What's new

Since the last publication of this document, there have been significant changes in the organization and product lines of DEC. The following sections have been updated to reflect these changes:

- Financials: DEC is still on the decline. Check out the new charts.

- Sales Strategies: DEC has been more aggressive than ever before, introducing some new sales strategies in selling its new "Alpha Ready" VAX systems and its soon to be obsolete DECsystems.

- Strategic goals/major claims: With Palmer as the new CEO, DEC's strategic goals and major claims have become more defined and frank as DEC struggles to become profitable.

- Operating Systems: DEC is trying to aggressively position OSF/1 against HP-UX. Microsoft NT has yet to be delivered on any DEC systems.

- Competitive Performance Positioning: Even with DEC's new, higher performance "Alpha Ready" VAXs and new Alpha AXP systems, HP still beats DEC in commercial performance with the HP 3000 and HP 9000.

- Mainframe Systems: DEC introduced the "Alpha Ready" VAX 10000 and the DEC 10000 AXP. (AXP is the label for "Alpha". Wherever you see AXP in this document, it is referring to an Alpha system.)

- Data Center Systems: DEC introduced the "Alpha Ready" VAX 7000 and the DEC 7000 AXP.

- Deskside Departmental Systems: DEC introduced new VAX 4000 models and the DEC 4000 AXP.

- HP versus DEC strengths and weaknesses: A new playing field has developed with the workstation and server announcements from HP and DEC. DEC's announcements include new leasing, discounting, and support strategies. HP has introduced user-based product pricing, a new HP 9000 family rollout, and server packaging.

- New Quote Section: Don't overlook the Quote section at the end of this document. It has recent quotes backing up a lot of the points made in this paper regarding DEC's RISC, OSF/1, Windows NT, ACE, UNIX products and strategies, and more

- New Cost of Ownership comparisons in the Appendix.

Corporate overview

DEC is number 30 on the Fortune 500 and currently has around 108,500 employees worldwide.

- DEC offers a full range of desktop, client/server, production, and mainframe systems for multivendor computing environments. DEC places a strong focus on software and services.

- Applications include transaction processing, data management, telecommunications, finance, real-time data acquisition and control, vector processing, education, publishing, manufacturing, software development, and health care.

Key executives

Robert B. Palmer	President and Director, CEO
John F. Smith	Senior Vice President, Operations
To be determined (David Stone quit)	Vice President, Software Engineering
William R. Demmer	Vice President, Alpha & VAX systems
William D. Strecker	Vice President, Chief Technology Officer
Rose Ann Giordano	Vice President, Executive Consulting
Russel A. Gullotti	Vice President, U.S. Sales Service, Customer Support Group
John L. Alexanderson	Vice President, U.S. and Sales Support Training

There have been some big changes since our last update earlier this year. Robert Palmer is the new CEO replacing Ken Olsen. David L. Stone, DEC's VP of software engineering, left DEC shortly after the November 10, 1992 Alpha system announcements leaving some doubt as to what level DEC wants to be a software player.

DEC is said to be structuring product-specific business units along the lines of components, storage products, PCs, and multivendor systems integration.
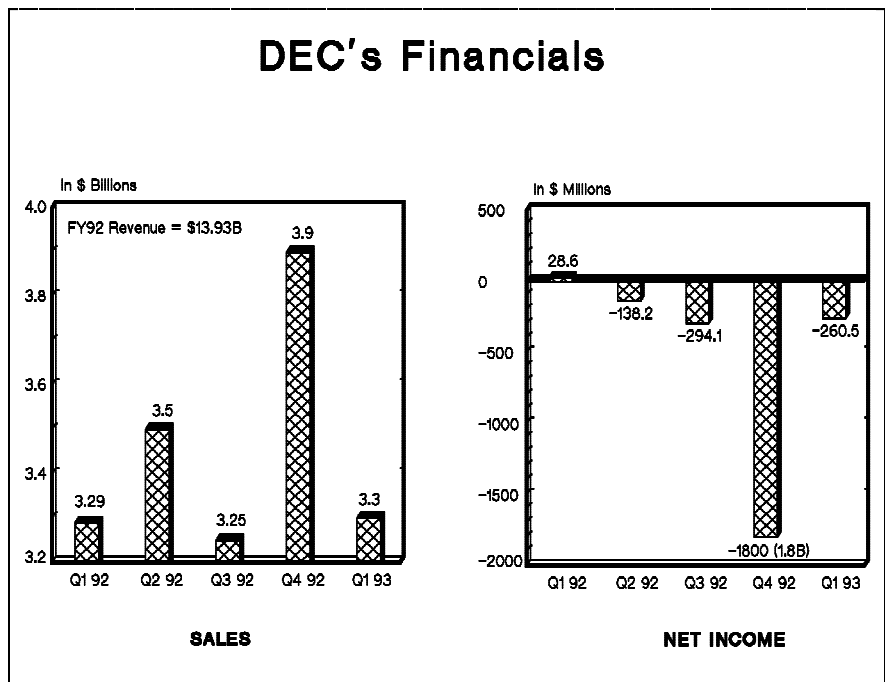
Industry-specific customer business units in the offing include discrete manufacturing, process engineering, natural resources (oil and gas), financial and professional services, and customer retail and communications groups.

DEC has attempted to create industry-related business groups in the past, but they included a mishmash of products driven by engineering rather than by customer concerns. The new structure will allow the business units to go outside DEC for products or distribution channels if that seems feasible or to use the services of horizontal groups within the company.

DEC is expected to lose another 20,000 employees in the coming year as Palmer makes substantial hardware development cuts as well as 8 to 10 percent cuts of DEC field service representatives nationwide.

Financials

DEC's 1992 business revenues are illustrated in the following diagram:

DEC's Financials

In $ Billions — SALES
- FY92 Revenue = $13.93B
- Q1 92: 3.29
- Q2 92: 3.5
- Q3 92: 3.25
- Q4 92: 3.9
- Q1 93: 3.3

In $ Millions — NET INCOME
- Q1 92: 28.6
- Q2 92: -138.2
- Q3 92: -294.1
- Q4 92: -1800 (1.8B)
- Q1 93: -260.5

DEC's fiscal '92 total revenues were essentially flat from the prior year, while total operating expenses increased by $1.2 billion. Although the company's service revenues grew, product sales declined as a result of the declining value of VAX systems and a shift in customer demand from high-end, higher-priced products to low-end, lower-priced products. DEC claims worldwide economic weakness and price competition also contributed to its flat year-to-year revenues.

First quarter '93 losses are $260.5 million with essentially flat operating revenues. A $300 million cut in research and development is also expected for '93.

DEC continues to derive a lesser proportion of revenues and profits from hardware sales and a greater proportion from sources such as software, networking, and systems integration. Its also experiencing a shift in the mix of product revenues from larger systems to lower-priced, lower-margin products.

DEC has several programs in place to promote revenue growth, with a continued focus on its growing systems integration and software product businesses. DEC improved the price/performance of its VAX products and announced its new RISC-based architecture, Alpha. During the year, DEC has leaked information to press and consultants regarding future Alpha systems and introduced a line of "Alpha Ready" VAX systems designed to be board-upgradable to Alpha. It also introduced a number of Alpha systems ranging from workstations to mainframe-class servers. DEC views Alpha as a key element for its future revenue prospects.

Sales strategies

Major marketing programs and sales tactics

- DEC's strategy of promoting server solutions helps DEC sell both software and hardware at attractive solution prices. The drawbacks to customers are that these servers (named "Advantage Servers") are based on the old VAX architecture and that the middleware software packages bundled in the servers are somewhat based on proprietary products and protocols.

- DEC's strategy of maintaining its VAX installed base is best reflected in its "Alpha Ready" systems marketing program, in which some VAX high-end systems are CPU board-upgradable to Alpha. But customers must port software to Alpha, which will require code re-writes and recompilation. VAX 4000 systems, positioned as "Alpha Ready", are actually box swaps with Alpha. These Alpha Ready systems will be discussed later in this paper.
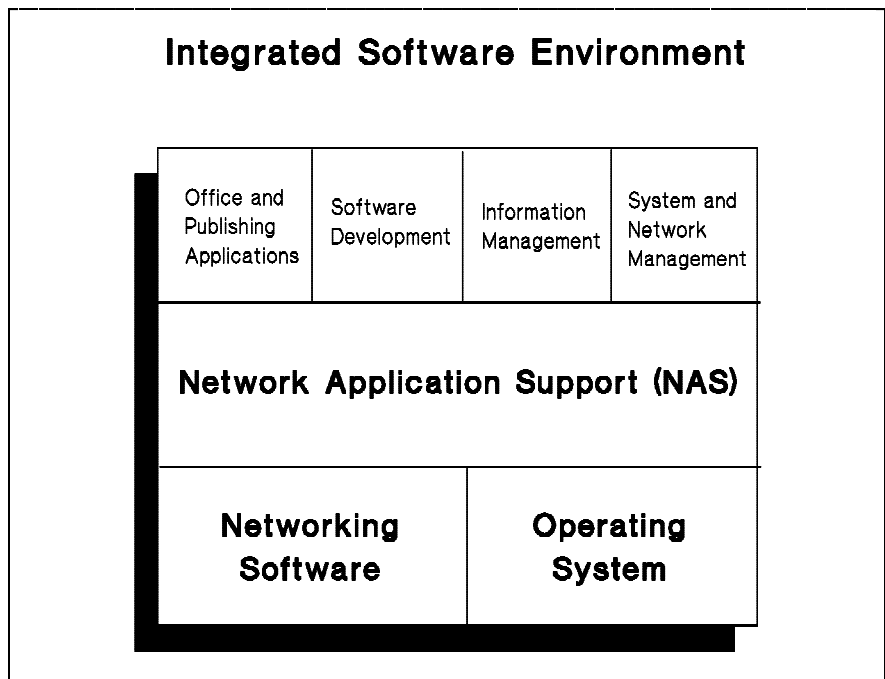
- DEC's strategy to revamp the old VAX technology is best seen with DEC's promotion of the next-generation Alpha systems. However, fully tuned, fully configurable commercial VMS environments won't be available on Alpha until 1H'94. The OSF/1 Alpha environment for commercial production systems won't be completely available until '94 or '95. By DEC's own accounts, the UNIX porting schedule to Alpha is slipping. In the meantime, DEC is aggressively selling "Alpha Ready" VAX systems for mission-critical production applications requiring fully configured and tuned high-end systems.

- DEC is streamlining its sales channels to only 6: VARs, systems integrators, developers, technical OEMs, distributors, and master VARs. DEC will be relying on third parties to provide solutions in smaller accounts while focusing its direct sales force on major accounts. DEC has also provided sales force commissions for added incentive. DEC is also experimenting with specialized sales forces in telemarketing and software sales.

- DEC is providing aggressive discounts on its "Alpha Ready" systems, up to 30 percent, and discounts as high as 65 percent on its DECsystems. In some cases, DEC is giving away free consultation to help customers move from VAX and DECsystem platforms when Alpha becomes available. This is often seen as a great value to customers, since DEC bills $185 per hour for its consulting services. When DEC isn't giving away these services, the customer can usually negotiate thousands of dollars worth of consulting at a large discount because of the high profit margin of these services.

- Leasing options with Alpha Ready systems are being pushed by DEC to alleviate customer concern about investment protection. In some cases, buyers can deduct trade-in values from the purchase price and retain the older equipment. In many cases, DEC can even set up brokers to then buy this equipment, both as an added service and to reduce site capacity for future sales efforts.

Strategic goals/major claims

- To attain recognition as a leader in open systems and multivendor connectivity.

- To improve corporate data center/mainframe penetration.

- To capture more of the growing OLTP, DBMS, and client/server markets.

- To expand its position in corporate networking environments.

- To develop leadership in enterprise system integration - hardware, software, consulting, installation, support, and management.

- To expand software's role as a profit entity, not constrained to DEC hardware.

- To lead the industry in price/performance.

- To gain leadership in the scientific/technical and engineering marketplace.
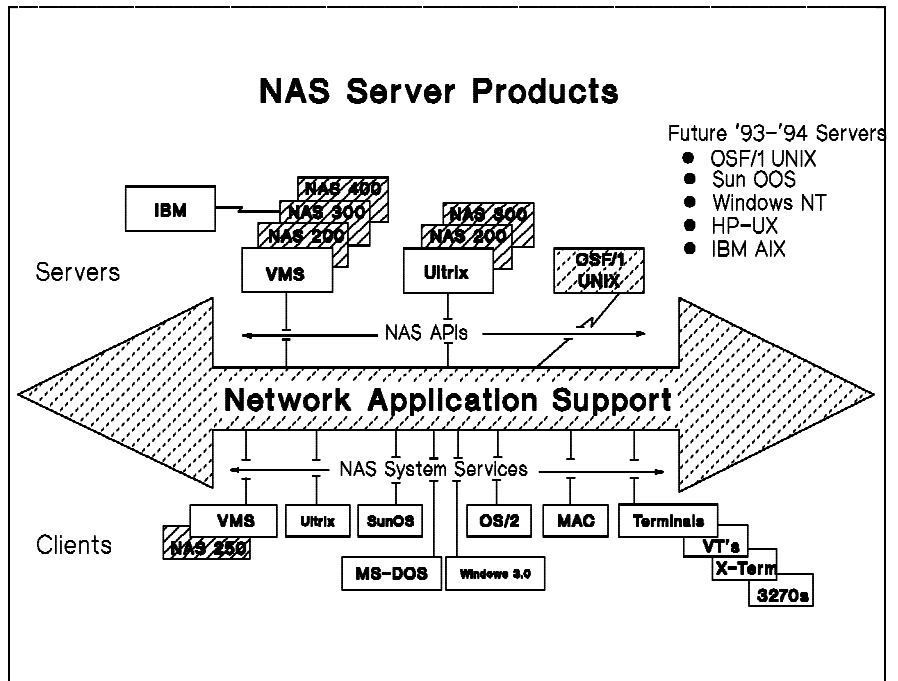
DEC software strategies

Network Application Support (NAS)

NAS is a set of integrated, somewhat standards-based software products from DEC that implements standard interfaces in products that reside above the base platform (the hardware, operating system, and network) and insulate applications from platform differences. NAS makes applications more interoperable, portable, and distributable across a wide range of disparate computer systems from different vendors. The picture below illustrates how DEC sees NAS from a system perspective.

Integrated Software Environment

Office and Publishing Applications	Software Development	Information Management	System and Network Management

Network Application Support (NAS)

Networking Software	Operating System

VMS, Ultrix, DOS, OS/2, Macintosh systems, and terminal users can be integrated into this environment. NAS is based on a variety of standards: X11, OSF/Motif, GKS, PHIGS, NCS, X.400, X.12, EDIFACT, ODA/ODIF, SGML, ASN.1, SQL, and NFS. DEC has also added proprietary services: DECwindows, DECforms, MAILbus, Compound Document Architecture (CDA), DECimage, CDD/Plus (repository), ALL-IN-1, DECprint, and LanWORKS. NAS is similar to HP's NewWave Computing Architecture.

DEC provides NAS server packages (software bundles) for VAX/VMS & MIPS/Ultrix products, packaging several NAS products on a single tape, for a single reduced price. The packages include NAS 200, NAS 300, NAS 400, and NAS 250. DEC's "Advantage Servers" are VAX systems which have the NAS 300 and NAS 400 packages preinstalled.

NAS Server Products

Future '93-'94 Servers
- OSF/1 UNIX
- Sun OOS
- Windows NT
- HP-UX
- IBM AIX

Servers

IBM

NAS 400
NAS 300
NAS 200

VMS

NAS 400
NAS 300

Ultrix

OSF/1 UNIX

← NAS APIs →

Network Application Support

← NAS System Services →

Clients

NAS 250

VMS   Ultrix   SunOS   OS/2   MAC   Terminals

MS-DOS   Windows 3.0

VT's
X-Term
3270s

NAS packaging is part of DEC's campaign to increase software revenue. Even though these products are positioned as "open", they still contain several proprietary software components. DEC intends to port NAS on non-DEC platforms, including HP-UX and MPE/iX, by the 1994/95 timeframe; however, at this time there is no evidence that DEC will be able to stick to this plan. DEC is also expected to have a tough time trying to persuade either system suppliers or users of competitive systems to rely on DEC for such a vital piece of their environments. With system software, users of non-DEC systems should be concerned that DEC may be inhibiting NAS capabilities on competing platforms to better position its own VAX and Ultrix systems.

- The NAS 200 product for both VMS and Ultrix servers provides basic networking, file, and data sharing for applications running on PCs, Apple Macintosh systems, or workstations, and implements standards, such as OSI, TCP/IP, SQL, NFS, and OSF DCE.

- The NAS 300 product for both VMS and Ultrix servers provides support for client/server applications, features capabilities for compound documents, messaging, distributed user interfaces, and object-oriented application linking. It supports standards such as Motif, X.400, and Object Management Group (OMG) specifications.

- The NAS 400 product for VMS provides extensions for high availability and reliability.

- Recently DEC introduced NAS 250 for Sun OS SPARCstation which allows NAS-compliant applications residing on Sun machines to be accessed by computers on an NAS-based network, or by computers running DEC's NAS client connectivity software.

- These packages show how DEC will put NAS on non-DEC servers. The NAS "bundle" will only include items not already offered by the platform vendor. For example, it would not include X.400 if the hardware vendor already offered it.

- The contents for each of these packages are listed in the DEC appendix under NAS 200 Contents, NAS 300 Contents, NAS 400 Contents, and NAS 250 Runtime Client Package Contents.

- For more information on NAS packages and how to sell against them, please refer to the "Handling objections" section of this profile.

Operating systems

DEC has now a multitude of computer system platforms, and supporting operating systems over these platforms is confusing. The following picture shows the current DEC plans for operating support over these various platforms:

DEC's Operating System Support

Product Line	VMS	Ultrix	OSF/1	NT
DECstations: 2100, 3100, 3100S, and 5000 Models 120, 125, and 200	no	yes	yes	future
DECstation (5000 Models 20, 25, 133 and 240)	no	yes	yes	future
DECsystem (5400, 5500, 5800, 5900, and 5000 Models 25 and 240)	no	yes	yes	future
VAX (MicroVAX, VAX 4000, VAX 6000, VAX 7000, VAX 10000)	yes	yes*	no	no
VAXstation	yes	yes*	no	no
Alpha (DEC 4000, DEC 7000, DEC 10000)	yes	no	yes	future

* Not supported: VAXstation 3100 Model 76, VAXstation 4xxx, VAX 4000 Models 300, 400, 500, 600, VAX 6000 Models 610-660, VAX 7000, and VAX 10000.

- OpenVMS Operating System: The OpenVMS operating system is DEC's premier operating system for the VAX commercial environment. It runs on all VAX systems from VAXstation workstations to VAX 9000 mainframes. Its strengths include VAXclusters, networking, and symmetric multiprocessing. DEC is trying to position the OpenVMS operating system as open, by changing its name to "OpenVMS" with its support of POSIX 1003.1, 1003.2, and 1003.4, OpenVMS, "open" NAS middleware solutions, and its intent to license it to other computer vendors.

- Ultrix Operating System: Ultrix is a commercialized implementation of 4.2/4.3 Berkeley Software Distribution (BSD) UNIX® and runs on both DEC's DECsystem family of RISC systems and VAX computers. Ultrix has traditionally been sold as a weak UNIX alternative to the proprietary OpenVMS operating system on VAX platforms. Ultrix supports a limited set of NAS services compared to OpenVMS. Compared to HP-UX, Ultrix is especially weak in the areas of MS-DOS® integration, multivendor communications, mainframe access, ease of use, and fault tolerance. (See Sales Strategy section where Commercial UNIX is listed and discussed as an HP Strength.) In

addition, DEC has stated that OSF/1 is its strategic UNIX operating system. Ultrix will not be ported to the Alpha platforms.

- Ultrix Workstation Software (UWS): UWS is an integrated system based upon the Ultrix Operating System V4.2 and a windowing environment based on the X Version 11 window standard referred to as DECwindows. DECwindows support OSF/Motif. Eventually, DECwindows will be phased out and OSF/Motif will be used as the sole GUI. UWS has not been positioned as a strategic operating system by DEC and will not be ported to the new Alpha DEC 3000 and DEC 4000 AXP workstations.

- Windows NT: NT is an operating system option that DEC expects will be available sometime in the first half of '93. It will run on the DECsystem/DECstation and Alpha platforms. The Windows NT environment is weak in systems management, network infrastructure, and hardware availability, and only slightly above average in MS-DOS, OS/2 and Macintosh connectivity. It is not expected to be competitive as an enterprise server until 2H'94.

ADVANTAGE NETWORKS

ADVANTAGE NETWORKS is DEC's networking strategy for integrating standards for local area networks, public packet-switching networks, UNIX and IBM communication, and long-distance data transmission over telephone networks. DEC's strategy for ADVANTAGE NETWORKS products is the integration of OSI, TCP/IP, and DECnet networks into a single network utility in such a way that no matter which protocol is actually used, it remains transparent to applications and users. The major component of ADVANTAGE NETWORKS is DECnet Phase V incorporating OSI. This component has only recently been shipping and will not be available on Alpha until mid/late '93.

Below is a table of supported network protocols under ADVANTAGE NETWORKS.

Network Protocol	Supported by HP?	Notes
DECnet	No	DEC's Proprietary network protocol
TCP/IP	Yes	Not available on Alpha until June '93?
Ethernet	Yes	
Token Ring	Yes	Not available on Alpha.
FDDI	Yes	
X.25	Yes	Not available on Alpha until June '93?
X.400	Yes	Not available on Alpha until Dec. '93?
X.500	Yes	Not available on Alpha until Dec. '93?
IBM SNA	Yes	Not available on Alpha until June '93?
DECmcc	No	HP uses OpenView.
NFS	Yes	Not available on Alpha.
DCE	Yes	Not available on Alpha until June '94?

System and network management: Enterprise Management Architecture (EMA)

Enterprise Management Architecture is DEC's architectural foundation for open, extensible, standards-based management of a multivendor, enterprise-wide computing environment. EMA defines management services with the objective of being implemented across multivendor platforms including UNIX, OpenVMS, MS-DOS, OS/2, and Apple Macintosh. EMA performs configuration, fault detection, performance monitoring, and services for security, accounting, and administration. DEC focuses on EMA's object orientation as a differentiator. HP's OpenView beat out DEC's EMA as the standard used in OSF's Distributed Management Environment model to be implemented in OSF/1. HP OpenView is also being used today across non-HP platforms and is licensed by IBM and implemented in NetView. For a discussion on how HP's OpenView and DEC's EMA compare, see Selling HP Strengths: Network Management.

Application development environment: COHESION

DEC has given the name COHESION to its software development strategy and the products and services from DEC and partner vendors.

COHESION development tools include: language editors for C, Ada, FORTRAN, Pascal, COBOL, PL/I, BASIC, BLISS, and DIBOL on OpenVMS; and for Ada, C, C++, and FORTRAN on Ultrix; graphical source-code analyzers and debuggers, and regression testing and performance analyzers.

Keep in mind the following points when in a sales situation where COHESION is part of the DEC solution being pitched:

- DEC is strongly pushing its consulting services to get customers up and running using COHESION. In addition, DEC is targeting solution areas in Aerospace and Defense, IBM cross development, and transaction processing environments for COHESION. Stress our own consulting services in these areas.

- DEC tries to differentiate COHESION on its use of DECwindows/Motif for presentation integration. HP provides this functionality via X-Windows and OSF/Motif on HP 3000 and HP 9000 systems. In addition, the HP 9000 supports the award-winning HP VUE.

- DEC also tries to differentiate COHESION on its object-oriented control integration approach though NAS ACA Services. ACA Services uses object-oriented technology to integrate functions from one tool to the next, permitting users to move from one activity to another in a seamless, natural manner. HP has taken the lead with object-oriented technologies. The concepts embodied in the Object Management Group's Object Request Broker (ORB) standard are derived from the Distributed Object Management Facility specifications that were jointly developed by HP and SunSoft. This technology is also based upon OSF's Remote Procedure Call facility, NCS -- another HP technology. In fact, DEC's ACA Services are based on DEC's proprietary RPC.

- Data integration in the COHESION environment is made possible by CDD/Repository. CDD/Repository enables developers and applications to create, store, and access common definitions for data, objects, and methods. HP provides a partial repository with SoftBench and is developing a full repository implementation with Informix.

PC integration: PATHWORKS

PATHWORKS is DEC's family of PC networking software for integrating DOS, Macintosh, OS/2 PCs, Microsoft®, Apple, Novell, and IBM LANs into a unified client/server environment. This software enables PC users to access and use remote corporate computing resources and to share data and resources with users of OpenVMS and UNIX systems.

- Microsoft integration is not complete and will not be shipping until next year.

- The strongest PATHWORKS support is for DECnet networks. Although TCP/IP support is one of the PATHWORKS marketing messages, TCP/IP support is not very well integrated - especially between PC clients and OpenVMS servers where special add-on software from DEC and third parties is required. This proves costly in price, performance overhead, and support.

Office and publishing applications

- ALL-IN-1 is DEC's proprietary office system. The client/server version, ALL-IN-1 Phase II, has recently begun rolling out, but is not truly client/server. The PCs running DECwindows are really acting as X-terminals to the VAX server. Except for the display, all processing is performed on the server. DEC's claims that ALL-IN-1 software supports 57 percent of all proprietary office system users in the U.S. It should be noted that ALL-IN-1 is strictly proprietary software to DEC and that it is not designed to be open.

- DEC's "Team Solutions" is a set of software integrating Microsoft Windows users into the NAS environment. Microsoft Windows end users are allowed access to X.400 electronic mail, distributed conferencing, and local and remote DOS files. Documents and spreadsheets may also be combined with text, data, graphics, and images from multiple sources in revisable compound documents. This capability is provided by HP via Distributed NewWave.

- DEC has limited support for office applications in the Ultrix environment, and must rely upon a third-party software product from Uniplex, called Uniplex Business Software for Ultrix, to provide word processing, spreadsheet, and SQL-database tools to UNIX workstations. In addition, this software is required to provide the ability to communicate with OpenVMS, ALL-IN-1, and X.400-compliant MAILbus users via the DECnet-Ultrix Mail Connection. HP does not rely upon third-party software for the same type of connectivity between its OpenMail and HP DeskManager office offerings on the HP 9000 and HP 3000, respectively.

System positioning

Low-End Systems Performance Positioning

HP 9000 Series 800	F10	F20 H20	F30,G30 H30,I30	G40 I40	G50 H50 I50
DECsystem (RISC/Ultrix)	5500	5900			
DEC VAX (VMS)	4300	6410 4400 4100 4500	6510 4610AXP	6610 *4620AXP(2)	6620 7610AXP

Note: Transaction performance based on published benchmarks and OLTP estimates
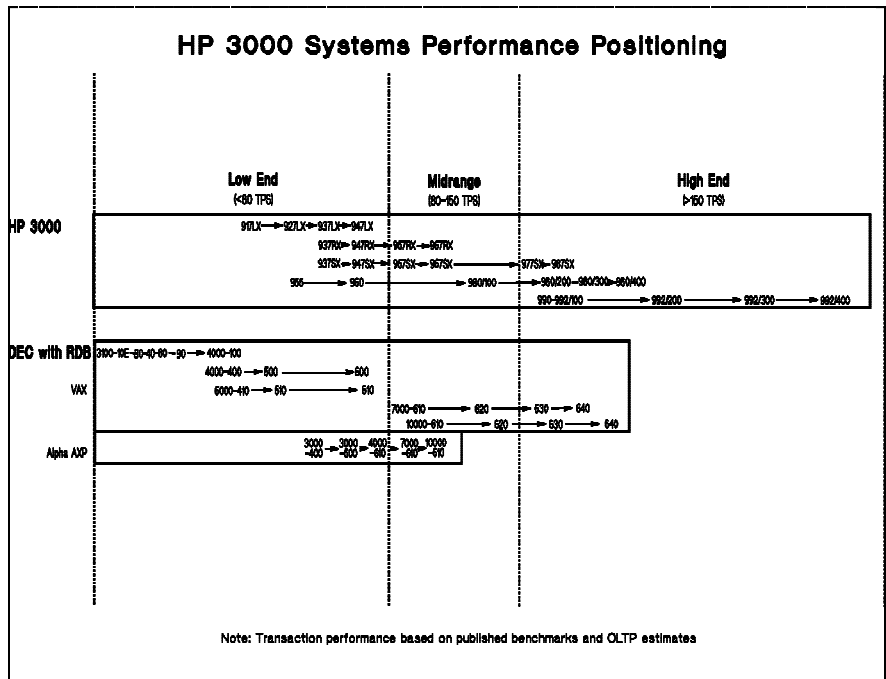
(#) = number of processors
* = not currently shipping

High-End Systems Performance Positioning

HP 9000 Series 800	890(1)	890(2)	890(3)	890(4)
DEC VAX (VMS)	6640(4) *7620AXP(2) *10620AXP(2)	6660(6) *7630AXP(3) *10630AXP(3)	*7640AXP(4) *10640AXP(4)	*7650AXP(5) *10650AXP(5) *7660AXP(6)

Note: Transaction performance based on published benchmarks and OLTP estimates

(#) = number of processors
*=not currently shipping

HP 3000 Systems Performance Positioning

	Low End (<80 TPS)	Midrange (80-150 TPS)	High End (>150 TPS)

Note: Transaction performance based on published benchmarks and OLTP estimates

- DEC positions DECsystems as low price/high performance, yet the performance range of the DECsystems is extremely narrow. These MIPS-based systems will be phased quickly out now that DEC is shipping Alpha AXP systems. The DEC field support for DECsystems has been rated by customers and consultants alike as poor, with major focus being on the proprietary VAX platforms where the profit margins have been traditionally higher.

- DEC positions its VAX/VMS systems as having higher commercial functionality and a wider solution set than compared to DECsystems. These systems are now being positioned as "Alpha Ready" and the system of choice when mission-critical applications and development is key. Alpha development and production environments are a long way from being ready.

- One of the VAX systems strengths in the past has been compatibility up and down the VAX product line, for current models and former ones as well. However, VAX OpenVMS is not binary compatible with Alpha OpenVMS, and Ultrix, which runs on some VAX platforms, is not an operating system option for Alpha.

- DEC's RISC microprocessor, the "Alpha" 21064-AA, runs at various speeds up to 200 MHz. Alpha features 64-bit processing with flat 64-bit virtual addressing and 64-bit registers, 5-ns clock speed, scalability from workstation to mainframe, applicability from uniprocessor to multiprocessor, and support for OpenVMS, OSF/1, and Windows NT. OLTP performance for these systems has yet to be proven where compiler performance is key and may take DEC 1 - 2 years to optimally tune.

- According to DEC, Alpha will receive equal support for both the OpenVMS and OSF/1 operating systems. However, according to its announcements on November 10, 1992, OSF/1 porting is very limited and slower than OpenVMS porting. DEC also announced its plans to support Windows NT on future Alpha platforms available in 1993.

- DEC is having a hard time convincing customers to buy VAX and DECsystems today because many prospective buyers are wary of the software migration effort involved which may be on the order of moving software to another vendor platform.

The mainframe systems

The "Alpha Ready" VAX 10000

The VAX 10000 is DEC's new mainframe-class system and replaces the VAX 9000 line. These systems incorporate DEC's NVAX CPU chip and can support up to 4 CPUs, with expected future growth up to 6 CPUs. Uniprocessor OLTP speed has been tested at 123 tps (TPC-A) and 4-way OLTP speed is estimated at around 400 tps. These systems are called "Alpha Ready" in that they are CPU board - upgradable to Alpha when Alpha board upgrades become available by mid '93. For system specs, see the Appendix.

The DEC 10000 AXP Mainframe Alternative Server

The DEC 10000 AXP server is DEC's RISC Alpha mainframe class server. This server comes in Models 610 - 660 which are 1- to 6-way processor configurations, respectively with a CPU chip running at a 200 MHz clock speed. These systems feature the same chasiss as the VAX 10000 and the VAX 10000 can be upgraded to a DEC 10000 with CPU-board upgrades of $30,0000 per processor. High-availability features include redundant power supplies and an uninterruptible power system to keep the system running for up to an hour in case of power failure. These systems provide 654.6 SPECthruput89 performance in 4-processor configurations. Performance numbers for other processor configurations were not released. Single-processor system prices start at $316,000 for 256 MB memory, 1 GB disk, CD-

ROM, and tape. SMP is not supported at the present time, so only uniprocessor models are available at this writing. For system specs, see Appendix. No TPC-A results were published at introduction.

The data center systems

The VAX 6000 and VAX 7000 families

DEC positions its VAX 6000 family as its "data center systems" and the family includes the older 410 and 510 models and a new VAX 7000 family which ranges from a uniprocessor model (the 610) up to the six-way symmetrical multiprocessor Model 660. For system specs, see the Appendix.

Like the VAX 10000, the VAX 7000 models are considered "Alpha Ready" and are CPU board - upgradable to Alpha. The OLTP performance and system maximums for I/O throughput and memory are exactly the same for the VAX 7000 as they are for the VAX 10000. The major difference between the VAX 7000 and the VAX 10000 is that the standard models come with less middleware bundled (NAS 300 vs. NAS 400) and don't have the mainframe-class support as a standard feature. Like the VAX 10000, the VAX 7000 has been introduced with up to 4-way CPU support with 6-way support planned for the near future. The VAX 7000s have a 20 percent performance increase over the VAX 6000 models they replace and are aggressively priced starting at $181,772 standard price. For system specs, see the Appendix.

The DEC 7000 Models 610 - 660 AXP Servers

These data center systems are available in 1- to 6-processor configurations and the VAX 7000 can be upgraded to a DEC 7000 AXP through CPU board-swaps at $30,0000 per processor. The Alpha CPU in these systems run at 182 MHz. The systems have a memory capacity of 2 GB to be expanded to 14 GB in a future OpenVMS operating system release. The systems can provide 604.4 SPECthruput89 performance in 4-processor configurations. Performance numbers for the other processor configurations haven't been released yet. Single-processor system prices start at $168,000 for 128 MB memory, 1 GB disk, CD-ROM, and tape. SMP is not supported on Alpha at the present time, so only the uniprocessor configuration is available at this writing. For system specs, see the Appendix.

The deskside/desktop departmental systems and servers

The MicroVAX 3100

This family is DEC's low-end servers for technical and commercial environments with support for local and wide area environments serving MS-DOS, OS/2, and Macintosh clients and different desktop workstations. The family includes the entry-level Model 10e and the newer Model 30, Model 40, and Model 80. For system specs, see the Appendix.

The VAX 4000 family

DEC states the VAX 4000s are high-availability servers, supporting Ethernet or Token Ring, with client support for OpenVMS, UNIX, MS-DOS, OS2, X11, and Apple Macintosh desktops. DEC tries to place these machines in a variety of technical and commercial environments including the office, warehouse, factory, and laboratory. The VAX 4000 family ranges from the small pedestal Model 200 with a performance of 5 VUPs (5 times that of a VAX-11/780) to the recently introduced Model 500 performing at 24 VUPs (24 times faster than the VAX-11/780). For system specs, see the Appendix.

The DEC 3000 AXP Servers

In this family, DEC offers two systems. The Model 400S AXP desktop server, a 133-MHz system performing up to 109 SPECmark89, is designed for small-to-medium-size workgroups. It supports a 90-MB/sec bus with three expansion slots. Server prices begin at $18,995.

The Model 500S AXP is a deskside system that runs at 150-MHz, achieves 121.5 SPECmark89 performance and is designed for multi-purpose workgroup computing. It supports up to 6 expansion slots and a 100 MB/sec bus. Prices for this system start at $41,195.

These servers are initially being sold with the OpenVMS operating system, but OSF/1 support is planned for 1H'93. I/O support includes SCSI-2, TURBOchannel, FDDI, Ethernet, and ISDN. See the appendix for more system specifications on these servers.

The DEC 4000 AXP Departmental Servers

These departmental systems offer the high-speed Futurebus+ with a throughput of 160 MB/sec. The Model 620 dual 160 MHz processor configuration (Model 620) can provide up to 247 SPECthruput89 performance.

The DEC 4000 Model 610 is a uniprocessor configuration which is priced starting at $77,000 for 64 MB memory, 1 GB disk, CD-ROM, and tape. Only the uniprocessor configuration is available at this time with SMP support expected later this year. For system specs, see the Appendix.

The DECsystem family

The DECsystem product line consists of the DECsystem 5000 model 25, 133, and 240; and the DECsystem 5900. These DECsystems incorporate the MIPS R3000 RISC chip, with upgrades to the R4000 chip planned for 1H'93. TURBOchannel is the supported bus architecture and Ultrix is the supported operating system. These systems are regarded as short-term platforms, since the Alpha AXP servers are expected to replace these MIPS-based systems within the next 1.5 years. See the appendix for system specification details on the DECsystem family.

The workstation systems

Currently DEC offers two different types of workstations. The older MIPS-based DECstation family and the brand new Alpha-based DEC 3000 AXP line of workstations which currently consists of two products which can be sold as either workstations or servers.

The DECstation family

The DECstation 5000 consists of the models 20, 25, 125, 133, and 240. These systems utilize the MIPS R3000A chip which will be board upgradable to the R4000 chip for DECstations 1H'93. System performance ranges from 16 to 32 SPECmark89 and prices range from $3,995 to $11,995. Graphics subsystems are supported through the TURBOchannel I/O bus, providing 2D and 3D graphics with up to 24-plane color. Ultrix is the operating system for these workstations with planned OSF/1 operating system support scheduled for 2H'93. Eventually, these systems will be replaced by Alpha AXP workstations. For system specifications for DECstations, see the Appendix.

DEC is offering upgrades from DECstations to the DEC AXP workstations (see below) at $99/SPECmark89. DEC is also offering competitive replacement programs for HP, IBM, and Sun workstations. Details about the program are not known yet. They will be announced on the Competitive Hotline when they become available.

The DEC 3000 AXP workstations

The Model 400 AXP is a desktop workstation that features a 133-MHz CPU and performance of up to 109 SPECmark89. It supports 2D and 3D graphic options. System prices begin at $14,995.

When DEC announced the desktop Model 400 AXP in November 1992, it assumed performance leadership for workstations. However, a few hours later HP introduced the new PA-7100 based workstations and beat the Alpha AXP workstations in performance by 38 SPECmark89 for the desktop and 25 SPECmark89 for the deskside.

The Model 500 AXP offers 121.5 SPECmark89, at a clock rate of 150 MHz. The deskside model is designed for 3D graphic applications that can run animation and visualizing applications. System prices begin at $38,995. The Model 500 AXP is not priced as aggressively as the Model 400 AXP.

I/O support for these systems includes TURBOchannel, SCSI-2, Ethernet, FDDI, and ISDN. I/O expandability ranges from 3 slots (Model 400 AXP) to 6 slots (Model 500 AXP). OpenVMS is the operating system, with OSF/1 support planned for 1H'93. See the Appendix for system specifications.

DEC did not introduce any entry level Alpha workstation (under $10K) in November 1992 but is expected to announce one early in '93.

Future

Within the next six months, DEC plans to upgrade the OpenVMS AXP operating system and update the Model 400 to support:
- 512 MB of Memory
- 3D graphics Accelerators (PXG+, PXGT+)
- VMEbus
- Multiscreen configurations
- OpenVMS clusters (Ethernet, FDDI)

The Model 500 is expected to support:
- 1 GB of Memory
- 99.7 GB of disk space
- Prestoserve (DEC OSF/1)
- Additional Ethernet ISDN (DEC OSF/1)
- OpenVMS clusters (Ethernet, FDDI)

In January 1993 DEC will introduce a workstation called DEC 3000 Model 300 AXP which is expected to deliver about 70 percent of the Model 400 performance for under $10,000. DEC will also announce its first Alpha PC based on an EISA bus. Later in 1993 DEC has promised to deliver a product that runs the 200 MHz version of the Alpha chip. This product is supposed to beat the HP 755 in performance and will be available for a price that matches that of a 755.

Competitive sales strategy   *DEC's general sales claims:*

- Dec provides hardware and software investment protection compatibility between hardware generations and operating systems versions across the VAX and Alpha AXP lines. DEC's high-end "Alpha Ready" VAX 7000 and VAX 10000 are CPU board-upgradable to Alpha at $30,000 per each processor board upgraded. DECstations/DECsystems are box swaps with Alpha, but the upgrades are inexpensive - taking the SPECmark difference between the current system and the upgrade system and charging $99 per SPECmark. Because full production and development commercial environments will not be ready for either Alpha OSF/1 or Alpha OpenVMS until 1994, DEC will still strongly push "Alpha Ready" VAXs as deployment systems for the next year and a half.

- DEC's NAS software makes it easier to develop production, Distributed Transaction Processing, and Client/Server Applications for Open Computing Environments. This claim is a half-truth. Although NAS software packages make it easier to purchase and in some cases support middleware for distributed networking, NAS also is built upon proprietary products as well as standards, and so-called "open" consulting services are designed to lock the customer into NAS, and therefore, DEC solutions. In addition, complete NAS packages are not yet available for Alpha platforms.

- DEC delivers all the services needed to support open systems, networks, and applications. This direction is a long way off from being a reality on DEC's new Alpha AXP systems which will not be POSIX compliant until late '93 or early '94 and will not contain a lot of necessary networking, such as TCP/IP, SNA access, X.25, X.400, X.500, and others until 1993 or early '94.

HP versus DEC strengths and weaknesses

The following is a table contrasting DEC and HP product strengths. The issues listed under parity reflect areas that may be important in a sales situation but both vendors offer equivalent products or services. HP's systems strengths or DEC weaknesses reflect areas that HP should discuss and sell as being critical to the prospect's success. DEC's strengths reflect what DEC will discuss when trying to sell its VAX/VMS, Ultrix, or future Alpha solutions. HP's perceived weaknesses are where HP can be expected to be challenged. The "Handling objections" section discusses tactics to discount or turn these issues into an HP strength.

Parity	HP's Systems Strengths (DEC's weaknesses)	DEC's Claims of System Strengths
-Best-of-class third-party software offering -Server support -Security -User-based software pricing	-RISC leadership -Server performance -Network management -RISC workstation offering -Clear OS strategy -Breadth of product lines -Workstation graphic options -RISC application support	-Alpha migration claim -Middleware claims -Processor clustering -Alpha SPEC performance VAX OLTP price/perf. -System upgrades -Midrange workstation -Price/Performance

Selling HP strengths

HP's RISC system stability and leadership

HP's early RISC vision has paid off:

- PA-RISC is the foundation for both the HP 3000 and HP 9000 product lines, providing 75 percent CAGR growth a year, complete binary compatibility within product lines, and thousands of applications that are available today.

- Unlike DEC customers, HP customers can live without the fear of costly application rewrites, box swaps, and the instability of mission-critical applications due to changing to a completely new system architecture. Alpha upgrades are expected to be complete box swaps for the VAX 6000 and VAX 9000 lines. In addition, it's expected that DEC will not develop the VAX lines beyond 1993.

- For the second time, *Computerworld's* Minicomputer Buyer's Scorecard (11/92) ranked the DEC VAX third of the four vendors evaluated. The HP 3000 captured first place overall. In fact, the HP 3000's scores for "Availability" were the highest scores earned by any vendor in any category for both years.

- DEC has no growth path on the DECsystem/DECstation line. The high-end server is positioned to be the VAX, which has a CISC architecture, and thus is binary incompatible. With DEC you would have to distribute applications over multiple systems, or convert applications (a costly endeavor) to a higher performance system from the same or another vendor.

- DEC is facing a difficult challenge to deliver the full OpenVMS and OSF/1 environments on a completely new architecture. Once the full OSF/1 and OpenVMS environments are ported sometime in 1994, both the systems and application will need to be performance-tuned on the new hardware. (See VMS for Alpha and OSF/1 for Alpha rollout schedules in the Appendix).

HP's more efficient RISC architecture

The Alpha AXP architecture uses an extremely fast chip. However, to reach these speed levels, efficiency had to be sacrificed. With a chip running at a 50 percent higher clock speed than PA-7100, the Alpha AXP implementation reaches performance levels of 25 percent to 30 percent LESS than PA-7100. This lack of efficiency can also be seen when comparing peak MFlop ratings for the two architectures. DEC Alpha AXP, running at 150 MHz, achieves a peak of 150 MFlops. PA-7100, running at 99 MHz, achieves a peak of 198 MFlops. Fast clock speeds for Alpha do not translate into real-life application performance.

HP's superior server system performance

- HP's new systems provide superior OLTP performance when compared to DEC's VAX and DECsystems product lines. (See competitive performance positioning section.) DEC has yet to announce OLTP estimates or TPC-A results for its new Alpha line, but they are expected to be poorer in VAX TPC-A performance due to tuning and scaling problems.

- Over time, HP will sustain its leadership in high-end performance, while remaining competitive in the high-end price range. HP's 9000 and 3000 families will achieve at least two times yearly high-end performance growth through 1995, with increased MP scaling.

HP's standards-based, flexible network management

HP's systems not only provide data center performance, but also provide flexible and complete data management solutions that meet the needs of the entire enterprise-wide organization.

- HP OpenView is the foundation of the Open System Foundation's Distributed Management Environment (OSF DME) specifications. HP OpenView forms the framework for HP's solutions in the storage, performance, and operations area. No DEC technology was chosen for OSF DME.

- HP's management platforms are standards-based: UNIX and DOS. DEC requires the proprietary VAX OpenVMS.

- Several vendors are using HP OpenView as a foundation for their network management solutions. DEC's partners are merely providing access to their products via DECmcc, DEC's network management product family. HP OpenView was also designed to integrate third-party applications. HP OpenView has been chosen by over 120 OEMs and several have already announced products. In addition, HP OpenView is also sold and supported on Sun platforms and IBM has announced that HP OpenView will become the foundation of the AIX management environment. DECmcc is only available on DEC systems and relatively few vendors are proclaiming support for it. DEC appears to be using DECmcc as a method of account control and as a device to sell more DEC hardware or networks.

- HP OpenView also supports several features that DECmcc doesn't. DECmcc (VMS) with TCP/IP SNMP AM does not support SNMP MIB extensions required for support of third-party devices, for example CISCO routers. Also, DECmcc currently has no ability to automatically draw and update network maps. HP OpenView's Autodiscovery feature provides this critical feature.

- HP OpenView is the least costly of all networking management options. A dedicated HP 9000 workstation and a single end-user license costs about $21,000. Compare this to DEC's management modules costing approximately $75,000.

HP's commercial RISC UNIX strategy

When comparing functionality between HP-UX and Ultrix, Ultrix is weak in the areas of system and network management, MS-DOS integration, and open system standard support.

- DEC's commitment to MIPS-based DECstations and DECsystems is believed to be weak at best and not long-lived beyond 1993.

- There continues to be no viable high-end UNIX system offering from DEC. Ultrix, in a select few cases, has been sold to run on the VAX platform, however DEC support of this configuration is especially weak. DEC will continue to try to sell OpenVMS on VAX platforms since the highest performance DECsystem available is the DECsystem 5900 at an estimated 30 TPS! An end-user OSF/1 operating system will not be available on Alpha until March '93. Alpha OSF/1 application support is expected to be only about 300 applications by the end of '93.

- PA-RISC outperforms the MIPS R3000/3000A by a factor of at least 2 to 1 in MIPS (integer performance), 3 to 1 in SPECmarks (integer & floating-point performance) and nearly 7 to 1 in LINPACK Mflops (floating-point performance).

- DEC is not well-focused on the open systems workstation front. As an example, the ACE initiative has proven to be somewhat of a contradiction in terms. The goal of ACE, to provide a common workstation and PC platform, has become fractured. Members are carrying out private agendas which often contradict the direction of the initiative. Compaq and SCO have both departed, and the general perception is that the ACE initiative is dead.

- Currently, DEC does not provide a UNIX SMP platform. (It is interesting to note that the DECsystem 5800 series which is a multiprocessor server, was discontinued in 1991 due to poor SMP performance.)

HP's superior software development environment

- HP is very strong in software development with robust CASE environment tools and development languages. In particular, HP is the first hardware vendor to supply a full AT&T-compliant C++ environment including a true C++ compiler (as opposed to an interpreter), C++ class browsing and construction tools, and a strong symbolic debugger at the C++ source-code level. C++ is becoming the application development language of choice and the HP C++ offering is unmatched by any other workstation vendor. Ultrix offers Glockenspiel C++ from Oasys which lists for $3,000 and $1750 (Nov '91) for the DECstation 5000/M200 and the DECstation 3100 respectively. This third-party offering of C++ is not nearly as robust as HP's total C++ environment.

- FORTRAN 77 comes standard with HP-UX and is a superset of the ANSI X3.9-1978 FORTRAN standard and includes most of DEC's VMS FORTRAN extension. Furthermore, an optimizing FORTRAN preprocessor detects opportunities in FORTRAN applications which manipulate large floating-point arrays, then selects the most efficient methods of execution, not unlike a vectorizing compiler.

HP's superior RISC compiler technology

Application performance with RISC is very much dependent on compiler design and tuning. DEC's compiler technology is unproven and an unknown. One of the biggest challenges that faces DEC is to tune its compilers to optimize application performance.

The Aberdeen Group reported on workstation performance with respect to the SPECmark and noted that HP's advanced compiler technology *"dramatically improves some floating-point operations, particularly matrix math. During a preprocessing phase, HP's compiler transparently reorders FORTRAN source code for optimal execution on HP's PA architecture. The result in the HP 9000 Model 730 is a 77 SPECmark machine that races through the Matrix 300 codes (FOOTNOTE: a FORTRAN kernel that exercises the LINPACK routines in double precision on matrixes of the order 300) at a remarkable 415 times a VAX I1/780! When results are normalized to SPEC's per-clock-rate, HP's compiler techniques on the Model 730 deliver 2.5 times the overall floating-point efficiency compared to last year's Series 9000 Model 835."*

HP's clear operating system direction

DEC gives its application developers three theoretical choices of operating environments: OpenVMS AXP, DEC OSF/1, and Windows NT. Which one should they choose? End users may have no choice, as it is highly unlikely that software providers have the resources to port, test, and maintain their applications on all three platforms. Remember, an OpenVMS application will not run on DEC OSF/1 or Windows NT unless the software provider has ported and tested it. All three operating environments are new, and are running on a new architecture. There are bound to be bugs in these environments initially. DEC will have to invest a lot of resources to get all three operating environments into stable, mature versions. The question is this: Will DEC have the resources required to maintain three operating environments over the long term?

Today, DEC cannot deliver an Alpha AXP UNIX version. OSF/1 is only available in a software developers' version. The reasons for the delay in offering an end-user DEC OSF/1 version are probably problems with software quality, resiliency, and usability. DEC OSF/1 for Alpha AXP is a very heavily modified version of OSF/1. Some parts of OSF/1 were completely rewritten; for example, the virtual memory management is DEC proprietary. DEC had to take this step because they have no solid UNIX offering they can rely on.

The lack of an OSF/1 version for Alpha means that DEC will continue to ship MIPS R3000 and R4000 products until well into the middle of 1993. These systems are based on a completely different architecture, a different operating system, and different tools from the new Alpha platforms; in short, the two systems are not compatible.

HP-UX is a mature, robust, proven operating environment, with functionality required in a real-life working environment. For customers who want to implement OSF standards, HP-UX is a good choice: all the OSF DCE and DME elements are implemented on the HP platform today.

HP's superior application availability

Application availability on Alpha systems is a really weak spot for DEC, at least initially. At introduction, there were only 50 applications running on Alpha AXP. And no indication was given as to which operating environment those 50 applications run on. Given DEC's goal of protecting their large installed base, most of the available applications can be assumed to run on OpenVMS AXP only. HP has a real window of opportunity here. Currently, there are over 5000 applications available on the HP 9000 and HP 3000 families.

HP's superior workstation performance

DEC, with its new Alpha AXP architecture, has failed to conquer the high-performance market systems. With the Model 735 and Model 755, HP is the clear performance leader. DEC marketed the DEC 3000 Model 400 AXP "the world's first desktop system with over 100 SPECmarks" and the Model 500 AXP as "the world's most powerful and versatile workstation". This claim lasted only until HP's announcement of the 735 and 755. The 735 is now the world's fastest desktop system with 147 SPECmarks, AND it offers 50 percent more performance on the desktop than DEC's fastest desktop model. The 755 is the industry's fastest deskside workstation.

HP's superior workstation graphics offering

HP's graphics family of products delivers the fastest X11 performance in the industry. Outstanding 2D and 3D vector performance and leadership in data animation capabilities can't be matched by any of DEC's graphics products. DEC did not introduce new graphics systems for its Alpha-based workstations, and current performance numbers are below any of HP's performance benchmark numbers for the Series 700 workstations.

Handling objections

- DEC promises Alpha migration will be painless.

  Counter with:
  There is no binary compatibility between VAX/VMS and Alpha/VMS. In addition, there is no binary compatibility between MIPS-based OSF/1 DECsystems and Alpha/OSF/1. A "compatibility mode" does not exist as an option for DEC customers needing to port their code to the new Alpha platforms. Instead, DEC is providing a special compiler that will take OpenVMS code written for the VAX and OSF/1 code written for DECsystems and compile it so that it can run on the new Alpha platforms. Applications recompiled in this fashion will not run at full native Alpha speed, and may experience up to 50 percent performance degradation when compared to the performance of applications originally written to run on Alpha.

  In addition, a full-scale OpenVMS production environment will not be available with Alpha until 1994. DEC is extremely biased towards building a OpenVMS environment, versus an OSF/1 environment, first on Alpha. See the VMS for Alpha Rollout Schedule in the Appendix.

- DEC claims that NAS is the most complete middleware solution available.

  Counter with:
  HP has announced new HP 9000 middleware "building block" packages focused on the needs of end users of IT, builders of applications, and administrators of enterprise-wide systems and networks. Pre-installation and consulting packages are available for information access, document and text management, electronic messaging, workflow automation, CASE tool integration, and network and system administration. For more details order the "Delivering on the Promise of Client/Server" sales guide, p/n 5091-5659E.

  The first step in countering the NAS promise from DEC is to understand what NAS is, which seems to be difficult not only for HP's sales representatives, but also for DEC's. The following is a breakdown of the NAS packages.

  NAS 250 provides the necessary software components for VAXstations and VAX 4000 workstations to integrate into a distributed client/server environment. It includes:

  – DECnet/OSI - DECnet-VAX extensions provide interoperability with other computer systems through OSI protocols, including remote file transfer, access from public packet networks, and management of OSI layers.

HP has long been a leader in OSI communications products, and provides interoperability between HP 3000 and HP 9000 products as well as other vendor platforms via the OSI protocols FTAM (File Transfer Access Method), X.400 electronic mail, X.25 networking, and HP OpenView, based on CMIS/CMIP protocols, which provides management of OSI layers.

– PATHWORKS Server for DOS, OS/2®, and MS-Windows - This software enables RISC/UNIX systems to act as file, print, and mail servers to PCs. The Servers link PCs into an overall corporate network and allows access to PCs and servers on remote LANs, through DECnet/OSI or TCP/IP protocols, enabling PCs to share applications, information, and resources such as printers.

HP has been a leader in PC integration using OSI and TCP/IP protocols for several years now, with support for Microsoft LAN Manager and Novell NetWare. Not only do HP products provide the sharing applications, data, and network devices, but also unattended PC backup and software distribution. OS/2, DOS, Apple Macintosh, and MS-Windows clients are supported. HP 3000, HP 9000, and PC-based servers are supported at this time.

The NAS 300 RISC/Ultrix package includes:

– Object-oriented DECmessageQ and ACA Services DECmessageQ enables application-to-application message communication using a queued message bus. ACA Services enables an application to ask for other applications to perform some processing on its behalf, or to dynamically share data with other applications across a multivendor network. Both these services are proprietary. HP has been leading the standards effort in object-oriented technology with its work on the Object Management Group's Object Request Broker (ORB) standard derived from specifications that were jointly developed by HP and SunSoft. This technology is also based upon OSF's Remote Procedure Call facility, NCS - another HP technology made into a standard. In fact, DEC's ACA Services and DECmessageQ are based on DEC's proprietary RPC.

The NAS 250 for OpenVMS package includes:

– DECnet/OSI: This is described above under NAS 250 for Ultrix

– PATHWORKS server: This is described above under NAS 200 for Ultrix

– OpenVMS/Ultrix connection: This software promotes the interoperability and resource sharing between OpenVMS and most common UNIX systems. The Network File System (NFS) support allows OpenVMS or UNIX systems to act as file servers for UNIX clients. HP provides NFS and a full line of TCP/IP services for both the HP 3000 and HP 9000.

– Rdb SQL services. These are SQL database services for DEC's proprietary Rdb database. HP provides the same SQL services with its ALLBASE SQL product available on both the HP 9000 and HP 3000 systems.

– Remote System Management (RSM) Client: This software product allows for remote software distribution and installation, file backup and restore, and system administration (including user accounts, directories, software licenses, and libraries) of a system or server running RSM Client. HP provides this functionality via a variety of products through NCS technology as well as third-party applications.

The NAS 300 for OpenVMS product includes:

– DEC MessageQ and ACA Services: This is described above under NAS 300 for Ultrix

– OpenVMS DECwindows Motif: This is a graphical user interface based on the X-Window System and Motif standards. HP provides this functionality via X-Windows and OSF Motif on HP 3000 and HP 9000 systems. In addition, the HP 9000 supports the award-winning HP VUE.

– DECforms: Implementing the ANSI FIMS standard, this software product provides forms processing. Access from video terminals or terminal emulators and from VT terminal windows under DECwindows is provided allowing applications to solicit information from and present information to the user in a structured format. HP provides form management via JAM on both the HP 3000 and HP 9000 systems.

– CDA: DEC's Compound Document Architecture provides services that make it easy for users to share revisable text, graphics, images, tables, voice, and other data types. Optional gateways provide support for the ODA and SGML document standards. HP provides compound documents via HP NewWave. HP also provides gateways for ODA and SGML document standard support.

– Rdb/VMS runtime option: This is a SQL-compliant relational database management system. HP provides the same functionality in ALLBASE SQL. HP also has strong partnerships with Oracle, Sybase, Ingres, Informix, and other leading RDBMS vendors.

– ALL-IN-1 Mail: This product allows users and applications to send, receive, and forward mail throughout a network using X.400-compliant software. HP and its partners provide HPDesk and OpenView which have connections to X.400, SNADS, UNIX Send Mail, ALL-IN-1, and PROFS electronic mail networks.

The contents of NAS 400 (for OpenVMS only) includes:

– VAX Applications Control and Management Systems (ACMS): this is a transaction monitor providing high performance and high availability plus inherent distribution capabilities for OLTP applications. HP has the transaction monitor, Tuxedo, on the HP 9000 and has a built-in transaction monitor in MPE/iX. HP also has a direction to support Transarc's ENCINA, a transaction monitor based on OSF DCE technology.

– VAXcluster software: VAXcluster software allows a number of CPUs and devices on a network to act and be managed as a single system. This software is proprietary to DEC and is not based on standards. Through third-party software, QUEST NETBASE, processor clustering support is provided on the HP 3000.

– VAX Volume sharing: Proprietary software from DEC that allows the contents of one disk to be copied to another in case of disk failure. HP provides the same functionality with Mirrored Disk/XL on the HP 3000 and DataPair/UX on the HP 9000. In addition, with HP's "RAID" disk-arrays, fault-tolerant disk devices are available without the need of specialized system software.

– VAX RMS Journaling: Provides data integrity for the RMS file in case of system failure. This file system integrity functionality is provided via the built-in transaction monitor on the HP 3000 systems.

– DECps Data Collector: Gathers and manages system data for use in tuning and planning system resources. This functionality is built into MPE/iX system software.

– DECtrace: Collects workload and performance information for the optimal design and tuning of system databases and applications. This capability is provided by HP via HP GlancePlus, LaserRX, and RXForecast.

- DEC claims NAS equals open.

Counter with:
NAS is not based on customer needs. It does not include many major platforms today such as AS/400, Tandem, OpenVMS, and MPE. DEC has announced that it intends to put NAS server software on five UNIX systems in 1992 - 1993, including HP-UX in 1993. There still is no proof that this will happen. Customers are taking a tremendous risk that DEC will actually port to these platforms as scheduled. DEC has almost no history of offering software on other vendors' platforms and has a long history of being significantly less "open" than it talks.

Standards Adherence in NAS 200, 300, and 400

Package	Product	Standard
NAS 400	ACMS	XA, (future support)
	Journaling	none
	VAXclustering	none
	Volume Shadowing	none
	VAX Perf. Advisor	none
	DECtrace	none
NAS 300	Motif	OSF/Motif (de facto)
	DECforms	ISO FIMS
	X.400 Mail Server	X.400
	ACA Services	OMG ORB
	DECmessageQ	none
	CDA	ISO ODA/ODIF
	Rdb	SQL
NAS 200	SQL Services	SQL
	PATHWORKS	LAN Manager (de facto)
	RSM Client	none
	DEC TCP/IP	TCP/IP
	DECnet w/OSI	OSI
	NFS w/RPC	NFS/ONC (de facto)

• DEC claims clustering provides the most flexible high-availability solution.

The following table outlines DEC's theoretical maximum performance improvements when using multiprocessors and VAXclusters. Multiprocessor systems are often placed in VAXclusters, so these numbers may be combined.

Number of Processors	Performance Ratio with SMP	Performance Ratio with Clusters
1	1.0	1.0
2	1.9	1.8
3	2.7	2.6
4	3.4	3.4
5	4.0	4.2
6	4.5	Unknown

Counter with:
– HP has been able to deliver 75 percent compound annual growth in processor performance on the high-end from 1988 to the present, and it's going to continue. HP anticipates 75 - 100 percent growth in the future. HP's strategy is to focus on the uniprocessor performance and then multiprocessor performance beyond that. This creates a balanced architecture for both online transaction processing and batch applications.

– Many DEC customers are finding out that VAXclusters pose a management challenge in the areas of system overhead, higher I/O bandwidths required, increased hardware maintenance costs, unsharable CPU, I/O, and memory resources, and cluster reboot time.

– Processor clustering will not even be available on Alpha platforms until 1994.

– Processor clustering is not an option with DECsystems.

- The HP 9000 Series 700 can be clustered.

  - SharePlex, an HP 3000 and Quest "Netbase" solution, allows multiple systems to be strung together, much like a VAXcluster so that performance can be grown horizontally. Horizontal growth supports automatic load leveling among the systems. In other words, if the demands on one system are too high another HP 3000 system in the "complex" can transparently pick up the workload. This can allow the customers to transparently support well over a 1000 users while meeting their mission-critical application needs. Please refer to the Appendix for more information on this solution.

- DEC claims thousands of third-party applications.

  Counter with:
  - DEC has a thick third-party software catalog, however one must realize that these are all VAX/VMS applications. These applications will have to be ported over to DEC's Alpha platforms. Also keep in mind that many of these applications are older, following a terminal-to-host design and are not based upon open client/server technologies. As previously noted, there are only 50 Alpha applications that have been ported, and DEC is targeting 1,000 by the end of '93. Only one-third of these will be OSF/1 based with two-thirds being OpenVMS or Windows NT based. Compare this with the over 5000 applications that run on HP 3000 and HP 9000 systems today.

  - HP has developed its relationships and partnerships with consultants, software conversion specialists, and systems integrators such as Andersen Consulting, Coopers and Lybrand, as well as leading open systems integrators such as Cambridge Technology Partners who can provide entire solutions.

  - One of HP's third parties, Software Translations, Inc., provides conversion tools and migration services that recompile programs written for DEC's VAX/VMS systems so that they can run on HP-UX without rewriting code or making extensive modifications to the application design. (For more information, contact Gary Bryan, Sales Manager for Software Translations, (512) 327- 6001.)

- DEC claims DECstation/DECsystem upgrades are easy and inexpensive.

  DEC's new lineup of DECstations provide upgrades to large processors with higher performance through a simple CPU daughter-card change. They are also upgradable to the full 64-bit R4000 processor.

Counter with:
- This is equivalent to HP's 825 upgrade to the 835 and 845 - the trouble is the 835 and 845 are noncompetitive in today's market.

- DEC's customers need to purchase two processors from DEC to get the same performance from HP in a system that is already tested and running.

- Today, DEC can deliver a 40 MHz R3000 at approximately 30 SPECmarks with an upgrade to the R4000 when it is available. The problem for DEC is that the R4000 will only deliver performance at HP's 720 or 730 level.

- DEC's upgrade path leads customers to noncompetitive systems.

• DEC claims DECstations provide a wide range of graphics options, the highest performance options bus, and a rich open software environment.

Counter with:
- DEC's graphics options do not compare with the performance and options offered by HP.

- DEC's bus is good but does not increase the speed of the CPU and in overall performance HP has a better offering.

- Compare the functions available in HP-UX versus Ultrix.

• DEC claims workstation-standards leadership.

DEC delivers performance through standards with software technology for X11, PHIGS, and PEX. DEC has agreed to assist SGI implementing PHIGS, and DEC will support the GL graphics library on DECstations.

Counter with:
- DEC's implementation generated outstanding X11 performance results until HP leapfrogged to a leadership position.

- Few ISVs are taking advantage of PEX currently. However, usage is expected to grow and HP will have a PEX offering coming out 2H'92.

- SGI's standards graphics story has not been good and DEC's partnering with SGI does not enhance DEC's offerings.

- HP offers a port for software written in the GL language.

- DEC claims workstation compatibility.

  All of the DECstations are ACE compatible since their software is binary compatible with the ACE SCO/ODT UNIX release.

  Counter with:
  - DEC needs to be a leader in system integration - DEC's PC, VAX VMS station, DECstation, and VAXstation are all different architectures and DEC needs to understand how these systems can be tied together.

  - Many of DEC's tools are focused on integrating MACs and PCs versus DECstations and PCs.

  - Being compatible with ACE may be like being compatible with a non-entity.

- DEC claims DEC support for workstation multiscreen, FDDI, and multimedia.

  All the DECstation 5000s support multiscreen, FDDI, and multimedia directly from DEC, plus IPI disks, and the VME bus through third-party TURBOchannel options.

  Counter with:
  The fact that supporting the VME bus through a converter will have a performance degradation. In addition, HP also offers an adapter from EISA to VME.

- DEC claims it has the highest midrange workstation price/performance.

  DEC states that the DEC 3000 Model 400 AXP has the best price/performance.

  Counter with:
  DEC does not offer a system under $10,000 yet. It has one great price point, for a midrange workstation that is not attractive for entry-level users. HP's systems still outperform DEC's systems in processor power and graphics and if X Stations can be sold in combination with the Series 700 workstations, HP's solution can be attractive for the price-cautious customer. HP's graphics and CPU performance leave all of DEC's workstations clearly lacking in competitive value.

- DEC claims the DECstation 5000 Model 240 offers competitive performance in its CPU, graphics, performance, and high memory capacity.

Counter with:
Although the DEC 240 has a 100/MB/sec TURBOchannel, HP's implementation is a two-tiered approach using, SGC for graphics and other high-performance I/O requirements. HP uses EISA and 33 MB/sec. However, your high-performance needs are serviced by the SGC at approximately 120 MB/sec. For additional information check the Series 700 white paper system design for a low-cost workstation, P/N 5091-1135E.

- DEC claims their new AXP workstations have better expandability than HP's Series 700 workstations. The Model 400 offers 3 TURBOchannel slots and the Model 500 offers 6 TURBOchannel slots.

Counter with:
Find out if the expansion slots are really necessary for the customer. HP's graphic subsystems don't require EISA slots, where DEC's graphics options take up one, two, or three TURBOchannel slots.

Quotes

On DEC's organization

"What prompted a number of key executives to jump ship? Dominic LaCava, John Rose, and Grant Saviers were vice presidents. Pier Carlo Falotti was president of DEC's International Division. Robert Glorioso, the VAX 9000 manager, took a leave of absence. Richard Nortz was director of DEC's U.S. Customer Service arm. Gary Eichorn had been chief of the company's General Systems Group. David Grainger headed DEC's U.S. sales operations. David Smith was a key UNIX analyst at DEC. James Osterhoff was finance chief. Rick Witek was co-engineer and developer of Alpha. Even the captain has bailed out. Ken Olsen announced that he will retire in October.

"The new captain of the ship has little time to plot his course. Robert Palmer has to swab the decks of personnel and costs to improve the bottom line, steer the delivery of Alpha systems, and rig the ship to offer OpenVMS, OSF/1 and Windows NT on the Alpha platform. It's a tall order for the DEC ship."

> Karen Detwiler,
> VAX Professional
> Sept - Oct 1992

DEC on DEC

"'Our products are difficult to understand and to sell,' reads a memo routed to DEC engineers from the new Supply Chain Program Office, which Palmer (DEC's CEO) has charted to oversee changes. '...Overall, our business practices, processes, services, and products are not competitive and are not satisfying our customers' requirements.'"

> PC Week
> September 28, 1992

On Alpha

"DEC's (RISC) entry is painfully late into a market where IBM, Hewlett-Packard, and Sun have been shipping products for several years. And these companies have also signed up other computer makers to use their RISC chips...DEC has only one sizable Alpha partner so far, Italy's Olivetti."

> Gary McWilliams
> Business Week
> August 3, 1992

"Alpha's super number-crunching power doesn't help customers unless they can run their software on the computers. And DEC must catch up with software designed for Alpha. That gives Sun and HP a big advantage: They have been shipping their RISC-based computers for several years, and there are sizable software libraries that work on the machines."

> Gary McWilliams and
> Robert D. Hof
> "Will Alpha Mark a New
> Beginning for DEC?"
> Business Week
> May 4, 1992

"Perhaps the most critical, if last discussed, issue concerning Alpha and its impact on both DEC and DEC's customers has to do with software conversion. Alpha was not intended to be binary compatible with VAX/VMS. While DEC presumably could have included a "VAX compatibility mode" in Alpha, this would have penalized performance for what in retrospect would likely have been a few-year transition issue for users."

> Aberdeen Group
> Alpha Status Report
> April 17, 1992

On DEC's ACE strategy

"After a brief life of 18 months, the Advanced Computing Environment (ACE) initiative is virtually dead."

> Corporate Computing
> November 1992

"Intangibility is symptomatic of the chronic malady that has plagued ACE since its inception. No champion, no leader, no single person or team emerges. As a result, the message is unclear - and it varies depending upon which ACE member you talk with. ACE appears to be a committee with only an ideology holding it together. As Paul Cubbage of Dataquest put it, "There is no one driving it - no owner. This isn't a group of people whose careers live or die with ACE."

> UNIX Review
> September 1992

On DEC's OSF/1 Operating System Kernal "Standard"

"While DEC plans to deliver an end-user version of OSF/1 in 1993, both Hewlett-Packard and IBM have decided to augment their existing UNIX System V kernels with layered software such as Motif and the distributed Computing Environment developed by the Open Software Foundation. Meanwhile, Sun Microsystems, Unisys, AT&T, Data General and Silicon Graphics are committed to using UNIX System V release 4 kernels. So, outside of DEC, the majority of UNIX implementations will be based on variants of UNIX System V for the foreseeable future.

DEC News and Review
September 14, 1992

On DEC's UNIX strategy

"I love to watch tennis. But the back-and-forth-line antics of the likes of Agassi and Becker pale in comparison to the back and forth line antics between DEC and its base of loyal customers intent on using UNIX. The serve-and-volley began in late May with DEC's announcement that it had no intention of supporting OSF/1 on Mips Technologies platforms. What DEC was really saying is that users should junk all those Ultrix-based DECsystems and DECstation 2000s, 3000s and 5000s and buy Alpha-based machines running OSF/1 or OpenVMS or perhaps even Microsoft's Windows NT....I am uneasy about how well DEC will do in the UNIX marketplace of the future with such a flip-flop approach."

DEC Professional
September 1992

On HP versus DEC UNIX strategy

"Outside the HP market, other vendors are scrambling to provide similar solutions to those already supplied by HP. DEC struggles mightily to overcome internal turmoil and deliver its much-ballyhooed Alpha RISC chip without further delays...Clearly HP has stacked its upper management tier with people whose careers are tied directly to HP-UX and open systems. And that's a strong indication that the company's leveraged hardware strategy and the ongoing convergence of its two midrange product lines are paying off.

"This is not the case - at least not yet - at other major vendors. In DEC's latest shakeup, for instance, Robert Palmer, a manufacturing manager and efficiency expert, replaced the retiring Ken Olsen."

HP Professional
September 1992

"Of course, Ultrix is a dead-end system, with only maintenance updates to support new hardware options, whereas OSF/1 is under active development. It is to DEC's credit that it responded in this way, yet I am uneasy about how well DEC will do in the UNIX marketplace of the future with such a flip-flop approach."

"Not all applications require 50 or more MIPS of computing power. The bottleneck is software - the operating system and the applications. And this shift does not seem to be fully realized by DEC's UNIX-based software planners."

"DEC seems to be ignoring the shortcomings of OSF/1 and concentrating on support of layered products. However, while good, integrated layered products are important, they are worth nothing if the underlying operating system does not live up to its expectations."

DEC Professional
September 1992

On Windows NT

"The Windows NT promise goes like this: NT will run on both Intel and other types of CPUs; versions for DEC's Alpha and MIPS' chips are already in the works. NT applications will run on any NT system. Buyers will consequently be able to pick the hardware platform they like best."

"On simple fact makes this promise false: Different types of CPUs run different executables. Even if the operating system is the same, the same bit patterns will execute differently - if at all - on two different types of systems."

"...To move from a so-called P5 running NT to an Alpha, you'll have to buy new copies of all your applications for the Alpha system or the application vendors will have to develop trade-in policies."

"...We're not denying that Windows NT has a lot of promise, and we're not saying you shouldn't buy it. You should, however, know the cage you've entered before the door slams shut behind you."

<div style="text-align: right">

PC Week
August 24, 1992

</div>

DEC fortune needs Alpha and more

"Analysts spoke approvingly of the new systems and services - for the most part. "The pricing on a performance basis for new systems is extremely low, but there are a lot of missing pieces right now," says D. H. Brown & Associates, a market research firm based in Port Chester, N.Y. He added that critical software and applications will not be ready for another year or 18 month, especially for commercial customers with clustering volumes. 'Without the actual application, they are going to be in a tough situation; for existing customers, they can push Alpha ready solutions and say that they will migrate them over later,' said Steve Widen, senior analyst at WorkGroup Technologies, Inc., a market research form based in Hampton, N.H. 'But new customers aren't going to opt for one architecture today and move in the future. The window of opportunity is closing for DEC.'"

<div style="text-align: right">

Computerworld
November 23, 1992

</div>

The DECstation 5000 model 25 (Tested Mettle)

"Despite these upgrade possibilities, DECstations have a downside. DEC has developed the Alpha RISC chip, which is clearly the company's processor of the future. While the expected lifetime of a particular DEC MIPS-based system will not be shortened, there is no indication that another generation of higher-performance, compatible systems will follow, thus orphaning DEC's MIPS-based systems. DEC may offer trade-ins from MIPS to Alpha machines, but these will require recompilation of all applications. The future of these DECstations should be considered when making a purchasing decision."

"Our biggest problem with DEC, however, is that about 50 percent of the technical questions we have, either pre-sales or after receipt of equipment, are answered incorrectly...DEC manuals are difficult to use."

UNIX Review
October 1992