distributed, or anything else.



Broad Range of Systems with Exceptional Growth

A VAX system is a wise investment for today, and for the future. VAX systems comprise the broadest family of 100-percent compatible computers available, so you can choose the best workstation, departmental system, or mainframe for your organization. It's a cost-effective approach to computing because you never have to purchase more computing power than you need, yet you still keep your options open.

With VAX systems, you can always adapt to changes in your marketplace. If your business grows, you can easily make your system grow without having to sacrifice investments in hardware, software, and training.

Digital is aggressive when it comes to improving the performance and price/performance of VAX systems without compromising our history of compatibility. You can be assured that these benefits will be passed along to you, so that you and your VAX system can continually grow—keeping your competitive edge sharp.

One Family, Unlimited Options

The versatility of VAX systems makes them perfect for a wide variety of tasks. Want timesharing? Client/server computing? High availability, fault-tolerance, transaction processing, realtime, or vector processing? A VAX system is always the right answer.

The entire VAX family is versatile enough to suit everyone's needs—from the small business interested in a MicroVAX system for the price of a PC, to the multinational corporation with wide area networks of VAXcluster systems containing VAX mainframes and supercomputers.

Investment Protection and Enhancement

Growth options are built into each level of the VAX family, making the value of your computing investment continue to grow over time. A VAX system gives you the ability to react to unpredictable changes in the marketplace. If your priorities change, you can take advantage of new applications or shift computing resources. If your organization experiences unforeseen growth, you can be confident that your VAX systems will grow with you—protecting and actually enhancing your investments in hardware, software, and personnel.

VAX systems are offered as single-user workstations, work group or departmental systems, servers, mainframes, and large VAXcluster systems. From top to bottom, all run the same VMS operating system, the same languages, and the same applications.



MicroVAX 3100



MicroVAX 3300



VAX 4000



VAX 6000

Eight Ways to Grow with a VAX System

VAX systems offer eight ways to grow that are either unique to Digital, such as VAXcluster systems, or that are based on technologies for which Digital is the industry leader, such as networking. VAX systems can grow

- From small desktop systems all the way to large VAX mainframes. Or you can distribute applications from a large VAX system to several smaller ones.
- With symmetric multiprocessing or faster processors, allowing you to expand performance up to 20 times in the same cabinet.
- With VAX vector capabilities that offer a breakthrough in vector price/performance for applications that process huge amounts of numbers.
- By dual-hosting two MicroVAX or VAX 4000 systems—increasing data availability and performance.
- With VAXcluster systems, which let you cluster together up to 96 VAX systems to act as one huge system that offers higher availability and uptime.
- With fault-tolerant VAXft 3000 systems for the highest level of data integrity and system availability.
- Through local or wide area networks that can grow as large as you need them.
- Into the future with aggressive new technologies.

VMS is the popular feature-rich operating system optimized for all VAX computers—from VAXstation workstations to VAXcluster systems, and from the first VAX system introduced in 1977 to the latest VAX system announced. VMS applications written for one VAX system run on any other.



VAX 9000

**Digital Networking:
A Standard of Excellence**

Digital's networks are built to specifications of the Digital Networking Architecture (DNA). As a result, all VAX network and application software remains compatible despite hardware and system software changes—protecting your investment in both software and training.

Digital supports multiple network standards (e.g., IEEE 802.3, ANSI FDDI) and higher-level protocols (e.g., DECnet/OSI, TCP/IP, X.25). This support enables us to integrate distinct networks and support systems from IBM®, Hewlett-Packard, Apple, Sun, Cray, and many other vendors.

Ethernet Local Area Networks

Digital's IEEE 802.3/Ethernet is the multivendor local area network (LAN) standard. Digital's LANs—which can operate over all common transmission media—provide 10 Mb/s communications within a building or cluster of buildings. They connect terminals, PCs, workstations, printers, servers, VAX systems, DECsystem systems, and the systems and components of other vendors.

The 802.3/Ethernet networks also give increased performance over LANs based on alternative standards. Digital's high-performance local area transport (LAT) protocol allows users to access multiple applications from multiple computers simultaneously. And Digital's LAN bridges provide the ability to extend a single LAN over 20 miles and service up to 8,000 users without any performance bottlenecks.

FDDI High-speed Backbone

Digital also builds products that comply with the ANSI Fiber Distributed Data Interface (FDDI) standard. FDDI is a very high-speed network that provides 100 Mb/s data networking. FDDI is accepted as the next worldwide standard for general-purpose LANs.

FDDI is used as a high-speed backbone for 802.3/Ethernet LANs. The standard also supports direct system interconnection to the FDDI LAN, enabling high-performance systems and workstations to take advantage of the bandwidth, reliability, and span of FDDI.

Wide Area Networks

When you need high-speed long-distance or worldwide communications, connect your 802.3/Ethernet LANs to form a single, integrated network with Digital's wide area network (WAN) products. Digital's standards-based WAN products provide connectivity and interoperability with SNA, X.25, X.400, and TCP/IP networks and efficiently link systems all over the globe.

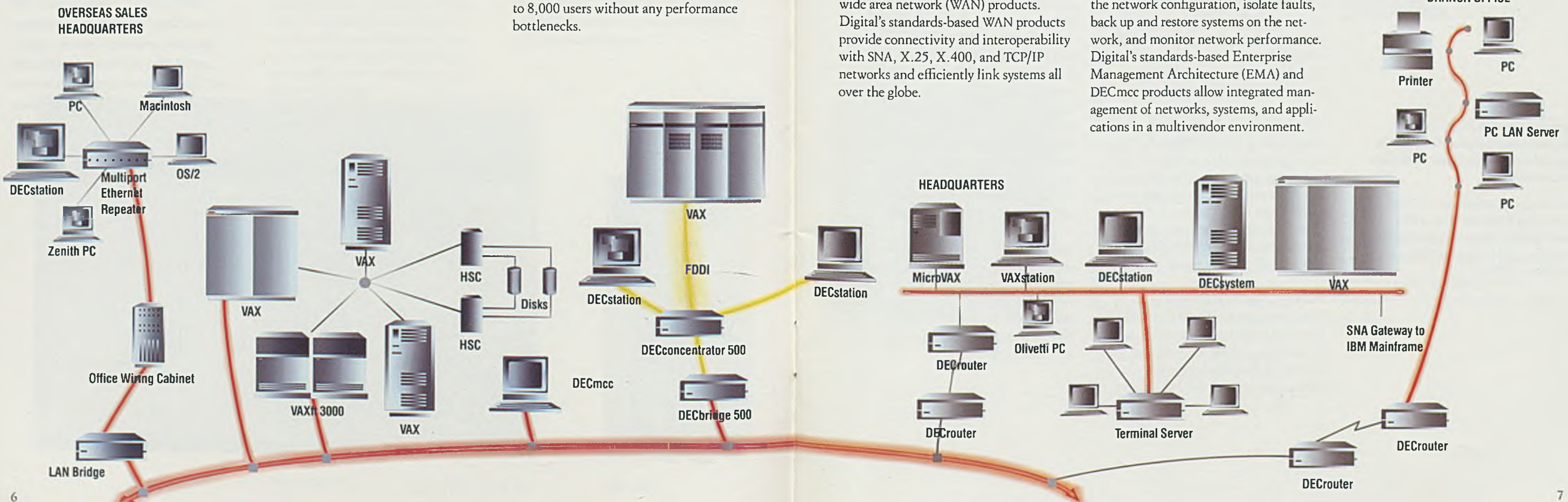
PC Networking

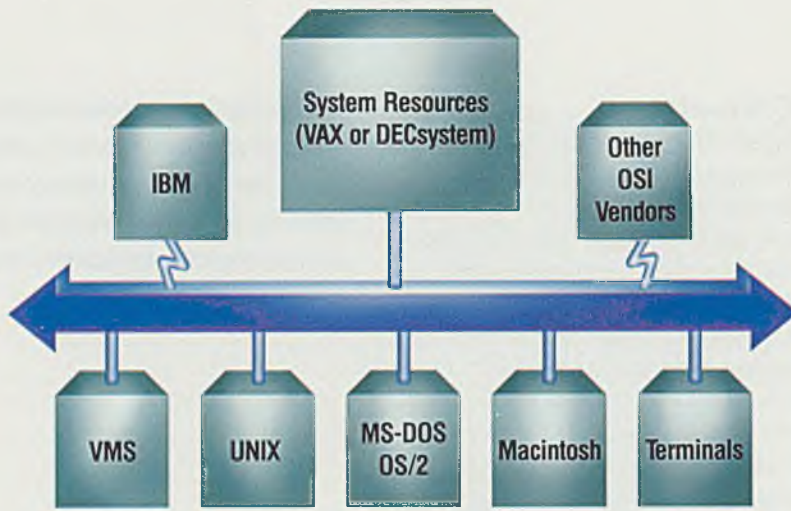
Digital's PC networking products and NAS services connect PCs for sharing files, applications, printers, electronic mail, and network services. They also link PCs with IBM systems through DECnet/SNA gateways. The Personal Computing Systems Architecture (PCSA) manages and controls groups of PCs with centralized application, file, and data services running on VAX systems.

Digital's Network Management Leadership

Digital's network management tools allow transparent network management, change, and growth—without disrupting the network's dynamic nature. Network management is built into DECnet software, so you can monitor and manage the network configuration, isolate faults, back up and restore systems on the network, and monitor network performance. Digital's standards-based Enterprise Management Architecture (EMA) and DECmcc products allow integrated management of networks, systems, and applications in a multivendor environment.

With our tradition of technical innovation, intelligent network management, unbounded growth, and steadfast commitment to open standards, Digital networking gives you a way to tie your company together without tying you down.





With NAS, you can take graphics from an Apple Macintosh, a Lotus® spreadsheet from an MS-DOS® PC, a drawing from a UNIX workstation, data from an IBM mainframe, and a scanned image from a VAX system and integrate them all into a single report. You can send it electronically to others anywhere on the network and even include up-to-the-minute connections to source data.

Adding POSIX and XPG3 for Application Portability

To meet your needs for applications portability, the VMS operating system draws upon the strengths of POSIX and X/Open's XPG3 to deliver the same levels of portability often associated with UNIX systems. Published by the Institute of Electrical and Electronics Engineers (IEEE), the POSIX family of standards has worldwide acceptance and acclaim for its vendor and platform independence. In a future release, VMS will support the POSIX 1003.1, 1003.2, and 1003.4 standards, as well as additional POSIX standards as they become available. With POSIX, it will be virtually as easy to move applications from UNIX to VMS as from one UNIX variant to another. And where POSIX specifies the operating system application interface, XPG3 builds on that foundation with added components for a complete application environment.

The VMS operating system also supports major networking and language standards for working across multivendor systems and networks. Through NAS, standards compliance includes GKS, PHIGS, ANSI languages, and the X Window System.

Some computer vendors think that open computing means "everybody has to use the same software." Digital's open computing can supply you with a wider range of choices. With Digital, you can use applications running on the desktop computer of your choice, whether it's a PC from IBM, Apple, COMPAQ, Olivetti, or Digital; a workstation from Digital or other UNIX® suppliers; or a low-cost terminal. You also benefit from a wide choice of large-system resources including Digital VAX systems and DECsystem computers, IBM, and Cray.

Adherence to standards is the essential component of Digital's Network Application Support (NAS) architecture for developing applications that are portable and interoperable across heterogeneous, multivendor environments. It also means the adoption and promotion of open standards such as POSIX, OSI, OSF/Motif™, and those from X/Open.

**Network Application Support—
The Cornerstone of Open Computing**
Network Application Support is a set of software products for using and developing integrated applications running on different vendors' systems.

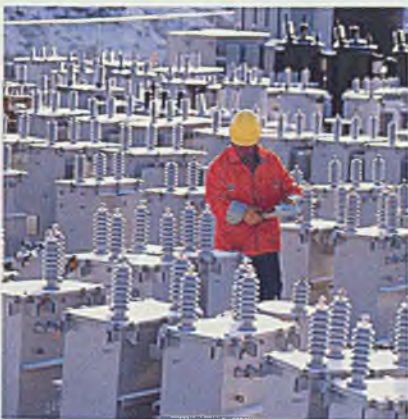
Digital's Network Application Support (NAS) lets you integrate applications and share information across your multivendor environment.

No other vendor comes close to Digital in providing the combination of VMS integrity and richness, NAS multivendor computing, and the coming application portability of POSIX.

Over 10,000 Applications and the Best Tools to Write Your Own

The portfolio of VMS applications written for VAX systems contains over 10,000 solution-oriented products. These applications have been developed by Digital, third parties, and customers for every type of business and organization. The huge number of VAX systems in the marketplace ensures a continuing wealth of applications from which to choose. Examples of applications available for VAX systems include the following:

- Corporate and Retail Banking
- CAD/CAM/CAE
- Inventory Control
- Environmental Engineering
- Earth Resource Engineering
- Laboratory Data Acquisition
- Econometric Modeling
- Factory Automation
- Credit Analysis
- Graphics Generation
- Database Management
- Hospital Administration
- Manufacturing Resource Planning
- Cellular Phone Management



Digital's COHESION Environment for CASE—The Favorite Software Development Environment

Digital's COHESION environment addresses the development, deployment, and management of software. COHESION includes a comprehensive CASE environment that supports all phases of the software life cycle. As part of COHESION, CASE ties together tools, languages, and utilities, as well as tools for coordinating your development team. Digital's CASE strategy addresses the needs of the production environment, as well as those of the development environment. It is comprehensive and flexible, to encompass the differing needs of commercial and technical environments. And it is open, based on industry standards.

The excellence of the Digital COHESION environment is one of the reasons why VAX systems have such an enormous library of applications. You can select from the available applications or use the VAX languages and tools to develop your own. Many customers even use VAX systems to develop applications that they plan to port to and run on other vendors' platforms.



VAX systems are designed and built with exacting software development requirements. The result is an environment in which applications can often be developed in half the time.

Digital's Enterprise Integration Services builds a relationship with you based on the idea that information technology should support your business and organizational goals.

At Digital, customer service begins long before you purchase a system. It begins when we design and build our products. Service means creating a reliable computer system that keeps on running. Designing quality into every component. And being the vendor you can depend on to be there when you need help.

Your Data Is Safe on a VAX System
VAX systems are designed for uptime. Our leading-edge engineering and manufacturing technologies produce dependable systems with fewer parts to maintain. Built-in features ensure data integrity, security, and reliability. For example, error correction code automatically detects and corrects many types of memory errors without disrupting operations.

Just as important as hardware reliability is the reliability of the VMS operating system—which has established an outstanding software reliability record over the past 13 years. Your data is safe on a VAX system because VMS provides integral security safeguards that keep your data safe and accurate.

Outstanding Service and Support
Every day of the year, 24 hours a day, Digital's Customer Support Centers around the world offer state-of-the-art hardware, software, and network solutions. Besides supporting our own equipment, Digital has a reputation of providing first-class service for other vendors' equipment.

And over 40,000 professionals in 450 worldwide locations deliver a wide range of services. These include Digital's Enterprise Integration Services for developing information systems solutions and integrating them with your business, organization, technical environment, and architecture.

Supporting the Goals of Your Enterprise
Services from Digital include planning, design, implementation, and management.

- **Planning and Design**—we analyze your needs and develop a plan that allows your data, your business, and your people to work in harmony. Strategic consulting, long-range planning, and site preparation are part of this stage.
- **Implementation**—we coordinate and manage even the most diverse and complex efforts, including customized hardware and software, efficiently, on time, and within budget.
- **Management**—we tailor our system management services, comprehensive training, network management, administration, recovery, and support services to meet your individual needs. And our leading-edge predictive services such as VAXsimPLUS ensure that maximum system uptime is not just a promise but a reality.



VAX Solutions

The following section gives you a closer look at Digital's VAX solutions:

VAX Systems and Servers	Page
▪ MicroVAX and VAX 4000 Systems	12
▪ VAX 6000 Systems	14
▪ VAX 9000 Systems	16
▪ VAXcluster Systems	18
▪ VAXft 3000 Systems	19
▪ Digital Servers	20
Desktops	
▪ VAXstations	22
▪ DECstation Workstations	23
▪ DECstation PCs	24
▪ Terminals and Printers	25
Software	26
Storage Devices	28

MicroVAX and VAX 4000 Systems: Superior Price/Performance with Built-in Flexibility for Open Office Environments

	Relative CPU Performance	Maximum Memory Capacity	Maximum Disk Capacity	Maximum I/O Throughput
MicroVAX 3100	3.5	32 MB	4.8 GB	1.5 MB/s (SCSI)
MicroVAX 3300	2.4	52 MB	7.3 GB	8 MB/s (2 DSSI) 3.3 MB/s (Q-bus)
MicroVAX 3400	2.4	52 MB	7.6 GB	Same as above
VAX 4000 Model 300	8.0	128 MB	28 GB	16 MB/s (4 DSSI) 3.3 MB/s (Q-bus)

MicroVAX 3100

This compact, entry-level, multiuser VAX system offers strong performance, storage expandability, and extensive communications at personal computer prices. It comes in two models to give you a choice of expansion options. It is ideal for local processing or transaction processing in retail stores and branch offices; multivendor desktop integration; distributed transaction processing, data collection, and communications in a corporate network; computer-integrated manufacturing; and PC LAN management.



MicroVAX 3100, Models 10e and 20e

MicroVAX 3300 and 3400

As standalone systems in open work space environments, the MicroVAX 3300 and 3400 systems can support large work groups or small departments running commercial or technical applications. The systems have diverse uses, including office processing, project management, scientific research, shop-floor control, and program development. They feature flexible expansion options for growth, including the ability to dual-host for higher data availability. Their small footprint makes them ideal for offices, labs, banks, and other environments in which space is at a premium.



MicroVAX 3300, 3400

VAX 4000 Model 300

The VAX 4000 Model 300 is a well balanced system that brings VAX power and performance into the open office. Features such as an integrated I/O subsystem, embedded disk and Ethernet adapters, and high-speed memory enable it to offer two times the performance and two and a half times the I/O of earlier MicroVAX systems. The VAX 4000 Model 300 system comes in multiuser, server, and realtime variants. Both the multiuser and server configurations are available in single system and dual-host configurations. In any environment, the VAX 4000 Model 300 is a perfect system for running distributed applications— transaction processing, software development, database, inventory control, office automation—and managing deployed applications.

Dual-host Capability

A dual-host system provides high data availability and multi-CPU performance in non-computer-room environments. A dual-host system consists of two Q-bus MicroVAX or VAX 4000 systems connected by a Digital Storage Systems Interconnect (DSSI) storage bus. The two systems share one another's disks across this bus, thereby increasing data availability. Dual-host systems always have Ethernet hardware; VMS, DECnet, and VAXcluster software; integrated storage elements, and DSSI storage adapters. The dual-host capability is an option for VAX 4000 and MicroVAX 3300, and MicroVAX 3400 systems.

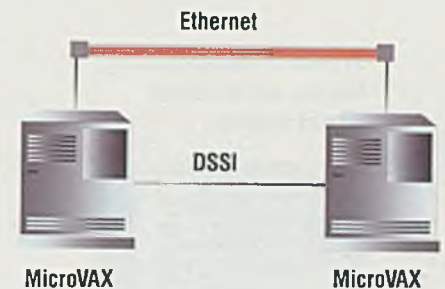
Should one CPU in a dual-host system fail, data is available through the second path and all operations can resume immediately. Dual-host systems are commonly used as servers for VAXcluster systems, as dual-host boot nodes for local area VAXcluster systems, or as multiuser systems with terminal servers. Packaged dual-host systems are available for MicroVAX, VAX 4000, and VAXserver systems.

Realtime

Special configurations of the MicroVAX 3300, MicroVAX 3400, and VAX 4000 systems are available for realtime applications. The rtVAX systems are packaged with a VAXELN runtime license. They are ideal for applications such as data acquisition and control in which predictable performance and quick response time are crucial.



VAX 4000 Model 300

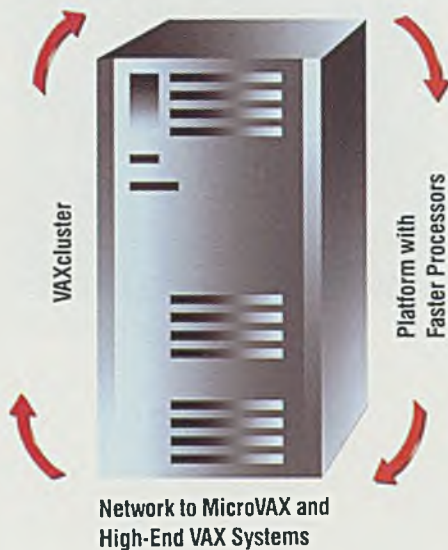


The Simplest Dual-Host System

VAX 6000 Systems: High Performance, Powerful I/O, and Great Expansion for Departmental and Data Center Computing

VAX 6000 Model	Relative CPU Performance	Maximum Memory Capacity	Maximum Disk Capacity	Maximum I/O Throughput
Model 310	3.8	512 MB	Over 5 TB	80 MB/s
Model 410	7	512 MB	Over 5 TB	80 MB/s
Model 510	13	512 MB	Over 5 TB	80 MB/s
Model 520	Up to 25	512 MB	Over 5 TB	80 MB/s
Model 530	Up to 37	512 MB	Over 5 TB	80 MB/s
Model 540	Up to 49	512 MB	Over 5 TB	80 MB/s
Model 550	Up to 61	512 MB	Over 5 TB	80 MB/s
Model 560	Up to 72	512 MB	Over 5 TB	80 MB/s

Symmetric Multiprocessing, Vectors, and Increased I/O and Memory



The VAX 6000 Platform Strategy offers many ways to grow.

Unique Platform Strategy for Present and Future Growth

The key to VAX 6000 systems growth is a unique modular platform strategy—featuring symmetric multiprocessing (SMP)—that designs out obsolescence. You can quickly and easily expand performance up to twenty times in the same cabinet in minutes by simply adding or changing modules. Memory and I/O expand in the same easy way. You can also increase availability and storage capacity by placing a VAX 6000 system in a cluster. The VAX 6000 platform strategy means lower growth costs and better protection for your computing investment.

But that's not all. The same modular platform design will allow you to upgrade to new performance levels as new generations of technology are introduced. This means that you can remain on the forefront of technology as you grow with VAX 6000 systems.

Powerful I/O Engine for Intensive Data Management

The VAX 6000 system's bandwidth of up to 100 Mbytes per second comes from a balanced I/O approach that encompasses the entire system, from the CPU, buses, and storage controllers, to the disks and software tools. The design breaks through I/O bottlenecks and optimizes performance throughout the system. With this advanced I/O design and very large memory and storage capacities, the VAX 6000 system is equipped to handle the most demanding applications.

The I/O design begins with the combination of an XMI high-speed system interconnect, advanced memory interleaving, high-performance controllers, and up to five VAXBI buses. This flexibility means that I/O capabilities can be expanded as demands grow.



VAX 6000 System (All VAX 6000 models are in the same modular platform.)

A wide selection of disk devices completes the I/O design. Features such as disk striping, multiple spindle storage arrays, and solid state technology boost I/O performance for critical applications. Advanced software tools such as the VAX Performance Analyzer help you make your entire system as efficient as possible by placing frequently used files on the fastest disks.

Commercial Strength Servers

Based on Network Application Support, Digital's client/server computing delivers flexible, cost-effective solutions using the most advanced technology. The VAX 6000 system's superior reliability and growth options, along with Digital's multivendor networking capabilities, and expertise in supporting distributed PC applications, make the VAX 6000 an ideal server system.

VAX Vectors—A Breakthrough in Price/Performance

VAX 6000 Model 400 and 500 systems can incorporate an integrated vector capability that accelerates performance to a peak of 180 MFLOPS single precision and 90 MFLOPS double precision. VAX 6000 systems with vector processing offer extremely high performance at affordable prices. You can use VAX 6000 vector systems to tackle a wide range of tough jobs such as seismic analysis or financial modeling. Or you can use the VAX 6000 vector option to increase the speed of your numeric-intensive FORTRAN applications.

Unmatched Versatility

Besides being the industry's most expandable systems, VAX 6000 systems are flexible enough to fulfill many different needs. They can be configured as time-sharing systems (running either the VMS or ULTRIX operating system), transaction processing systems, VAXserver systems, VAXcluster systems, and rtVAX realtime systems. A rackmount VAX 6000 system is available for environments in which constrained packaging is a requirement.

VAX 9000 Systems: Well-balanced Mainframe Performance and High Availability for Large-scale Transaction Processing and Numerically Intensive Computing

VAX 9000	Relative CPU Performance	Maximum Memory Capacity	Maximum Disk Capacity	Maximum I/O Throughput
Model 210	40	512 MB	Over 7 TB	80 MB/s
Model 410	40	512 MB	Over 7 TB	160 MB/s
Model 420	Up to 79	512 MB	Over 7 TB	160 MB/s
Model 430	Up to 118	512 MB	Over 7 TB	320 MB/s
Model 440	Up to 157	512 MB	Over 7 TB	320 MB/s

A Better Choice for Mainframe Computing in the 1990s

The VAX 9000 family of advanced mainframe systems provides the power, throughput, and high availability needed for mission-critical applications in commercial and technical computing environments.

VAX 9000 Model 400 systems offer reliability and expansion potential to meet the current and future needs of developing mainframe applications. Model 400 systems are supplied in configurations of one to four CPUs and offer high availability and a level of flexibility previously unknown with mainframe machines.

The VAX 9000 Model 210 is available in a single CPU configuration and is designed to deliver excellent price/performance. It is ideal for dedicated compute-intensive tasks.

Additional Power and Availability from VAXcluster Technology

All VAX 9000 systems may be connected into VAXcluster systems with over 400 times the performance of the VAX-11/780. These VAXcluster systems can be configured to eliminate single points of failure, providing high availability for mission-critical applications.

High Throughput Balances Processor Power

System throughput rates of up to 2 Gbytes a second are delivered through a high-performance System Control Unit (SCU). The SCU links the processors, the large main memory (up to 512 Mbytes), and the I/O subsystems. The SCU optimizes overall system operation and throughput and is linked to one to four XMI buses, which can provide 80-to-320-Mbytes-per-second throughput to storage, networks, VAXcluster systems, and VAXBI buses. For large-scale transaction processing applications, VAX 9000 Model 210 or 410 systems complete 70 transactions per second (TPC-A rating).

Supercomputer Performance with Fully Integrated Vector Processing

VAX 9000 systems can incorporate an integrated vector capability able to boost performance to a peak of 500 MFLOPS. Supercomputing applications can achieve 80 MFLOPS on a single vector processor system and 312 MFLOPS on a quad-vector processor system (LINPACK 1000 × 1000 rating). VAX vector processing is fully supported by a wide range of applications and development aids, such as the industry-leading VAX FORTRAN compiler. The compiler has been extended to automatically vectorize and decompose applications across multiple processors. Additional tools include the VMS Math Run-Time Library and Digital Extended Math Library, the Language-Sensitive Editor, the Performance Coverage Analyzer, and the VAX Debugger. A disk-stripping driver can provide a higher performance method of keeping the vector processor fed with data, again balancing the system for numerically intensive applications.

Flexible Choices for Customized Solutions

Hardware and software options make it possible to configure balanced systems that meet specific application needs using the VMS or ULTRIX operating systems. General commercial computing and compute-intensive processing in technical and statistical environments are readily accommodated.

The VAX 9000 family is a range of mainframe computers ideal for organizations that need a cost-effective, highly available solution for large-scale commercial and technical applications. It extends existing VAX computing resources to include mainframe capacity or supercomputer performance without changing the architecture.



VAX 9000 Model 410

VAXcluster Systems: Higher Availability and Performance for Large-scale Computing

Every single VAX system—from the original VAX-11/780 to the most recently announced system, and from a VAXstation to a VAX 9000—can be linked in a VAXcluster system.



(A) Two VAX nodes: VAX 6000 and VAX 9000, both benefiting from higher availability.
 (B) VAXft 3000 node used as a fault-tolerant front-end processor providing the highest level of availability.
 (C) Terminal server to allow terminal access to all clustered systems.
 (D) Disk controllers with dual-ported disks and tapes for higher data availability.

Only Digital offers clustering—the ability for a collection of processors and storage elements to operate as one system. Special reliability and availability features make VAXcluster systems truly unique in the industry. VAXcluster systems let you link together as many as 96 VAX systems and share huge databases of over 7,000 gigabytes (7 terabytes) to form the largest computer systems in the industry. All data is available to all systems on the cluster at all times. VAX 6000 and VAX 9000 systems take maximum advantage of clustering capabilities through the high-speed Computer Interconnect (CI) interface.

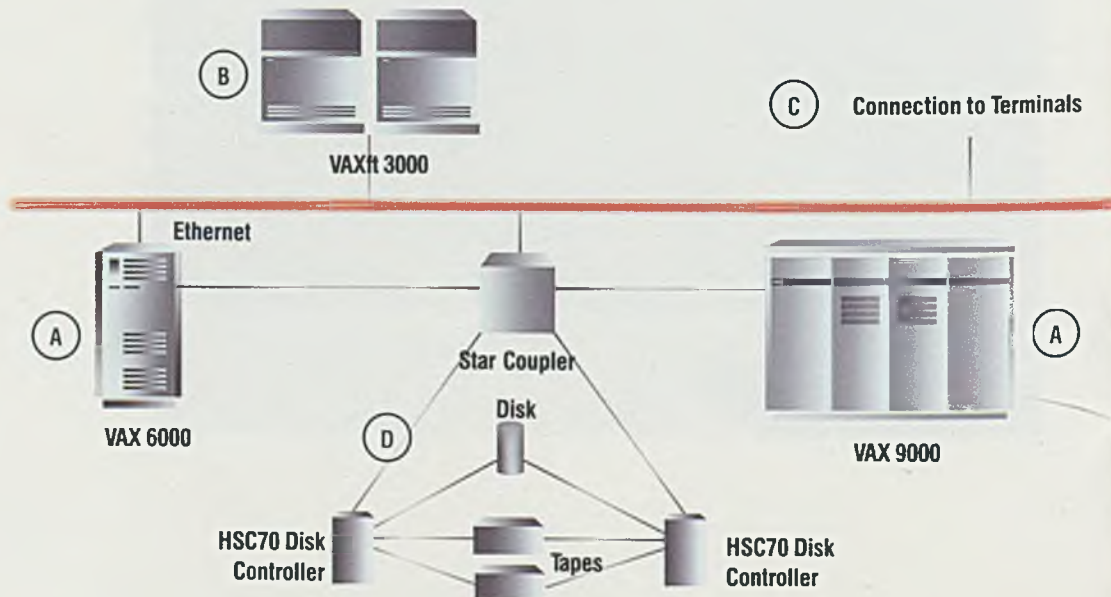
High Uptime and Economical Growth

In a VAXcluster system, single points of failure can be minimized to ensure higher availability and uptime. If one processor goes down, the others can take over without disrupting users or applications. Yet you are able to manage and use the cluster centrally as though it were a single system.

In addition to answering today's needs for uptime and processing performance, VAXcluster systems answer future needs for growth. VAXcluster technology offers an economical means of expanding computing resources in gradual steps, exactly as needed, without disrupting your business operations. You never have to replace older systems. You can simply add new VAX systems and VAXstations to a cluster when your requirements grow.

VAXcluster Advantages in Open Office Environments

Dual-host systems extend the data availability advantages of clustering to open offices. Dual-host configurations can link MicroVAX and VAX 4000 systems through a Digital Storage Systems Interconnect (DSSI) bus. With a dual-host system using a DSSI connected to the Ethernet and running VAXcluster software, users can reach disk-based data through both members of the dual host.



VAXft 3000 Systems: Fault Tolerance for Mission-critical and Transaction Processing Applications

VAXft 3000	Relative CPU Performance	Maximum Memory Capacity	Maximum Disk Capacity	Maximum I/O Throughput
Model 310 Entry System	3.8	128 MB	1.2 GB	4.0 MB/s
Model 310 Expanded System	3.8	128 MB	4.2 GB	4.0 MB/s



VAXft 3000 Model 310 Entry System

Transparent Fault Tolerance for Mission-critical Applications

Digital's leadership in providing high availability with clustering and dual-hosting is extended to greater lengths by our fault-tolerant systems. The VAXft 3000 Model 310 system provides a completely fault-tolerant platform that runs VMS applications with no modification. The system is an ideal solution for mission-critical and transaction processing applications that demand continuous processing with the highest levels of data and computational integrity.

With the flexibility typical of all VAX systems, the VAXft 3000 Model 310 system allows you to put fault tolerance wherever you need it. The system may be used as a standalone system, or as part of a mixed-interconnect VAXcluster system as well as in wide area and local area networks.

Continuous Processing Ensures Application Integrity

The VAXft 3000 Model 310 implements a hardware-intensive, fault-tolerant architecture. Each system includes two fully duplicated sets of components, called zones. No single point of failure can bring down your application and absolutely no special user-written code is required. The VAXft 3000 design also includes redundant Ethernet network connections; a mass storage system using multiple ports, DSSI buses, and VMS volume shadowing; and dual uninterruptible power supplies with battery backup that keeps your applications available during the most critical times.

Fault-Tolerant Service Strategy

The VAXft 3000 Model 310 system keeps applications running continuously, even during maintenance and repair. The zone under repair is simply taken completely off-line while the other services the application. Numerous other service features make system maintenance easy and predictable without ever disrupting your applications.



The platforms for Digital servers range from the PCLAN/Server 3100 (shown above) to the VAXserver 3000, 4000, and 6000 systems and the VAX 9000 mainframe.

Based on Network Application Support (NAS), Digital's client/server strategy offers the functionality of a complex multivendor network with the simplicity of a single system—it's the best of both worlds.

Digital's client/server computing environment delivers all the traditional Digital strengths in networking, systems and software engineering, and services to provide the best client/server solutions in the industry. Digital servers span the entire range of our systems—from OS/2-based PC LAN servers to DECsystems, VAXserver systems, and VAX 9000 mainframes—making the Digital Server family the most complete family of server products. This brochure describes VAXserver systems.

VAXserver Base Platforms—Strong Foundations for Building Client/Server Solutions

	Relative CPU Performance	Maximum Memory Capacity	Maximum Disk Capacity	Maximum I/O Throughput
VAXserver 3100	3.5	32 MB	4.8 GB	1.5 MB/s
VAXserver 3300/3400	2.4	52 MB	7.3/7.6 GB	8.0 MB/s
VAXserver 4000 Model 300	8.0	128 MB	28 GB	16 MB/s
VAXft Server 3000 Model 310	3.8	128 MB	4.2 GB	4.0 MB/s
VAXserver 6000 Models 310 to 520	3.8 up to 25	512 MB	Over 5 TB	80 MB/s

VAXserver systems are VAX systems optimized for specific use as servers. They share the same characteristics as (and can convert to) multiuser VAX systems, but their different software licenses make them more economical when used exclusively as servers. You can also use DECsystem and general-purpose VAX systems as well as dual-host, VAXcluster, and fault-tolerant systems as server platforms.

Server Packages

Digital offers application server packages, built on the base platforms, that solve specific workgroup and organizational problems. These servers include the software, tools, and integration support for areas such as database access, database integration, management, office processing, electronic mail, and vector processing.

Digital's packaged PCLAN servers include the VAX-based PCLAN/Server 3100e and PC-based PCLAN/Server 316 and 333 for integrating PCs into your enterprise. (See DECstation 316+ and 333c specifications on page 24.) You can also use software included with VAX systems to integrate OS/2, MS-DOS, and Macintosh systems. For more information on these and more server packages, see the Digital Server Family Information Sheet.

You can use VAXserver platforms in whatever way best suits your business style—as general-purpose servers running your applications, or as platforms upon which you build a customized solution using Digital's application-specific server packages.

Building from Strength

Digital's unbeatable strengths in client/server computing come from our long history of delivering the best technologies. First, we broke new ground with the VAX architecture and VMS operating system—a family of compatible systems from desktop to data center. Then we offered distributed networks for peer-to-peer communications. Multivendor integration followed, with interoperability between our systems and IBM, UNIX, Cray, Apple, and other vendors. Client/server computing draws from all of these strengths to provide you with the most comprehensive, integrated computing environment possible.

The Flexibility to Choose What's Best for You and Adapt to Change

Because Digital's solutions are flexible, you have choices. You can choose centralized or decentralized computing. Choose dual-hosting, clustering, or fault-tolerance for varying levels of availability. Servers can be any size, located in the data center or under a desk. Our networks let you distribute applications wherever they are needed. And if your needs change, you can easily adapt and reconfigure your servers and clients.

You can also choose to use systems from other vendors and know that they will work with other systems in your network. Choose any type of popular desktop system or server platform depending on whether your needs are large or small and if you anticipate future growth. And choose whatever type of application meets your critical business needs.

The Commercial Strength to Deliver Top Performance

The commercial strength of Digital's client/server environment means that you can select from a wide variety of versatile platforms upon which to run the bet-your-business applications you depend on. Our platforms have all the capabilities—CPU and I/O performance, high availability, data integrity, system management tools, CASE tools, and more—to let you offload applications from expensive mainframes to flexible servers.

Cost-Effectiveness on Every Level

Your organization will find that client/server computing is cost-effective because it allows you to shift work loads from expensive systems to lower-cost resources. It maximizes investments you already made in systems, software, and human resources because it works with what you already have and know. You don't have to throw away other vendors' equipment or reprogram and retrain. With Digital's client/server computing you also benefit from lower software development costs and inexpensive system growth through symmetric multiprocessing, dual-hosting, and clustering.



VAXserver 4000



VAXserver 6000 Vector System

VAXstations: Highly Productive Workstations Compatible with the Entire VAX Family

	Relative CPU Performance	Maximum Memory Capacity	Maximum Disk Capacity	Graphics	I/O Throughput
VAXstation 3100 Models 30 and 40	2.8	32 MB	6.6 GB	2D	1.5 MB/s
VAXstation 3100 Models 38 and 48	3.8	32 MB	6.6 GB	2D	1.5 MB/s
VAXstation 3100 Model 76	7.6	32 MB	6.6 GB	2D	1.5 MB/s
VAXstation 3520	Up to 5.4	128 MB	1.3 GB	2D/3D	20 MB/s
VAXstation 3540	Up to 10.8	96 MB	1.3 GB	2D/3D	20 MB/s



VAXstation 3100 Model 38 SPX

VAXstation 3100

The VAXstation 3100 systems are the lowest-priced VAX-based workstations for high-performance graphics applications. The VAXstation 3100 family consists of five models: Models 30, 38, and 76 for workstations, and Models 40 and 48 for workstations/serverstations. The VAXstation 3100 family is differentiated by storage capacity, CPU speed, and graphics performance. The systems offer a choice of three graphics options: monochrome, 8-plane color (GPX), or high-performance 8-plane color (SPX). The SPX systems provide up to 10 times the graphics performance of the other VAXstation 3100 models.

The VAXstation 3100 systems can be configured as diskless network nodes, stand-alone workstations, or systems that can simultaneously operate as workstations and servers. VAXstation 3100 systems support thousands of software applications—OSF/Motif, VWS/UIS, X Window System, DECwindows, and terminal applications, as well as industry-standard MS-DOS® applications. They are the ideal systems to use with Digital's DECwindows integrated windowing environment.

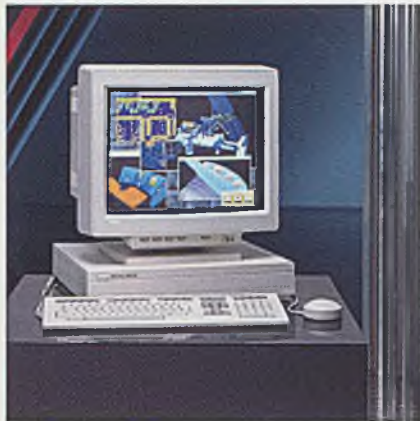


VAXstation 3520

VAXstation 3520 and VAXstation 3540

The VAXstation 3520 and VAXstation 3540 systems are symmetric multiprocessing workstations that provide outstanding graphics performance for such demanding uses as computer animation, fluid dynamics, and molecular modeling. Digital's fastest 2D and 3D VAXstations, these systems offer high resolution (1,280 by 1,024 pixel) graphics, 3D motion, smooth shading, depth cuing, and true color display. The VAXstation 3540 almost doubles the CPU performance of the VAXstation 3520.

UNIX Computing in a VAX-based Organization



DECstation 5000 Model 200



DECstation 3100

While a VAX system running VMS software may be your first choice in the data center, you may have UNIX workstations on your engineers' desks. That's why we offer the VMS/ULTRIX Connection product. It forms a bridge between these two environments and protects your investments in both.

The VMS/ULTRIX Connection is a layered software product on the VMS operating system that provides TCP/IP and NFS networking for VMS systems. It provides resource sharing—networking, file access, remote terminal access, and application development—between VMS systems and UNIX or ULTRIX systems via the Internet protocols suite. With the VMS/ULTRIX Connection, UNIX users benefit from a distributed computing environment with all the exceptional reliability and uptime features associated with the VAX family.

DECsystem Workstations—RISC-based UNIX Systems

In addition to the VAX family, Digital offers a complete family of UNIX systems using Reduced Instruction Set Computer (RISC) technology. Based on industry standards for hardware and software, the DECsystem family specializes in fast, high-performance ULTRIX computing for the UNIX marketplace. DECsystem computers offer excellent UNIX performance and price/performance across the family—from the DECstation workstations (see the table below) to the largest DECsystem computers. (See the DECsystem brochure for more information on the entire DECsystem family.)

	Integer MIPS ¹	SPEC- mark	Maximum Memory Capacity	Maximum Disk Capacity	Maximum I/O Throughput
DECstation 2100	10.4	7.5	24 MB	2.3 GB	4.0 MB/s
DECstation 3100	14.3	10.1	24 MB	2.3 GB	4.0 MB/s
DECstation 5000 Model 200	24.0	18.5	120 MB	21.0 GB	93.0 MB/s

¹Million instructions per second based on a combination of Dhrystone, grep, yacc, diff, and nroff benchmarks.

Digital's Integrated Personal Computing: Extending the Resources of Your Organization

Digital's PC integration products and DECnet/OSI services integrate MS-DOS, OS/2, and Macintosh personal computers into your organization's information systems strategy without sacrificing the individual's benefits of industry-standard personal computing. With these products you get resource sharing, multivendor compatibility, simplified system management, and a clear growth path.

You can access PC-generated information stored on a VAX system from other VAX systems, terminals, and workstations as well as PCs. You are assured of having the latest company data for accurate reports because you can retrieve it any time.

Software included with VAX systems allows VAX systems to act as application, data, and resource servers to groups of MS-DOS and OS/2 personal computer clients. Similar services are available to users of Macintosh systems. All users have equal access to the server and shared printers, and to the "personal" processing power provided by the PCs.



DECstation 212LP



DECstation 325c

Digital PCs: Industry-standard Personal Computing Integrated into the VAX Environment

Digital's industry-standard PCs offer outstanding speed and graphics in MS-DOS and OS/2 applications working standalone or as part of a networked work group. Through Network Application Support (NAS), these systems are integrated into Digital's world of enterprise-wide computing.

The DECstation 333 and 316 systems are also available in server configurations that provide NAS-based file and print services to MS-DOS work groups and OS/2 clients.

	Technology	Maximum Memory Capacity	Maximum Disk Capacity
DECstation 212LP	Intel 80286, 12 MHz	16 MB	170 MB
DECstation 316sx	Intel 80386sx, 16 MHz	16 MB	170 MB
DECstation 316+	Intel 80386, 16 MHz	16 MB	640 MB
DECstation 325c	Intel 80386, 25 MHz	16 MB	640 MB
DECstation 333c	Intel 80386, 33 MHz	16 MB	640 MB
DECstation 425c	Intel 80486, 25 MHz	16 MB	640 MB

Digital's European PCs offer slightly different characteristics:

DECstation 220	Intel 80286, 12 MHz	16 MB	400 MB
DECstation 316sx	Intel 80386sx, 16 MHz	12 MB	400 MB
DECstation 325c	Intel 80386, 25 MHz	18 MB	400 MB
DECstation 425e	Intel 80486, 25 MHz	64 MB	800 MB

Digital Terminals and Printers for VAX Systems



VT420 Terminal

With Digital, productivity on the desktop means having the best tools at hand. In addition to systems and servers, we offer a variety of high-quality terminals and printers.

VT320, VT330+, VT340+, and VT420 Terminals

The economical VT320 terminal features single session operation. The dual-session VT330+ and VT340+ terminals handle graphics; the VT340+ also offers color. The VT420 is a low-cost, dual-session terminal with the ergonomics and performance needed for demanding client/server environments. It offers full-formed fonts, high resolution, and extra display lines.

New VT1200 Windowing Terminal

The new VT1200 terminal offers the features—menus, icons, and mouse interaction—commonly associated with more expensive PCs and workstations. The terminal displays applications from any Digital or non-Digital host that implements the X Window System standard.



DEC Laser 2100 and 2200 Printers

New VT1300 Color X Window Terminal

The color VT1300 X Window terminal offers high resolution and performance. Through DECwindows and the X Window System user interfaces, it provides access to thousands of applications previously available only with a workstation. It supports TCP/IP and DECnet protocols, and can be upgraded to a VAXstation 3100 Model 30 system.

Desktop Printers

Digital offers a choice of desktop printers. The LA75 and LA70 are the perfect companions for VT320 terminals. They are quiet, small, and easy for anyone to operate. The LJ250 and LJ252 color printers print up to 255 colors at 90 by 90 dot-per-inch resolution. For fast, superior-quality laser printouts Digital offers the DEC Laser family for one- or two-sided printing, the LN03 Image printer for text, graphics, and PostScript™ files, and the ScriptPrinter for sophisticated desktop publishing.



PrintServer 40 Plus

PrintServer 20 and PrintServer 40 Plus Network Laser Printers

When you need a printer for the whole department, choose the PrintServer 20 or, for the entire organization, the PrintServer 40 Plus. Both print crisp, clear text and graphics quickly and quietly. The PostScript-based PrintServers include resident typefaces and are supported by industry-standard electronic publishing software.

Lineprinters

Digital offers a full range of high-speed impact printers. The LG31 prints text and graphics at 300 lines per minute. The LG01/LG02 computer room lineprinters output text and graphics at up to 600 lines per minute. The LP37 is a heavy duty lineprinter that handles up to 1,200 lines per minute in open offices and computer rooms. The LP29 “workhorse” prints up to 2,000 lines per minute for continuous data processing.

The Digital commitment to production system computing extends the strength of the VMS operating system into your most critical business applications. VMS features for production systems ensure that applications are always available, system recoveries are swift, transaction services are distributed, data is accurate, and information is exchanged openly.



VAX systems are complemented by excellent software solutions—operating systems, programming languages, development tools, office solutions, and thousands of software applications available from Digital and third parties.

VMS Operating System

The VMS operating system is Digital's popular multifeature operating system for VAX systems from VAXstation workstations to VAX 9000 mainframes. Its strengths include peer-to-peer distributed processing, networking, system management, security, symmetric multiprocessing, and a DECwindows user interface. Desktop-VMS Software is also available to give nontechnical VAXstation users a simplified VMS operating system environment.

The VMS operating system provides a seamless environment for critical applications. From a single platform you can integrate all your computing resources and share them across your entire enterprise—even across global networks. Its flexibility guarantees an open growth path that protects your computing investments, past and future.

Its consistent, easy-to-use interface is designed to support key programming, graphics, windowing and data interchange standards to promote maximum portability for your applications. VMS is also designed to give you maximum interoperability, so you can share data and functions among VMS, UNIX and MS-DOS systems, all running the same common programming interface.

ULTRIX Operating System

The ULTRIX operating system is Digital's implementation of the native mode UNIX operating system for DECsystem and VAX systems. It offers all of the advantages of the Berkeley Software Distribution (BSD) UNIX software and incorporates the best elements of AT&T's UNIX System V. Digital's enhancements to the ULTRIX operating system include symmetric multiprocessing (SMP), security features designed directly into the operating system, and larger disk and memory capacity than other UNIX products. Through Network Application Support (NAS) services, ULTRIX implements key industry standards such as POSIX, ANSI SQL, and the X Window System; and conforms to X/Open and Open Software Foundation environment specifications.

VAXELN Operating Environment

Digital's VAXELN Realtime Software Toolkit supports dedicated realtime applications such as process control, simulation, or high-speed data acquisition. Optimized for realtime, VAXELN software is supported on VAX processors. And Digital offers rtVAX systems—system building blocks preconfigured with VAXELN software.

The DECwindows Interface

The DECwindows environment means users can access and display ULTRIX, MS-DOS, and VMS-based applications on the same display device at the same time. Based on the X Window System developed at the Massachusetts Institute of Technology, the DECwindows desktop environment cuts across Digital's operating system and hardware families with a consistent user interface that has the same "look and feel" from one system to the next. DECwindows supports the OSF/Motif graphical interface for both VMS and ULTRIX environments.

DECtp Transaction Processing Environment

Digital provides a complete range of software for your transaction processing needs. Embedded in the latest version of the VMS operating system are two transaction processing products: a VAX Rdb runtime license for database management and DECdtm software for updating multiple databases using a two-phase commit protocol. Layered software products include the DECintact and VAX ACMS transaction processing monitors, DECtrace for collecting and reporting, DEC RdbExpert for optimizing physical database performance, DECscheduler for automating the execution of repetitive production jobs, VAX DBMS for database management, and DECforms for creating application interfaces.

Information Management

Digital's information-management solutions include VAX Rdb, a full-function relational database-management system with the speed to handle high-volume production and transaction processing applications. VAX TEAMDATA and VAX RALLY, two more companion products, gather information from databases to custom-tailor new applications. The VAX DATATRIEVE report generator retrieves data from Digital and IBM databases.

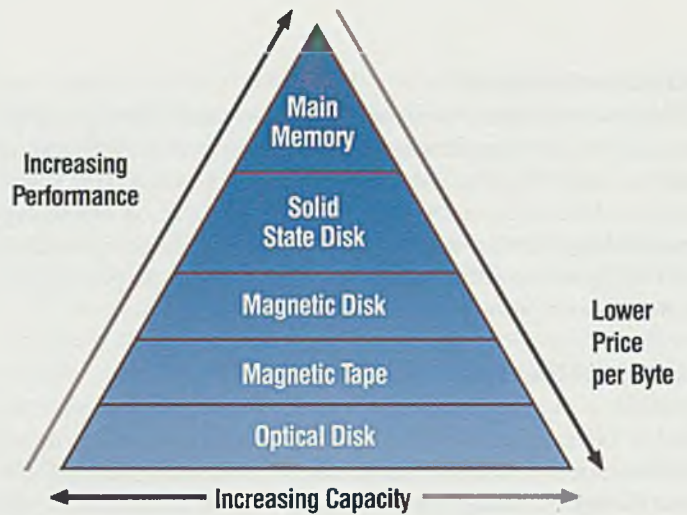
Office Solutions

The ALL-IN-1 System, based on NAS services, is the cornerstone of Digital's office-computing strategy. ALL-IN-1 delivers core services such as electronic file cabinet, document processing, and electronic messaging as well as advanced capabilities for accessing, manipulating, and presenting information to the desktop. It also allows users to create and integrate a wide range of business and office applications—increasing individual and work group effectiveness.

Languages and Tools

The VMS environment supports a multitude of programming languages and tools to make software development and general computing more productive. Digital's language compilers follow industry standards and include enhancements that take advantage of special VMS services. All VAX systems use the same compilers, ensuring portable code.





Digital offers a wide range of storage products that handle all of your storage requirements for capacity, performance, cost, and data availability. Our storage products are organized into a hierarchy—at the top is the storage device with the fastest access time. At the bottom is the best long-term archiving capability. And in between is a selection of varying degrees of performance and capacity.

Products at every level of the Digital storage hierarchy conform to the Digital Storage Architecture (DSA), which leads the industry in providing investment protection, easy growth, high capacity, high performance, and low cost of ownership. Digital provides all the compatible storage solutions you need—from the top of the hierarchy to the bottom. Digital also offers Small Computer Systems Interface (SCSI) disks and tapes for workstations and small systems.

Digital's robust set of storage-management software tools—the VAX Performance Analyzer (VPA), the System Performance Analyzer (SPA), and the Storage Library System (SLS)—help to manage data location and access. These tools allow data to reside on storage devices that maximize system and application performance.

Memory

Digital's memory products unlock the full power of your VAX system. When you increase memory, you benefit from better performance, faster system throughput, and reduced response time, especially in applications that access memory quite often. Designed as an integral part of the system architecture, Digital's memory products optimize performance and maximize your system investment.

ESE Solid State Disk

The Electronic Storage Element (ESE20) boosts the performance of standalone and VAXcluster systems running applications that require high I/O. The ESE20 combines the benefits of high-speed memory with the storage capacity and data recovery of a disk. Configured as a nonvolatile device, the ESE20 uses semiconductor technology to provide data access an order of magnitude faster than traditional magnetic devices. This lightning performance eliminates I/O constraints and complements the massive storage capability of Digital's RA and SA disk family.

SA Storage Arrays and RA Disks

Digital's family of high-capacity storage arrays provides a choice of capacity and performance for midrange and high-end VAX systems and VAXcluster systems. With these products, over seven terabytes of data storage can be configured. That's 7,000 gigabytes of storage to support every conceivable commercial and technical application.

RF Integrated Storage Elements

The RF family of integrated storage elements (ISEs) brings high-end data-storage features to small systems. It integrates dedicated intelligent controllers and Winchester disk drives (within a standard 5.25-inch form factor) with the performance and flexibility of the Digital Storage Systems Interconnect (DSSI). RF integrated storage elements come packaged in increments of 150, 380, or 400 megabytes. Removable versions (called Removable Storage Elements) are available for enhanced data security and easy transport of data to other locations.

TU and TA Tape Drives

The TU and TA tape drives are high-performance, industry-compatible storage solutions for MicroVAX, VAX, and VAXcluster systems. All provide readily accessible offline storage for dependable, reliable information management.

RV Optical Disks

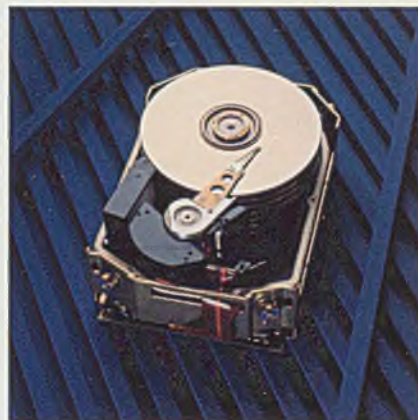
The RV family is based on write-once/read-many (WORM) technology and provides a cost-effective way to archive huge quantities of data (128 gigabytes) on compact, rugged cartridges for applications requiring permanent data and long-lived media.

Disks and Tapes for Workstations and Small Systems

Digital offers disks and tapes for workstations and small systems. These include the 3.5-inch and 5.25-inch RZ disk drives and the TK/TZ cartridge tape drives. A new product, the 5.25-inch TLZ04, is an industry-standard 4-mm DAT tape drive that provides unattended backup and archiving. These devices offer the performance, capacity, and dependability required by Digital's desktop and desktside workstations and meet SCSI ANSI standards.



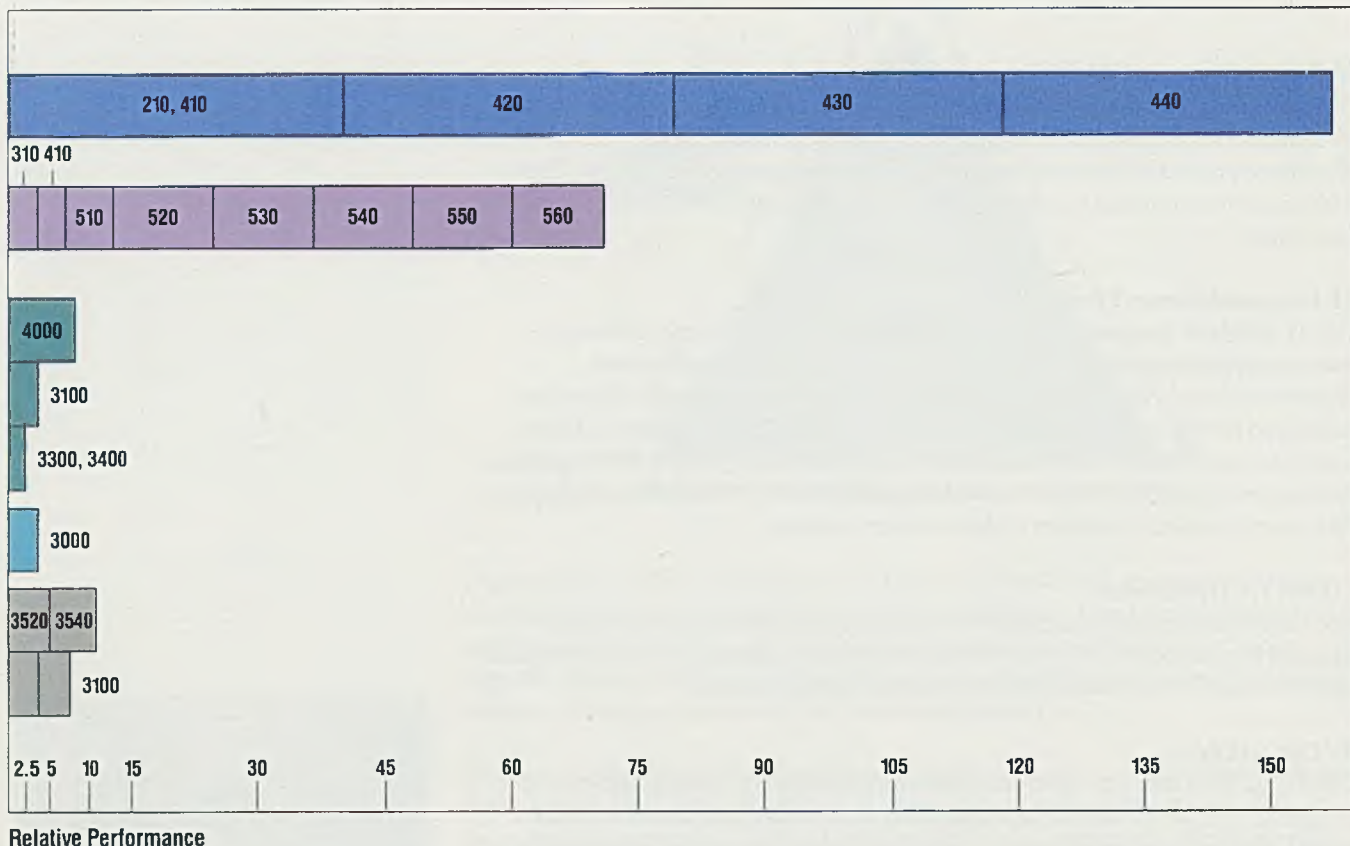
ESE Solid State Disk



RF Integrated Storage Element

VAX System Positioning

Broadest Range of 100-percent Compatible Systems in the Industry



- VAX 9000 Systems - Well-balanced Data Center Mainframes
- VAX 6000 Systems - Expandable Departmental and Data Center Systems
- MicroVAX and VAX 4000 Systems - Flexible Work Group and Departmental Systems
- VAXft 3000 Systems - Fault-tolerant Systems
- VAXstation Systems - Powerful Workstations

The charts on the following pages allow you to compare the features and performance of each VAX system.

For More Information

Digital has more than 1,200 sales, service, manufacturing, engineering, and administrative offices and does business in 82 countries. Please contact your local Digital sales representative for more information.

VAX System Comparison Chart

System	VAXstation 3100 Models 30, 40, 38, 48 and 76	VAXstation 3520 VAXstation 3540	MicroVAX 3100	MicroVAX 3300 MicroVAX 3400	VAX 4000 Model 300	VAXft 3000 Model 310	VAX 6000 Systems Models 310 and 410	VAX 6000 Systems Models 510 through 560	VAX 9000 Models 210, 410 through 440
Relative Performance × VAX-11/780*	Models 30, 40: 2.8 Models 38, 48: 3.8 Model 76: 7.6	VAXstation 3520: Up to 5.4 VAXstation 3540: Up to 10.8	3.5	2.4	8.0	3.8	Model 310: 3.8 Model 410: 7	Model 510: 13; Model 520: Up to 25; Model 530: Up to 37; Model 540: Up to 49; Model 550: Up to 61; Model 560: Up to 72	Models 210, 410: 40 Model 420: Up to 79 Model 430: Up to 118 Model 440: Up to 157
Technology	CMOS	CMOS	CMOS	CMOS	CMOS	CMOS	CMOS	CMOS	ECL/MCU
In-cabinet CPU Upgrade Kit	N/A	VAXstation 3520 to VAXstation 3540	N/A	N/A	N/A	N/A	Each VAX 6000 system upgrades to any higher VAX 6000 system	Each VAX 6000 system upgrades to any higher VAX 6000 system	Each VAX 9000 system upgrades to any higher VAX 9000 system
Number of Processors	1	VAXstation 3520: 2 VAXstation 3540: 4	1	1	1	2 × 2 (redundant processors)	1	Model 510: 1; Model 520: 2; Model 530: 3; Model 540: 4; Model 550: 5; Model 560: 6	Models 210, 410: 1 Model 420: 2 Model 430: 3 Model 440: 4
Max. Vector Processors Supported	N/A	N/A	N/A	N/A	N/A	N/A	Model 310: 0 Model 410: 1	Models 510, 530, 540: 1 Model 520: 2; Models 550, 560: 0	Models 210 VP, 410 VP: 1 Model 420 VP: 2; Model 430 VP: 3; Model 440 VP: 4
Peak Vector Performance per Processor	N/A	N/A	N/A	N/A	N/A	N/A	45 MFLOPS (double precision) 90 MFLOPS (single precision)	45 MFLOPS (double precision) 90 MFLOPS (single precision)	125 MFLOPS
Max. Memory Support	32 MB	VAXstation 3520: 128 MB VAXstation 3540: 96 MB	32 MB	52 MB	128 MB	128 MB (mirrored memory)	512 MB	512 MB	512 MB
Mass-storage Capacity									
Max. Disk Capacity	6.6 GB	2.3 GB	4.8 GB	MicroVAX 3300: 7.3 GB MicroVAX 3400: 7.6 GB	28 GB	4.2 GB (nonshadowed) 1.9 GB (shadowed)	Over 5 TB	Over 5 TB	Over 7 TB
VAXcluster I/O Servers (HSCs)	N/A	N/A	N/A	N/A	N/A	N/A	Up to 124	Up to 124	Up to 150
I/O Bus Capacity									
Max. I/O Throughput	1.5 MB/s	20 MB/s	1.5 MB/s (SCSI)	8 MB/s (2 DSSI) 3.3 MB/s (Q-bus)	16 MB/s (4 DSSI) 3.3 MB/s (Q-bus)	4.0 MB/s	80 MB/s	80 MB/s	Model 210: 80 MB/s; Models 410, 420: 160 MB/s; Models 430, 440: 320 MB/s
Bus Type	Asynchronous SCSI	Q-bus adapter, M-bus, synchronous SCSI	Asynchronous SCSI	1 Q-bus 2 DSSI bus‡	1 Q-bus 4 DSSI bus‡	2 DSSI (dual access)	1 XMI, up to 5 VAXBI	1 XMI, up to 5 VAXBI	Model 210: 1 XMI, up to 4 VAXBI Models 410, 420: 2 XMI, up to 8 VAXBI Models 430, 440: 4 XMI, up to 14 VAXBI
Communications									
LAN Support	Standard	Standard	Standard	Standard	Standard	Standard (redundant connection)	Standard	Standard	Standard
Ethernet Adapters	Standard	Standard	Standard	Up to 2	Up to 3	Up to 4	Up to 6	Up to 6	Model 210: Up to 4; Models 410, 420: Up to 8; Models 430, 440: Up to 16
High Availability									
CI VAXcluster System Support	N/A	N/A	N/A	N/A	N/A	N/A	Optional	Optional	Standard
Ethernet VAXcluster System Support	Standard	Standard	Optional	Optional	Optional	Optional	Optional	Optional	Standard
Dual-host Support	N/A	N/A	N/A	Optional	Optional	N/A	N/A	N/A	N/A
System Software									
	VMS ULTRIX (except Model 76 and SPX systems) VAXELN (except Model 76)	VMS ULTRIX	VMS ULTRIX VAXELN	VMS ULTRIX VAXELN	VMS VAXELN	VMS	VMS ULTRIX VAXELN	VMS ULTRIX	VMS ULTRIX
Processor Features									
Floating-point Accelerator (F,D,G,H†)	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Cache Size	1 KB on chip, 32 KB on board Model 76: 2KB on chip, 128 KB on board	1 KB on chip/processor, 64 KB on board/processor	1 KB on chip	1 KB on chip	2 KB on chip, 128 KB on board	1 KB on chip, 32 KB on board	Model 310: 1 KB on chip, 256 KB on board; Model 410: 2 KB on chip, 128 KB on board	2 KB on chip/processor, 512 KB on board/processor	128 KB per processor, 8 KB instruction cache per processor
Cache Cycle Time	Models 30, 40: 90 ns on chip, 180 ns on board; Models 38, 48: 60 ns on chip, 120 ns on board; Model 76: 28 ns on chip, 56 ns on board	90 ns on chip, 180 ns on board	60 ns on chip	100 ns on chip	28 ns on chip, 56 ns on board	60 ns on chip, 120 ns on board	Model 310: 60 ns on chip, 120 ns on board; Model 410: 28 ns on chip, 56 ns on board	16 ns on chip, 48 ns on board	16 ns

*VAX-11/780 = 1

†Emulated by software in VAXstation, MicroVAX, VAX 4000, VAXft 3000,
and VAX 6000 systems

‡Up to two hosts per DSSI (Digital Storage
Systems Interconnect)
N/A = not applicable

Performance is highly dependent on configuration, application, and operating environment. Individual workloads should be carefully
evaluated before making performance estimates for specific applications. In this chart no warranty of system performance
is expressed or implied.

Details on configurations are found in the *VAX Systems and DEC Systems Systems and Options Catalog*.

Digital History

- 1957 Digital Equipment Corporation begins operations.
- 1960 PDP-1
- 1970 PDP-11
- 1977 VAX-11/780
VMS Operating System
DECnet
Digital revenue exceeds 1 billion dollars
- 1982 ALL-IN-1
- 1983 MicroVAX Systems
Ethernet
VAXcluster technology
ULTRIX
VAXELN
- 1984 VAXstation Workstations
IBM Interconnect Products
VAX 8000 Systems
- 1985 DECnet-DOS for IBM PCs
- 1986 VMS Services for MS-DOS
DECconnect
- 1987 DECnet/OSI Program Announcement
- 1988 Network Application Support (NAS)
OSF
VAX 6000 Systems
DECtp
Digital revenue exceeds 10 billion dollars
- 1989 DECwindows
DECstation and DECsystem Products
Vector Processing
VAX 9000 Systems
- 1990 VAXft 3000 Systems
VAX 4000 Systems
Integration Software for OS/2 and Macintosh
Digital Servers
COHESION CASE
FDDI LAN

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