

HP 3000 Strategic Directions



White Paper

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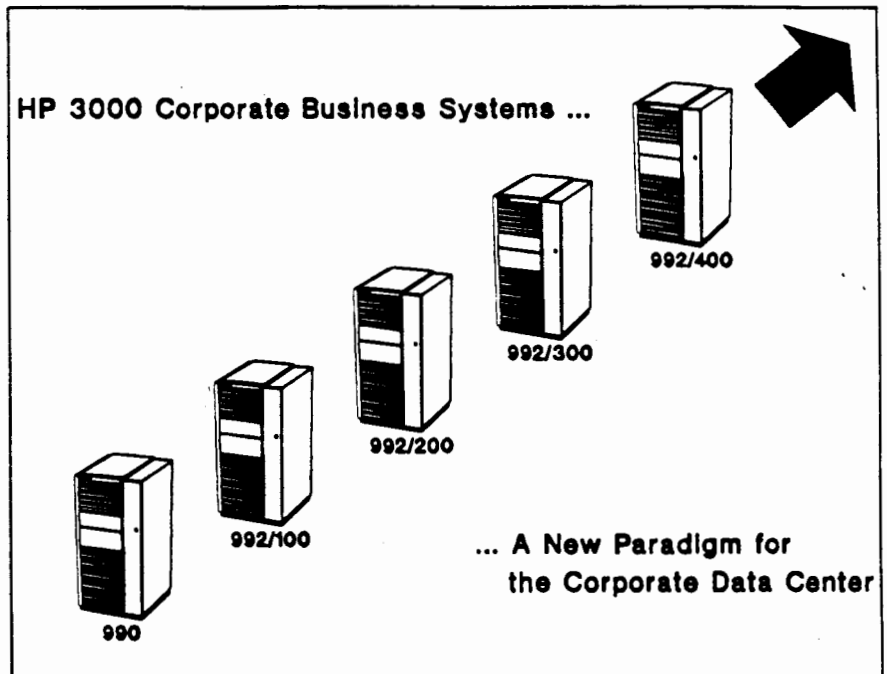
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**The HP 3000 Corporate
Business System; A New
Paradigm for the Data Center**

The HP 3000 Corporate Business Systems usher in a new epoch in data center computing. With its powerful proven RISC (Reduced Instruction Set Computing) architecture, the HP 3000 now provides levels of performance previously associated only with large expensive water-cooled mainframe systems. The HP 3000 Corporate Business Systems, while providing mainframe performance, are not mainframes in the traditional sense. Instead, they represent a new paradigm for high-end data center computing, a paradigm where many of the prevailing constraints regarding the corporate data center environment are removed. These high-end systems provide the performance, availability, configurability, and functionality required in the corporate data center without the cost, size, staffing, and inflexibility of traditional mainframe systems.



Conventional mainframe systems are based on CISC (Complex Instruction Set Computing) architectures. HP Corporate Business Systems, by contrast, are based on PA-RISC, a RISC (Reduced Instruction Set Computing) architecture. RISC architectures are based on the discovery that a computer architecture featuring a focused instruction set can provide higher performance and higher reliability with fewer components compared to a conventional CISC architecture. Prior to the adoption of PA-RISC, HP 3000 systems provided high end performance growth rates of 30% per year, typical performance growth for systems based on CISC architectures. With the adoption of

PA-RISC, the high-end performance growth of HP 3000 systems increased to 75% per year. With the introduction of the new HP 3000 Corporate Business Systems, HP 3000 high-end performance will grow at 100% per year.

RISC architectures, because they require far fewer components than the traditional CISC architectures used by all mainframe systems, consume less power, are inherently cooler, less costly, and more reliable. These characteristics of RISC architectures have allowed the HP 3000, the first commercial system in the industry to adopt a RISC architecture, to provide the performance of large water-cooled mainframe systems in a considerably more compact air-cooled package that requires no exotic power or cooling technologies. With their advanced RISC architecture, HP 3000 Corporate Business Systems require about 10% of the power and floor space required by comparable mainframe systems. The HP 3000 Corporate Business Systems also feature much lower purchase and maintenance costs, dramatically reduced infrastructure support requirements, and dramatically reduced staffing requirements. While these differences are the most readily apparent, other more subtle differences help illustrate the nature of the paradigm shift from the mainframe to the Corporate Business System.

The Emergence of a New Paradigm in the Data Center

Corporate Mainframe

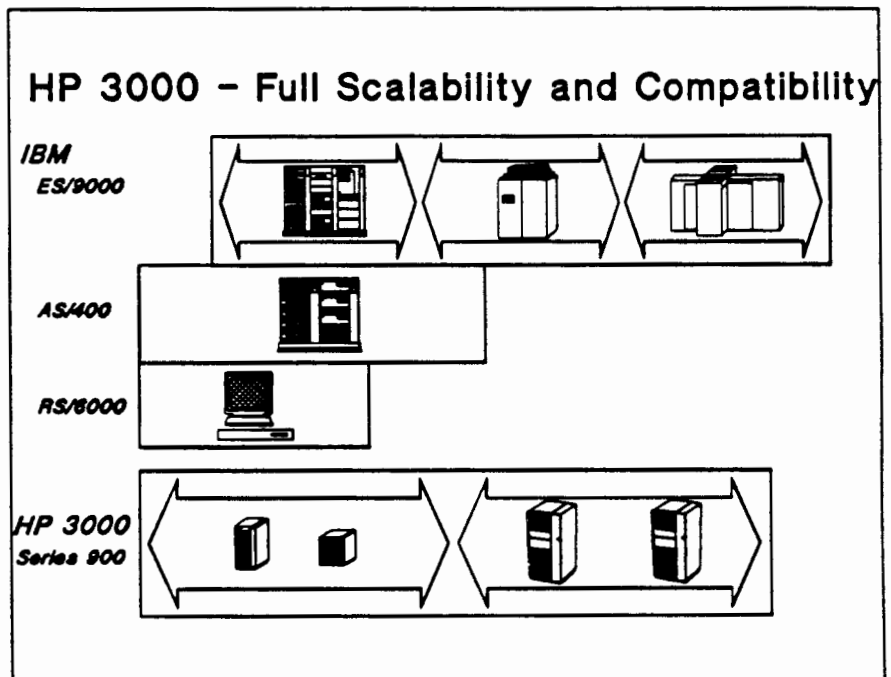
- MIS focused
- Closed
- 70's centralized approach
- Data center
- 10+ support staff
- Big room, water cooled
- 3-10 million, CISC

Corporate System

- User focused
- Open
- 90's client/server approach
- Desktop to data center
- 1-2 support staff
- File cabinet, air cooled
- Under \$1 million, RISC

Creating a win/win for users and the data center

In contrast to mainframe systems that are found only in data center settings, the HP 3000 is equally at home in the departmental setting as well as the corporate data center. The HP 3000, through its scalable PA-RISC architecture, provides complete software compatibility between departmental systems, divisional systems, and Corporate Business Systems. Traditional mainframe systems are not scalable to departmental systems and run different software compared to midrange systems. The HP 3000, with its full range of completely compatible systems (from small 8-user entry-level departmental systems to high performance Corporate Business Systems supporting thousands of users), can accommodate both centralized and distributed computing environments as well as environments that have elements of both centralized and decentralized environments. Unlike traditional mainframe systems the HP 3000 provides exceptional value without compromise and adapts easily to the way your organization does business.



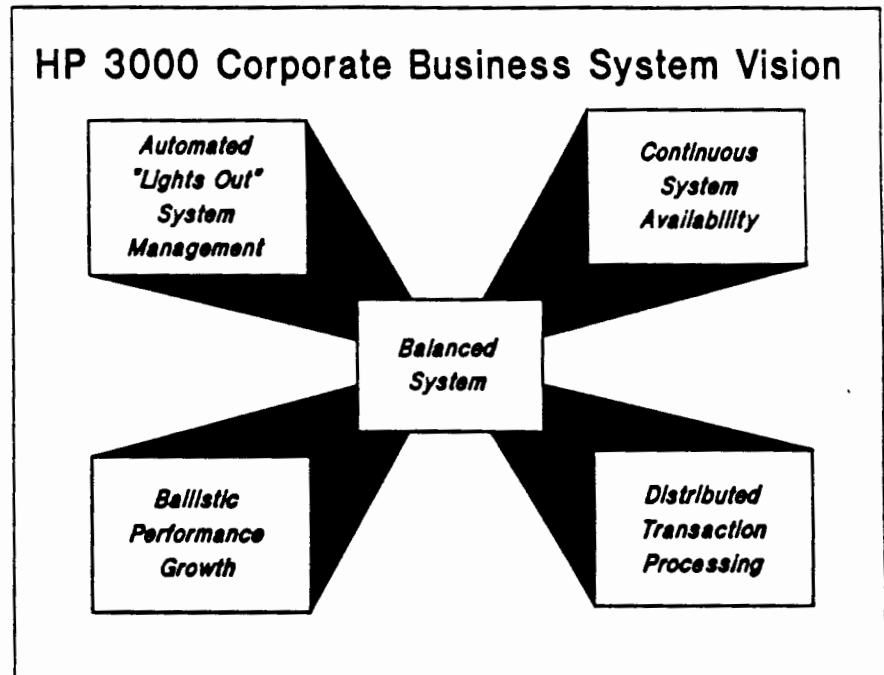
The HP 3000 is user-focused and provides outstanding integration with both Personal Computers (PCs) and UNIX* workstations in addition to supporting the traditional non-intelligent terminals found in the mainframe environment. Client/Server computing utilizing both PCs and UNIX* workstations allows the HP 3000 to provide end-users with the graphical user interfaces (GUIs) that can dramatically boost end-user productivity. Integration capabilities with the Apple Macintosh will be added in early 1993. While the HP 3000 Corporate Business Systems provide client/server computing with both PCs and UNIX* workstations, future plans for HP 3000 Corporate Business Systems include investigation of 3270 support in order to preserve current mainframe customer investments.

The HP 3000 is an open system and supports the official and de facto standards that are required for multi-system interoperability and software portability. For example, in addition to supporting a broad suite of IBM SNA interoperability products and protocols, the HP 3000 also supports POSIX, the official open operating system standards. POSIX standards are derived from the two most popular versions of UNIX*; AT&T SVID and Berkeley UNIX*, and help provide portability of UNIX* applications to and from the HP 3000. In addition to these official operating system standards, the HP 3000 also supports additional de facto and official standards that are frequently associated with UNIX*. For example, Berkeley Sockets and Network File System (NFS) are both supported on the HP 3000. X-Windows and OSF/Motif, user interface standards commonly associated with the UNIX* environment, are both supported on the HP 3000. Future directions for the HP 3000 include the incorporation of distributed technologies from the Open Software Foundation (OSF) such as the Distributed Computing Environment (DCE) and Distributed Management Environment (DME).

HP 3000s are known for the low levels of operator staffing that are required for their operation. The HP 3000 Corporate Business Systems are no exception and offer dramatically lower staffing requirements compared to traditional mainframe environments. Many functions, such as adjusting table sizes, that would have been performed by the support staff in the past, are performed automatically by the system. Memory allocation between files, databases, and application programs, for example, is performed on a global basis by the system. Multiprocessing is completely symmetric and requires no operator configuration. The use of large main memories for extensive file and database caching dramatically reduces physical disk I/O requirements and eliminates the need for the support staff to consider file and database placement in order to eliminate disk I/O bottlenecks. With predictive support, impending hardware problems such as a disk failure can be detected by the system and HP support personnel automatically informed.

HP 3000 Visions

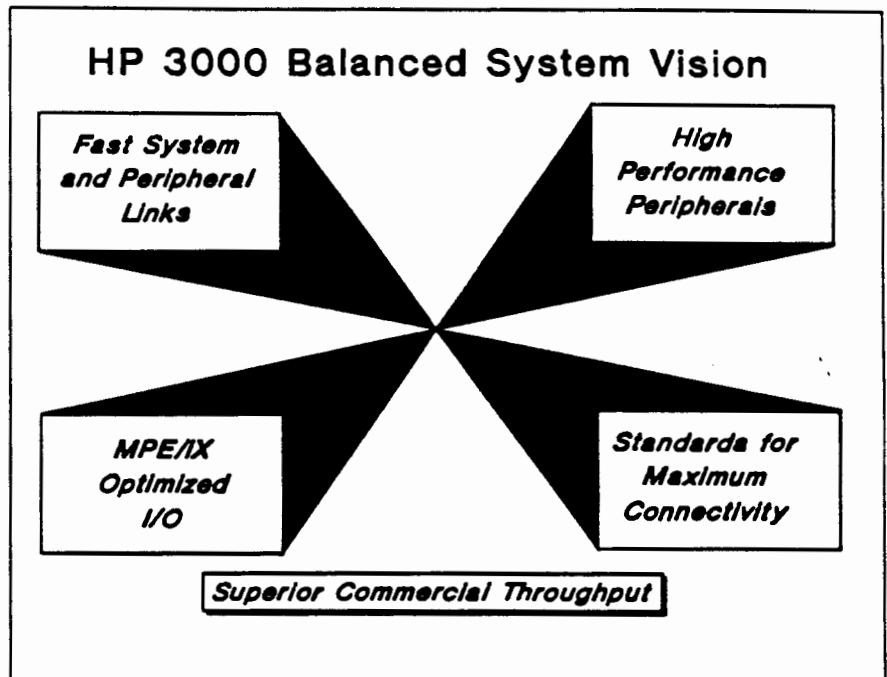
The HP 3000 Corporate Business Systems represent a new era in corporate data center computing. Never before has so much versatility, flexibility, and cost/effectiveness been offered for the corporate data center. While providing a startlingly attractive alternative for the data center environment, the Model 990 and Model 992 are only the beginning. In the subsequent sections of this document you will have the opportunity to obtain a glimpse into the future, a future where the HP 3000, with nearly 20 years of providing investment protection through complete and unequalled software compatibility, moves forward to meet the demands of the future.



HP 3000 future directions include dramatically increasing levels of performance, continuous system availability, and unattended "lights out" operation. These directions mean a steady stream of enhancements for the HP 3000, the foundation for which is already included in the hardware and software architecture of the HP 3000 Corporate Business Systems. The HP 3000 will be enhanced in other ways as well to ensure that it even better meets the needs of the corporate data center. Current and future plans for the HP 3000 include the support of high-end peripherals for very high volume printing; high-speed, high-capacity backups; very high speed links for peripheral and networking connects; and system availability 24 hours a day, 7 days a week.

In addition to high end peripherals and high speed networking links, the HP 3000 will be enhanced to support the software technologies from the Open Software Foundation (OSF). These technologies, such as the Distributed Computing Environment (DCE), will allow the development of distributed applications in which end-users are able to access resources on a network of distributed systems without concern for the physical location of the resources. Other technologies, such as OSF's Distributed Management Environment (DME) will provide technologies that allow for the management of distributed systems on a network.

HP 3000 Corporate Business System - A Balanced System



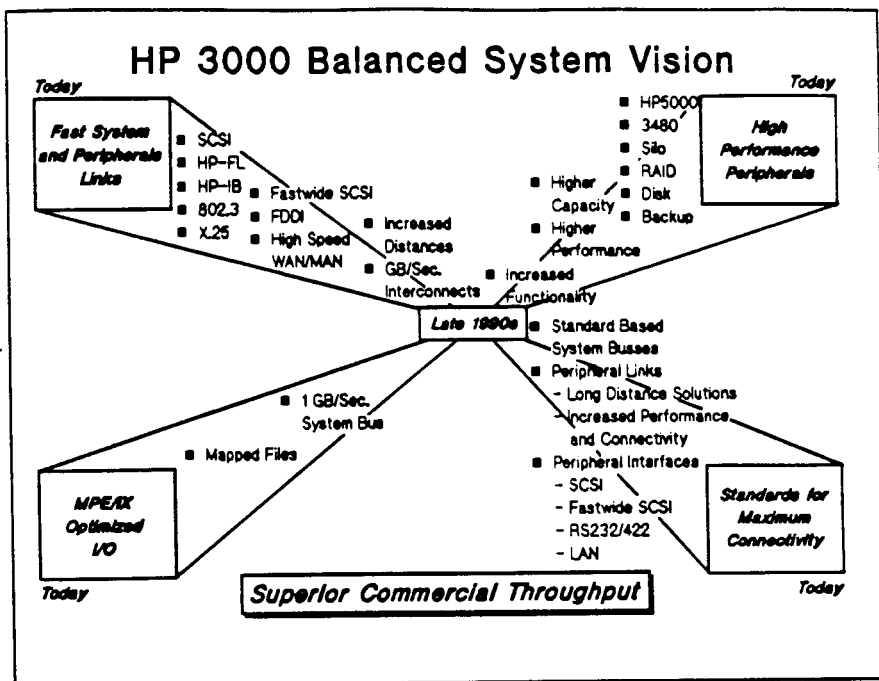
One of the great strengths of the HP 3000 is the balanced performance that it provides in meeting all of the numerous requirements that must be addressed by a truly outstanding commercial business system. The HP 3000 provides an environment with high performance optimized I/O while at the same time working to reduce I/O to the absolute minimum needed. For example, the HP 3000 utilizes large main memories for extensive caching of files and databases in main memory. This feature, known as mapped files, allows application programs to access files directly in memory at speeds thousands of times faster than having to access the same files on disk. Measurements comparing traditional mainframe architectures with the architecture of the HP 3000 have shown that this approach has virtually eliminated any possibility of a disk I/O bottleneck on the HP 3000, boosting performance and allowing higher levels of CPU utilization. The file system of the HP 3000 is also tuned to deliver

maximum performance for batch jobs by means of intelligent pre-fetching algorithms. Intelligent file system pre-fetching techniques combined with mapped file access allows the HP 3000 to provide truly powerful batch performance: mid-range HP 3000 systems provide better batch performance than some water-cooled mainframe systems.

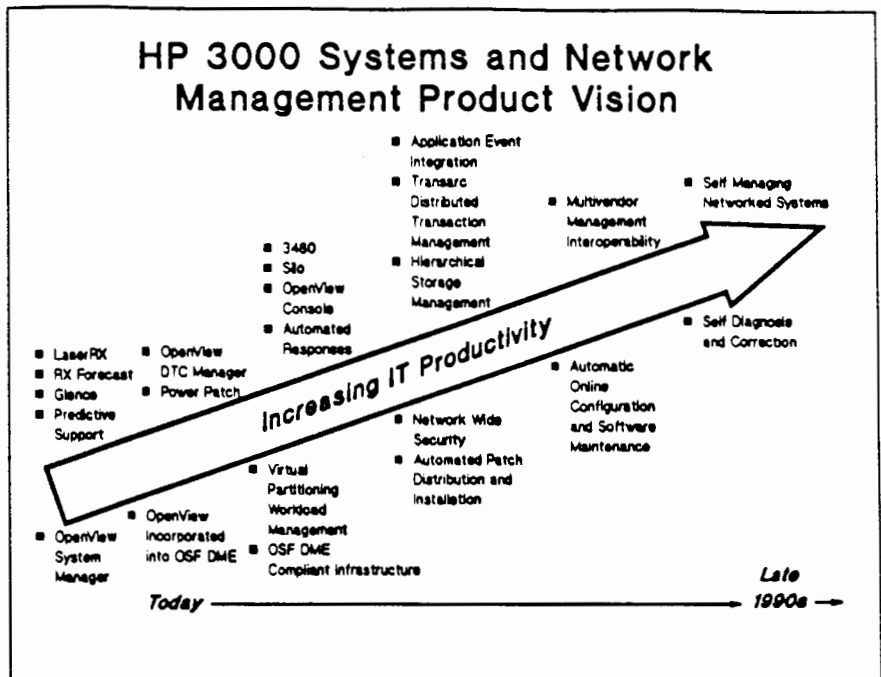
These tremendous I/O reducing technologies of the HP 3000 are further augmented by the 1 gigabyte per second main system bus in the HP 3000 Corporate Business Systems, a tenfold increase in main bus speed over the previous high-end HP 3000 systems.

The HP 3000 features an impressive array of link technologies for connection with peripherals and other systems. Today these links feature fiber optics interfaces for speed and connectivity over distance as well as industry-standard interfaces such as SCSI. The future will bring support of faster standard interfaces such as Fastwide SCSI featuring data transfer speeds of up to 20 Mbytes/second, a 4 times increase over current SCSI transfer speeds. Support of additional peripherals for the high end data center environment such as the HP 5000 high end printers, IBM 3480 auto-changer cartridge tape backup systems, and SILO automated tape library management systems from StorageTek will be added. Disk connectivity for the new HP 3000 Corporate Business Systems will be in excess of 600 gigabytes at first release and will increase to over a terabyte in the first half of 1993.

Equally impressive are the array of system to system networking technologies that the HP 3000 has available today to provide interoperability among the best in the industry. HP 3000s are today able to provide interoperability with systems from IBM, DEC, and virtually every other system on the market. HP 3000s today interoperate with multi-user UNIX* systems, personal computers, and workstations. These capabilities will be augmented by the addition of very high speed links such as FDDI (Fiber Data Distributed Interface) featuring speeds of 100 megabits per second.



"Lights Out" Operation for the Data Center



The HP 3000 was designed from the outset to require minimal system management staffing and today requires far lower levels of operational staffing compared to traditional mainframe environments which are well known for their high staffing requirements. HP 3000s today include such features as automatic job scheduling which eliminate the need for operator scheduling and management of jobs. Products such as TurboStore with data compression allow for unattended data backup. The automatic adjustment of many system tables by the system virtually eliminates the need for a system programmer to perform system configuration.

Data center environments require large capacity, high performance data backups. The HP 3000 today features the TurboSTORE/iX family of powerful data backup products. TurboSTORE/iX performs data backup to multiple backup devices running in parallel and also performs online data backup for both databases and flat files (without requiring mirrored disks). With the HP 3000 Corporate Business Systems, support will be added for StorageTek 3480 auto-changer cartridge tape backup systems. Future backup device plans include support for SILO automated tape library management systems from StorageTek. Data backup capabilities on the HP 3000 will continue to be enhanced. Current data backup capabilities include 12 gigabytes per hour with Digital Audio Tape (DAT) and 33 gigabytes per hour with optical disk. Future capabilities include greater than 50 gigabytes per hour with the 3480 in 1992 and greater than 100 gigabytes per hour in 1994.

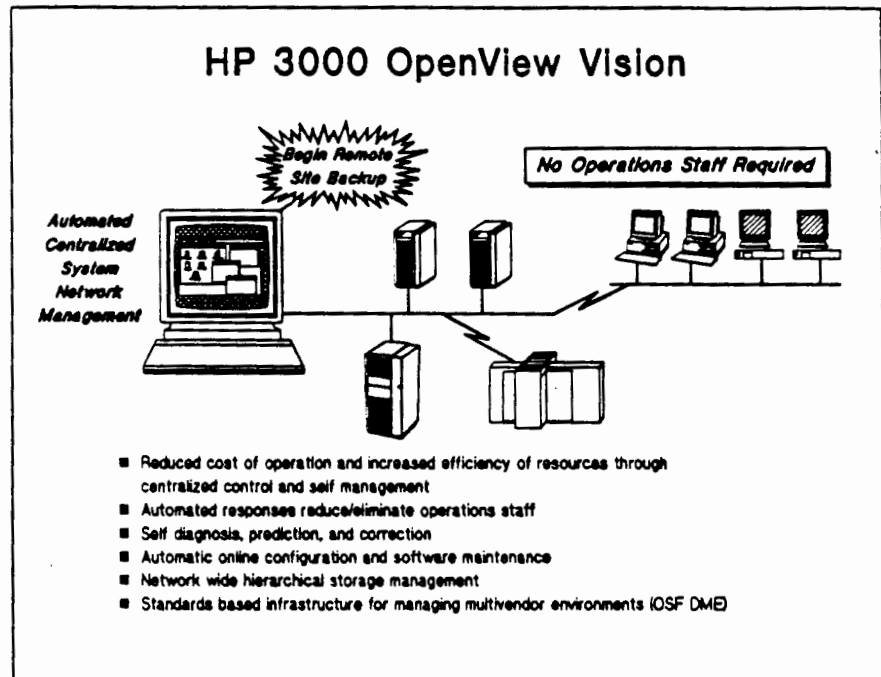
Data center environments frequently involve the management of large amounts of information that must be kept accessible for years and potentially decades. While the price per megabyte of online disk storage has been decreasing it is still not economical to maintain all information on magnetic disk. Archiving information to tape is one way to store infrequently accessed information but accessing information archived to tape is labor-intensive and very costly. To answer the need for an easy and cost effective way to manage long-lived but infrequently accessed corporate data, hierarchical data management capabilities will be added to HP 3000 Corporate Business Systems. These hierarchical storage management systems will manage a hierarchy of storage technologies including magnetic disk, optical disk, magnetic tape, and potentially microfiche. As information ages and becomes less frequently accessed, the hierarchical storage management system will automatically move information to a lower cost storage technology. The information will still be accessible but will take somewhat longer to retrieve. With a hierarchical storage manager data center staffing costs are further reduced and "lights out" operational capabilities are increased because the hierarchical storage manager does much of what used to be performed manually.

It is an HP 3000 Corporate Business System direction to provide a completely "lights out" management environment for the remote data center and a "lights dim" environment for centralized data centers. In order to help make this possible the HP 3000 will provide automatic self configuration and automatic problem analysis and correction. With the addition of these new capabilities the HP 3000 Corporate Business System will eliminate the need for operational personnel to perform these functions.

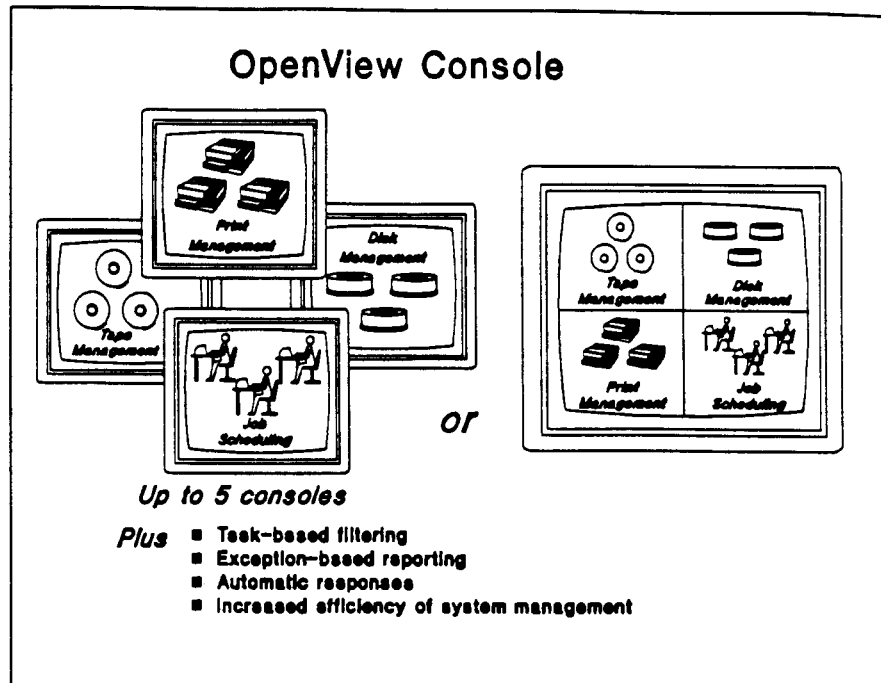
With self configuration capabilities the HP 3000 will be able to recognize and configure new peripherals and networking interfaces as they are connected to the system (it is today possible to perform online configuration of terminals). System downtime due to the configuration of new peripherals will be a thing of the past. In addition to automatically configuring new peripherals, the HP 3000 also monitors the operation of peripherals and network links in order to detect rising error rates which frequently occur prior to failure. This feature, called Predictive Support, monitors the error rates (number of retries needed) on peripherals to determine when failure is imminent. When error rates exceed a given threshold the system can automatically notify HP service personnel who can intervene to replace the unit before failure occurs.

In addition to self configuration capabilities the HP 3000 will be enhanced to allow automatic software maintenance. It will be possible for software maintenance and software patching to be performed automatically while the system stays up. In this way, software patches can be automatically provided and installed as opposed to waiting until the problem is encountered.

In addition to providing a lights out system management capability, the HP 3000 will provide tools that greatly increase the effectiveness and productivity of systems management personnel. For example, the HP OpenView system management products OpenView System Manager, OpenView DTC Manager, and OpenView Console greatly extend the ability of system operators to manage systems whether centralized or distributed. These products allow a complicated network of computer systems to be effectively managed from a central location with a minimum of staffing.



With the introduction of the HP 3000 Corporate Business Systems a major new tool, OpenView Console, is added to the arsenal of system management tools available on the HP 3000. OpenView Console provides a powerful system management interface that features a graphical user interface. With OpenView Console the productivity of system operators and managers is greatly enhanced. Different system management functions (such as job scheduling and print management) can be routed to different consoles (up to 5) or be displayed in different windows on one console.



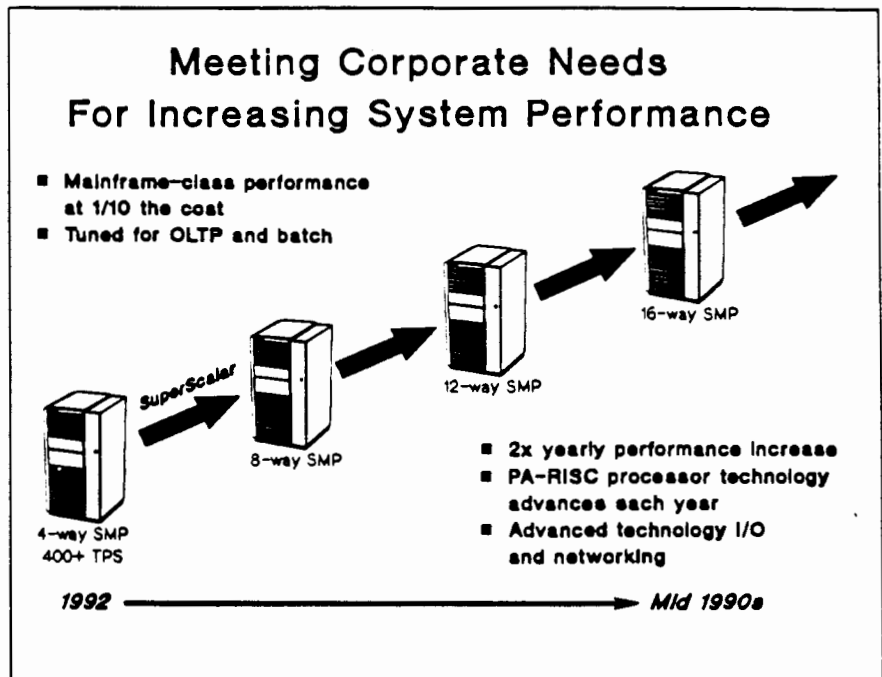
The HP 3000 today provides a complete set of performance measurement and analysis tools as well as tools that allow capacity planning. Glance/iX allows for performance monitoring in order to pinpoint performance problems as they occur. LaserRX allows the analysis of data gathered over time in order to pinpoint performance problems whose occurrence is difficult to predict. HP RX Forecast allows studying of data gathered over time in order to predict future performance needs, thus providing a tool for capacity planning.

To effectively manage even higher levels of performance, the MPE/iX scheduler will be enhanced to allow virtual workload partitioning. Virtual workload partitioning will make it possible to guarantee response time for a particular set of users or to guarantee a certain percentage of CPU for these users.

HP 3000 Corporate Business Systems feature commercial-grade security capabilities that are augmented by hardware-based security implemented as part of the PA-RISC architecture. The combination of these security capabilities make HP 3000 Corporate Business Systems highly secure to penetration by viruses, worms, and Trojan horses.

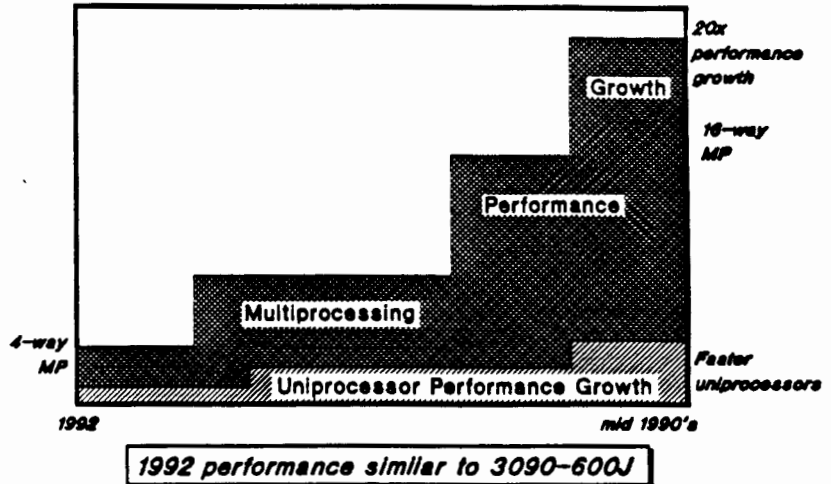
**Annual Doubling
of High-End
Performance**

In addition, the direction of HP 3000 systems management is based on standards wherever possible. HP OpenView, for example, as been accepted by the Open Software Foundation (OSF) as one of the key technologies of OSF's Distributed Management Environment (DME). Portions of DME will be supported on the HP 3000 beginning in 1993 as key components become available from OSF.



A key component of the HP 3000 vision of the future is continuing dramatic increases in high-end system performance. With the scalability and performance potential of the PA-RISC architecture it is anticipated that the HP 3000 will deliver the largest high-end performance increases in the history of the industry with high-end performance doubling every year through the mid 1990's. These performance increases will come from both more powerful uniprocessors and higher levels of multiprocessing. Over the next five years uniprocessor performance will increase by a factor of 3 and multiprocessing will increase from 4-way to 16-way. This will result in a 20 times performance increase from the Model 992/100 over the next five years. While 2 gigabytes of main memory are initially supported, support for 4 gigabytes of main memory will be added in 1994. It is anticipated that the HP 3000 Corporate Business Systems will eventually support up to 32 gigabytes of main memory.

HP Corporate Business System Performance Growth



Continuous System
Availability for the
Corporate Data Center

HP 3000 System Availability Vision

*Continuous availability for mission-critical applications
at near commodity RISC prices*

Data Integrity	Reliable Systems	Data Availability	System Availability	Fault Tolerance	Disaster Tolerance
■ Distributed Transactions Traversal and ALLBASE Star ■ System Wide Logging ■ MPE/RI Transaction Manager ■ Powerful	■ MPE/RI ■ PA-RISC	■ Online Software Maintenance ■ Automatic Online Configuration ■ Online Configuration Database ■ Database Replication ■ Online Backup	■ Application Isolation ■ Bullet Proof Software ■ Automatic Processor Decomposition ■ RAID ■ Mirrored Disk ■ SPU Self-healer	■ Redundant Hardware ■ Self Diagnosis and Correction ■ Redundant Memory ■ Redundant CPU ■ Redundant Power Supply ■ Memory Redundancy	■ Distributed Availability with Traversal ■ Coupled System ■ Hot Standby

Absolute data integrity under all conditions today

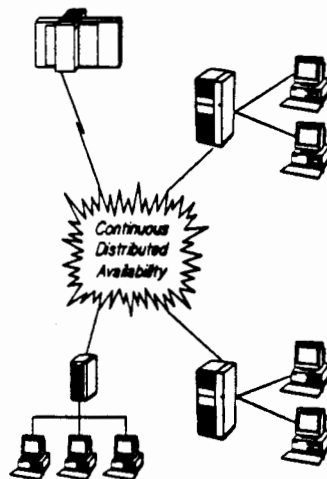
Note: Capabilities in italics are planned for future availability

As computer systems become absolutely critical to the operation of businesses in the 90's, the guaranteed availability of these systems becomes increasingly vital. Today HP 3000 systems provide systems availability in excess of 99.98% with respect to unplanned downtime. High availability products are available that can extend this availability to 99.995%.

The foundation for HP 3000 reliability and availability is provided by the extremely reliable HP 3000 PA-RISC processors and extremely reliable peripherals such as disk drives that today provide mean times between failure in excess of 150,000 hours (more than 17 years!). Currently available RAID (Redundant Arrays of Inexpensive Disks) technology increases this reliability to greater than 35 years. RAID disk arrays continue to operate, with complete data integrity, even should one of the disks in the array fail. Failed disk array components can be replaced online without bringing the system down. In addition to the impressive reliability of HP 3000 systems and peripherals a feature known as Predictive Support logs and tracks error rates over time and is able to notify HP support personnel automatically if error rates indicate that a failure may occur in the near future. HP 3000 Corporate Business Systems also feature automatic deconfiguration upon restart of failed components such as CPUs, memory arrays, and I/O cards.



HP 3000 System Availability Vision



Continuous availability for mission-critical business applications at near commodity RISC prices

- Prevent unplanned downtime through self diagnosis and correction, redundant components, and "bullet proof" software
- Eliminate planned downtime through online auto configuration, software maintenance and backup
- Disaster tolerance through distributed availability options

MPE/iX, the operating system for the HP 3000, is one of the two most robust operating systems in the industry. MPE/iX is constantly being enhanced to provide "bullet-proof" protection against system and software failures. New software routines are being added provide to workarounds for software problems and prevent system failure. Subsystems are being isolated from the operating system in order to prevent subsystem problems from causing a system abort. For example, the index sequential access file system (KSAM) is now fault-isolated from the operating system and cannot cause a system abort. Over time this isolation will be extended to all subsystems.

Extremely reliable processors, peripherals, and system software provide a solid foundation for HP 3000 reliability and availability. The HP 3000 provides additional features that increase reliability and availability. For example, every HP 3000 includes as a standard feature powerfail recovery and battery backup for main memory. This combination ensures that HP 3000 systems are able to recover after short-term power outages with no loss in data and no loss of processing. The HP 3000 operating system, MPE/iX, provides further reliability with software technologies that protect against events such as extended power outages or application and software errors. Although HP 3000 powerfail recovery capabilities address the vast majority of power outage situations, extended power outages or situations where the system must be rebooted due to application error or software failure can play havoc with data integrity. Current HP 3000 systems were designed to protect data integrity even in these extreme situations. All PA-RISC HP 3000 systems include an integrated transaction manager that provides data integrity for databases, index sequential access method (KSAM) files, flat files, directories, and other critical system tables. The integrated transaction manager is similar in concept to a journaled file system but is much more powerful in that it is integrated with all of the critical system subsystems such as database systems and critical system tables such as the directory. In contrast to most systems involving journaling, the data integrity provided by the integrated transaction manager is transparent to applications; no programming effort is required to take advantage of the integrated transaction manager. As applications run, the integrated transaction manager constantly logs changes to disk so that exposure to loss of data is less than 1 second. If system reboot is initiated, the integrated transaction manager is invoked automatically to perform recovery if necessary, all without any operator action or intervention.

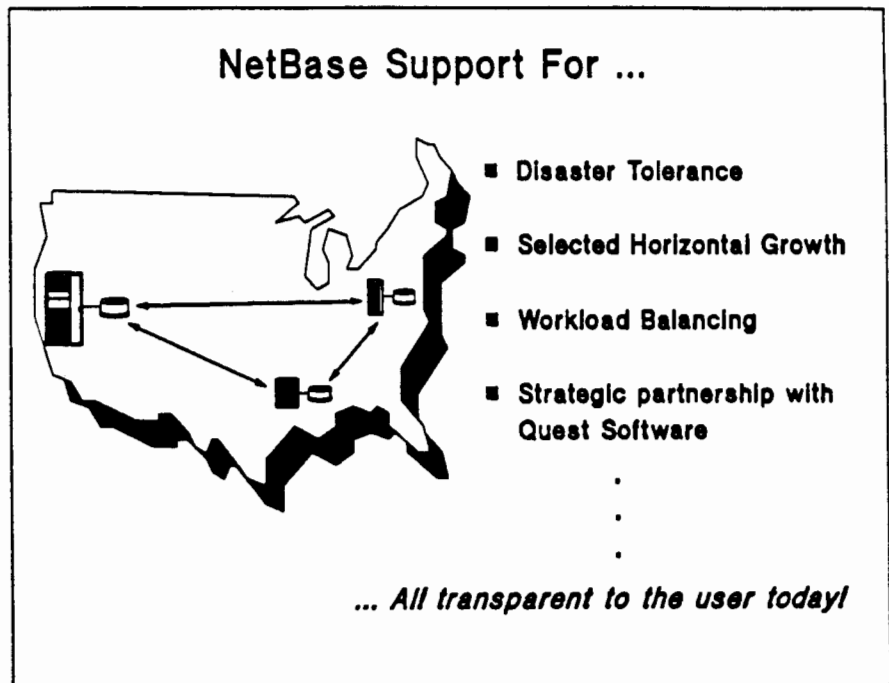
While the HP 3000 has today a host of built-in features that increase system reliability, availability, and integrity of data, additional features will be added during the 1990's. Many of these features will provide the ability to perform activities online that today require that the system be inaccessible to users. For example, online component configuration and replacement capabilities will be added to the HP 3000 in late 1993 as will the ability to perform online software maintenance. The ability to perform online replacement of components such as disks and I/O cards will be added. In addition, the ability for the system to deconfigure failed components such as CPUs and memory online without bringing the system down will be added.

Increasingly, computer systems are interconnected via networks to other computer systems. Network failures, while they do not bring individual systems down, may have the same effect by preventing communication between systems. In order to prevent network failures from affecting the ability to conduct business, HP 3000s will support redundant networks whereby all traffic is automatically and transparently switched to a redundant link should the primary link fail. With redundant networks the networked systems can continue to process while the failed network components or links are repaired and brought back on line.

In addition to features that will increase the reliability and availability of HP 3000 systems, the HP 3000 offers a complete lineup of high availability products that provide additional protection against disk failure, SPU failure, and downtime due to system backup. Mirrored Disk/iX provides transparent protection against disk failure. SPU SwitchOver/iX allows for application processing to be switched to a backup system within 15 minutes. The SPU switchover time of 15 minutes includes data recovery, the most lengthy element of any strategy to switch processing from a failed CPU. AutoRestart/iX allows a system to restart itself automatically and without operator intervention after a system failure. The HP 3000 TurboSTORE family of data backup products provides fast and flexible system backup including backup to multiple backup devices running in parallel and online data backup.

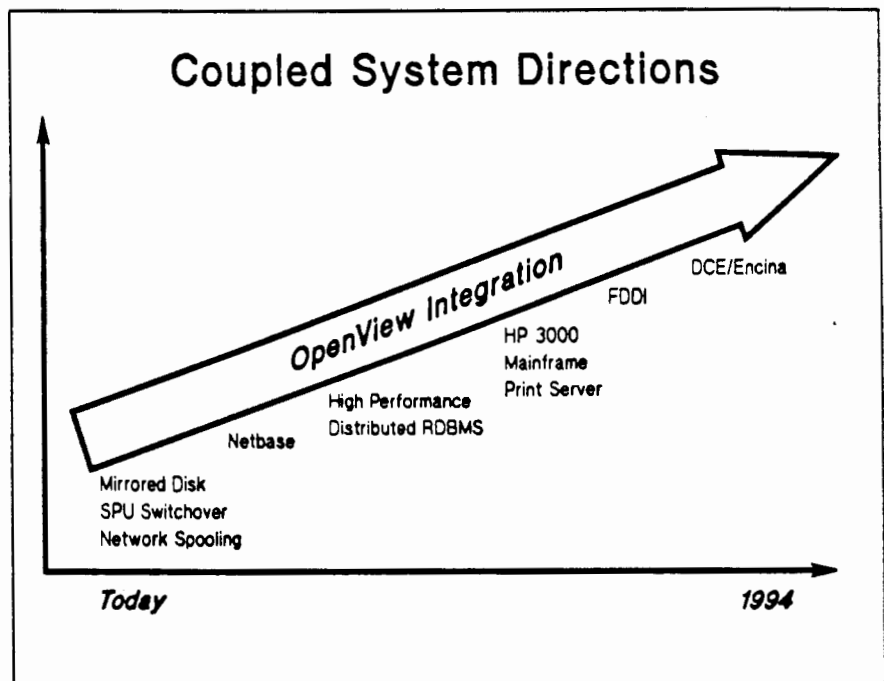
Despite the numerous features that harden individual HP 3000 systems against failure and provide fast recovery, disasters can occur that will effect even the most reliable of systems. Today many firms perform extensive planning for disaster recovery scenarios that will allow them to recover critical processing operations within hours of a natural disaster.

HP 3000 Corporate Business Systems will go beyond current disaster recovery scenarios to provide disaster tolerant systems. HP 3000 systems linked together in a disaster tolerant network will be able to continue processing through a natural disaster with almost no loss of data. In order to provide industry-leading disaster tolerance capabilities, HP 3000 Corporate Business Systems will roll out new capabilities to couple multiple systems together with transparent data replication and high performance distributed database capabilities. This program will build on the HP 3000 high availability capabilities of today (mirrored disk, SPU switchover, autorestart). The first element of this roll-out is NetBase, a product from Quest Software. Netbase provides data replication and load leveling, thus providing a high level of disaster tolerance as well as a level of horizontal performance growth. Data can be replicated across a network of HP 3000 systems using Netbase such that a natural disaster affecting one of the systems can have almost no effect on the processing capability of the network.



In 1992 ALLBASE/SQL will add distributed data base capabilities. In 1993, the Coupled Systems plan includes transparent data replication for ALLBASE/SQL distributed databases, thereby significantly improving performance. Even higher performance data replication and distributed data will be provided when support for FDDI, a 100 megabit per second fiber-based networking standard, is added in mid-1993.

The rollout of OSF Distributed Computing Environment (DCE) and Transarc Encina distributed transaction processing monitor technology in the 1993 timeframe will further enhance the coupled systems capabilities of the HP 3000. Transarc technology will allow the development of distributed applications that are able to preserve logical data integrity even should one of the systems in the network fail. With the foundations provided by Netbase, ALLBASE/SQL Replication, high-speed FDDI networking, and the distributed application capabilities provided by DCE and Transarc technology, the HP 3000 will provide distributed disaster-tolerant applications where processing continues regardless of local disasters or system problems.



Enterprise-Wide Connectivity

As businesses seek to integrate all aspects of their operation, the seamless and rapid flow of information within the organization becomes increasingly critical to maintaining smooth and coordinated operations. The ability to communicate with existing mainframes, heterogeneous divisional and departmental systems, and desktop devices are just some of the requirements. The HP 3000 Corporate Business Systems meet these requirements by providing a comprehensive and robust offering of standards-based networking products second to none in the industry.

HP has been a leader at providing standards-based networking for years. HP's networking strategy continues to provide enterprise-wide connectivity through the support of current and emerging standard networking links and services. HP will also improve network communication performance by tuning for existing network services and incorporating faster networking technologies as they become available.

For seamless integration into IBM computing environments, the HP 3000 Corporate Business Systems provide a complete offering of IBM connectivity products supporting both Systems Network Architecture (SNA) protocols and IBM Bisynchronous (BSC) protocols. The HP 3000 SNA IMF product provides IBM 3270 emulation for interactive communication with IBM systems. The HP 3000 SNA DHCF (Distributed Host Command Facility) product allows IBM users interactive access to HP 3000 Corporate Business Systems. The HP 3000 SNA/NRJE and BSC RJE products provide batch access to IBM systems. The HP 3000 LU 6.2/PU 2.1 product provides an API for program to program communication between HP 3000 Corporate Business Systems and IBM midrange and mainframe systems. Electronic mail interoperability between HP 3000 systems and IBM mainframes can be achieved with both the HP 3000 SNADS product and the HP X.400 product. The HP 3000 also co-exists easily as part of an IBM SNA network. For example, the HP 3000 SNA/SDLC Link product supports IBM NetView Alerts, thus allowing the HP 3000 to be managed as part of an IBM SNA network.

For system-to-system communication with non-IBM systems, the HP 3000 offers a complete offering of local and wide-area networking services. ARPA services, Network File System (NFS), and Network Computing System (NCS) provide transparent file access, file transfer, and sharing of resources in a TCP/IP environment. For OSI-based networks, HP 3000 FTAM product provides a standard file transfer mechanism. For electronic mail, the HP 3000 X.400 product, based on the industry-standard OSI model, allows the transfer of electronic mail messages across a multivendor environment.

HP 3000 networking capabilities provide networking connectivity to both PCs and UNIX* workstations. For connectivity to PCs, the HP 3000 supports the dominant de facto PC networking standards; Novell Netware and MicroSoft's Lan Manager. For connectivity with UNIX* workstations, the HP 3000 provides ARPA networking and NFS. Apple MacIntosh networking capabilities will be added in 1993.

The foundation for HP 3000 system-to-system and PC Lan networking is the support of industry-standard networking links, the hardware and software that provides the basic connectivity. The HP 3000 supports all of the major industry-standard links including Ethernet/802.3, IEEE 802.5, and X.25. Support for FDDI (Fiber Data Distributed Interface), a 100 megabit per second optical fiber based networking standard, will be added in mid-1993.

The HP 3000 Corporate Business Systems provide a solid networking foundation with a complete and robust offering of products supporting both industry and de facto networking standards. This offering will be continually enhanced with new and faster networking technologies and also with standards such as OSF's Distributed Computing Environment which will support the development of true distributed applications.

Distributed Transaction Processing

As businesses seek to tightly integrate geographically dispersed entities in order to achieve decisive competitive advantages, it becomes more important to support distributed transaction processing. In keeping with this new trend in corporate business computing ALLBASE/SQL will add in 1992 a distributed data base capability (ALLBASE/STAR) with two-phase commit capabilities. In addition, the HP 3000 Corporate Business System will begin to add support for OSF's Distributed Computing Environment (DCE) and Distributed Management Environment (DME) in late 1992 and early 1993. OSF's Distributed Computing Environment will make true distributed applications possible. In addition to support of OSF DCE and DME, the HP 3000 Corporate Business System will also support distributed transaction processing monitor technology from Transarc Inc. Transarc is developing Encina distributed transaction processing monitor technology designed to utilize OSF DCE for distributed transaction processing. Transarc technology has also been endorsed by other vendors such as IBM, Informix, Stratus, and Sybase.



**HP 3000 Corporate Business
System Data Center
Application Strategy**

The HP 3000 Corporate Business Systems provide an application platform of unequalled performance, reliability, price/performance, and flexibility. The application strategy of the HP 3000 is also designed to provide maximum results for HP 3000 Corporate Business Systems customers. The HP 3000 Corporate Business Systems today support industry-leading applications in areas such as manufacturing, accounting and financials, state and local government, education, health care, human resources, retail, and distribution. Data center class applications from some of the best known names in the industry, names such as Dun and Bradstreet, SAP, Oracle, Peoplesoft, and ASK, just to name a few, are available on HP 3000 Corporate Business Systems today. Application suppliers are finding that the HP 3000 Corporate Business System, with its performance, reliability, price/performance, flexibility, and openness, offers a very attractive value proposition. The suite of thousands of applications on the HP 3000 today virtually ensures the right fit for your particular need.

The HP 3000 also supports a large number of open systems standards and is attracting new open systems applications that will run on HP 3000 open systems interfaces such as POSIX. Applications from SAP, Lawson Associates and SoftWare AG are just several examples of new applications that will use the open systems interfaces of the HP 3000.

**Application Development
Strategy**

The HP 3000 supports a large number of multivendor 4GL and client/server toolsets that allow for rapid and flexible applications development. Among the 4GL and client/server tool sets currently supported on HP 3000 Corporate Business Systems are IBI Focus, Cognos Powerhouse, Ingres, Speedware, Uniface, Gupta SQL Windows, Powerbuilder from Powersoft, CGI PacLAN, and Maestro II from Softlab. In addition to current applications and application development toolsets, the HP Corporate Business Systems also support tools that help migrate or reshape mainframe applications so that these applications can be ported to HP 3000 Corporate Business Systems. For example, the Infosoft Conveyor product can be used to convert an IBM CICS/COBOL application to an HP 3000 Corporate Business System.

HP's Premier Account Support Program

At the heart of HP's Premier Account Support program is the belief that our customers' success defines our success. We've built a program to help make the Corporate Business Systems customer successful in the three key areas on which they are measured; 1) solution availability, 2) resource management, and 3) technology planning.

The Premier Account Support program features new support capabilities packaged together in a single, integrated service and support product. Key components include:

- A single point of contact with on-site presence
- Personalized Response Center capabilities
- 24-hour, 7-day hardware, software, and network support
- A pre-defined, easily-administered yearly contract
- Pro-active support to maximize the effectiveness of the customer's resources
- Support from the best--HP's team approach to quality and service is successful and our reputation unmatched.

HP's vision for high-end support is to proactively partner with our customers to enable them to not only have their systems continuously on-line, but also to quickly implement new solutions while protecting their past investments in people and technology.

HP 3000: Exceptional Value . . . No Compromises

The new paradigm represented by the HP 3000 Corporate Business System allows corporations to meet the needs of the corporate information architecture and the information needs of users. No longer must the tradeoff be made between systems that provide high performance but are expensive and inflexible, systems that are easy to use but underpowered for the corporate MIS environment, and systems that are open but do not provide the functionality and reliability of commercial systems. With the HP 3000, there is no need to compromise.

* UNIX is a trademark of UNIX Systems Laboratories in the United States and in other countries.

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