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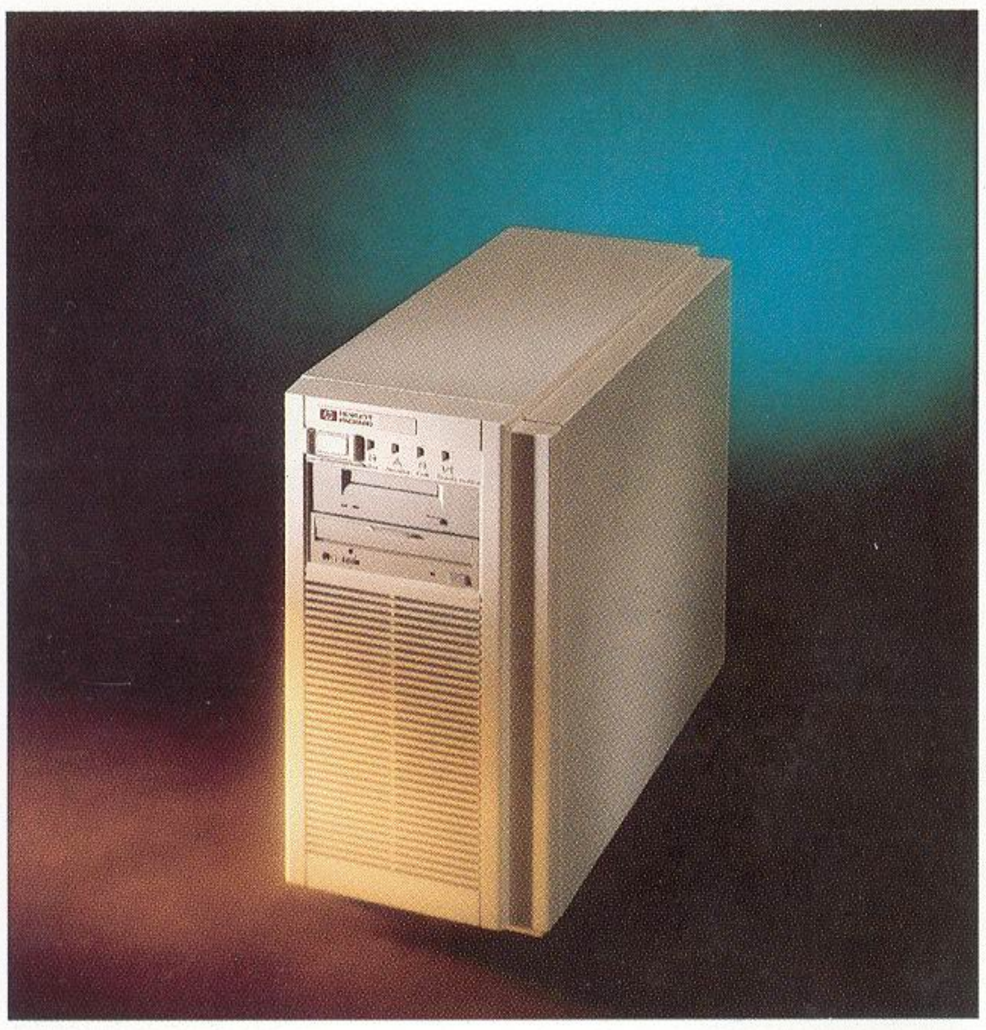
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HP 9000 E-Class Servers

Product Brief

HP 9000 Models E25, E35, and E45



Dimensions: 17.2" high × 9" wide × 21" deep

Reasons to Choose the E-Class Servers

- Unmatched scalability and performance
- Top quality and reliability
- Robust commercial operating environment
- Leading enterprise-wide system management tools
- Large application portfolio
- First-class worldwide support

HP 9000 Models E25, E35, and E45

The HP 9000 Models E25, E35, and E45 are entry-level servers in the industry's broadest UNIX®-based product family, the HP 9000. The modular design of the E-Class servers allows for smooth and cost-effective performance and I/O expansion upgrades while preserving investments in software and peripheral devices. In addition to this scalability, these servers take full advantage of HP's industry-leading network connectivity solutions to best integrate with a broad range of computing environments.

The superior capabilities of the E-Class servers make them a platform of choice for a wide variety of applications including replicated site installations, multi-user and server configurations, and small businesses. In these environments, the E-Class servers are complemented with a robust operating system and system management environment, an extensive application portfolio, and a vast worldwide support and service network.

Key Product Features

- Superscalar Precision Architecture RISC (PA-RISC 7100LC) CPU
- Up to 4 HP-PB (HP-Precision Bus) I/O expansion slots
- Integrated I/O, and up to 4 built-in peripherals
- Modular product design with easy performance and I/O expansion upgrades
- Expandable to 512 Mbytes of memory
- Expandable to 144 Gbytes of disk storage
- Optional powerfail support with integrated Uninterruptible Power Supply (UPS) port
- Unmatched reliability with mean time between failures (MTBF) of over 5 years
- Robust HP-UX operating environment pre-installed on internal disk drive
- Support for over 5,000 leading applications
- Superior performance optimized for commercial computing
- Enhanced for replicated site environments with remote console support and auto-configuration capabilities
- Rackable with external peripherals into a single modular system enclosure
- Security ring to locally secure system

Unmatched Scalability and Performance

In today's competitive global business environment, it is more important than ever to select strategic computing solutions that position your business for success over time. This requires choosing a solution which will allow your business to continue to rapidly adapt to new business requirements while minimizing downtime and preserving application investments.

PA-RISC: The leading commercial computing architecture

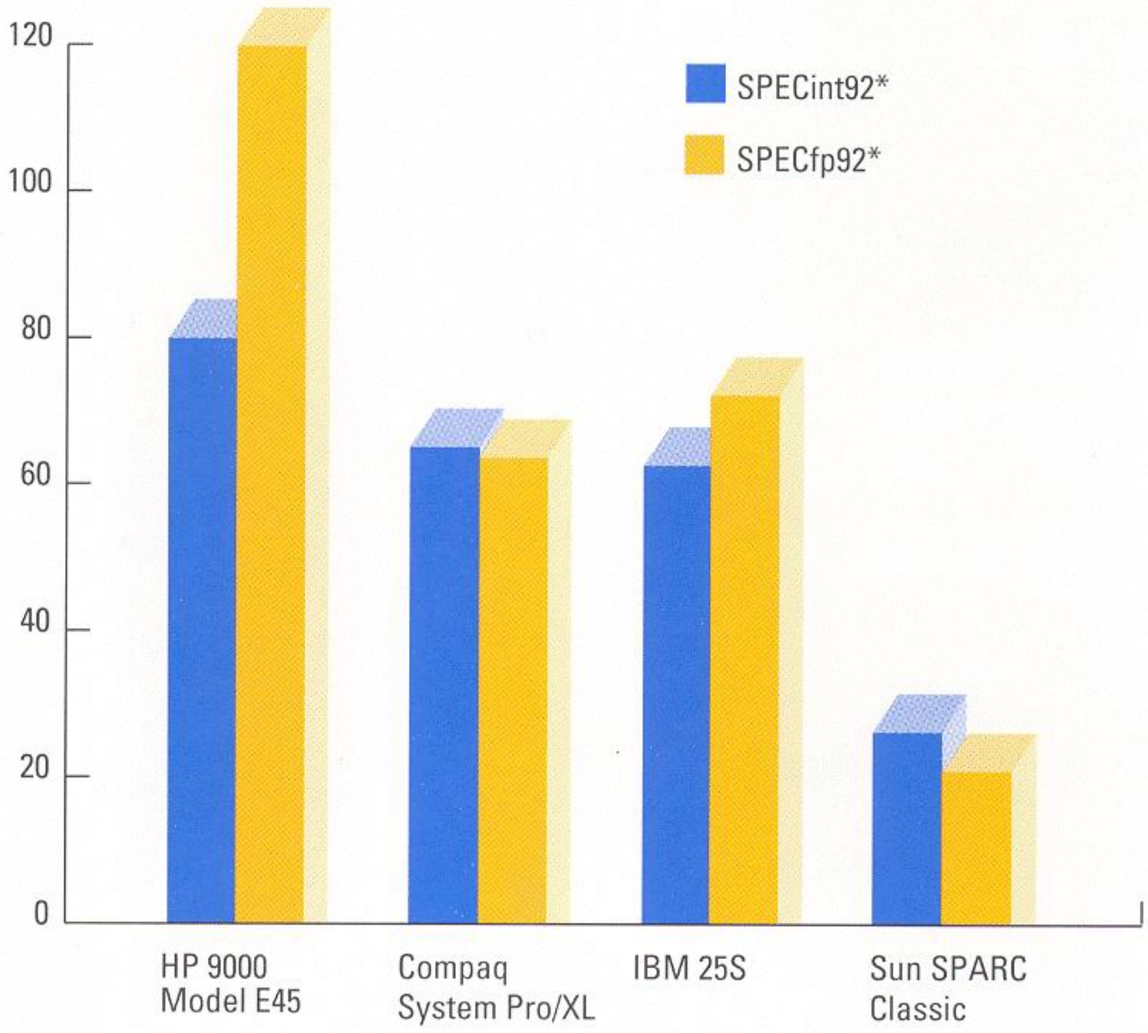
In 1986, HP was the first major vendor to bring RISC technology to the commercial market. Since then HP has delivered seven generations of the PA-RISC architecture that have consistently outperformed the competition. This demonstrates why HP has become the leading manufacturer of RISC-based computers in the world today.

Unmatched performance

The advanced PA-RISC architecture enables the E-Class servers to deliver more performance than any other entry-level system in the industry. Customers requiring a low-cost solution have a system fortified with enough performance headroom to add additional applications, add additional users, or meet the ever increasing demands for more powerful software solutions.

Other entry-level system architectures such as Pentium,® Power PC,® or SPARC® can't match the processing performance of HP's newest CPU, the PA-RISC 7100LC. Figure 1 shows the performance superiority of the commercially tuned E-Class servers, relative to competitive products.

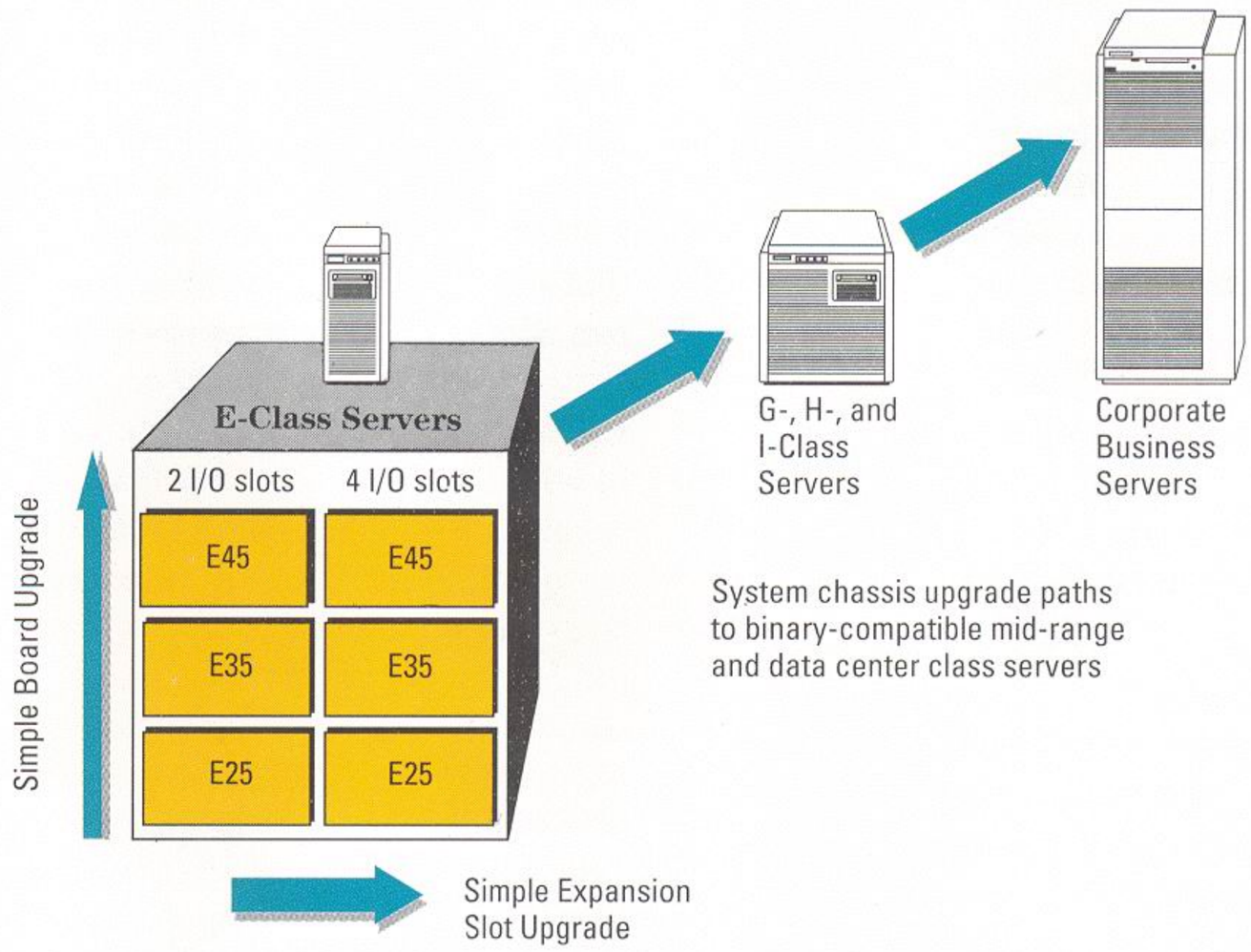
Figure 1. E-Class Servers Provide Industry-leading Performance



*SPEC performance results are preliminary.

The superior growth path and scalability of the Series 800 offers a much broader selection of high-performance systems to meet your immediate needs and allow for effective growth paths as your needs increase over time.

Figure 2. The E-Class Servers Provide Simple and Affordable Performance and Expandability Upgrades



E-Class designed for investment protection

Recognizing that the ability to grow performance and accommodate I/O expansion are key concerns to your business, HP has combined a modular system design with unmatched processing scalability to deliver simple, affordable performance and expandability upgrades. For example, processor upgrades from one model to another involve only a simple, field-installable board exchange. You can add additional I/O slots via a cost-effective upgrade option which is also field-installable. System chassis upgrade paths are also available to more powerful midrange and high-end Series 800 models.

All HP 9000 Series 800 models are based on the same PA-RISC architecture and use the same HP-UX operating system, providing object-code compatibility from desktop to data center class systems. This scalability translates into savings as training and support costs can be leveraged throughout your organization to meet your total information technology needs.

Unlike other vendors, HP has focused the product design of the E-Class servers to provide a cost-effective entry price and an affordable upgrade path to meet your growth needs. Other vendors have put less emphasis on upgrade paths and may require a costly system swap to increase the number of I/O slots. With the E-Class server the HP solution affords more cost-effective, field-installable I/O and performance upgrades.

Broad selection of industry-leading peripherals

HP offers a broad selection of industry-leading, standards-based peripherals. HP-manufactured peripherals include: disk drives, tape drives, optical drives, printers, plotters, terminals, X terminals, PCs, and data communication devices. The built-in scalability of the HP 9000 Series 800 means your investment in HP's peripherals is protected as you upgrade your processing power.

Each E-Class server may be configured with up to two internal disk drives and two removable media devices (QIC, 4 mm DDS tape drive, 3.5-inch floppy drive or CD-ROM). These options may be configured in the compact E-Class chassis footprint for environments where floor space utilization is important, such as retail stores or branch offices. Should your applications require external devices, the E-Class servers may be pre-integrated and shipped in standard racking cabinets containing the system, disk drives, tape backup unit, and a wide range of other peripherals.

In addition, you may select from HP's wide array of multivendor networking products to connect your Series 800 Business Servers to TCP/IP, OSI, Novell NetWare, Banyan, Microsoft® LAN Manager, and SNA environments.

Top Quality and Reliability

In most industries, computer downtime often means lost business—and frustrated customers. The superior reliability of the E-Class servers positions them as the leading choice for business-critical applications where system uptime is a key requirement.

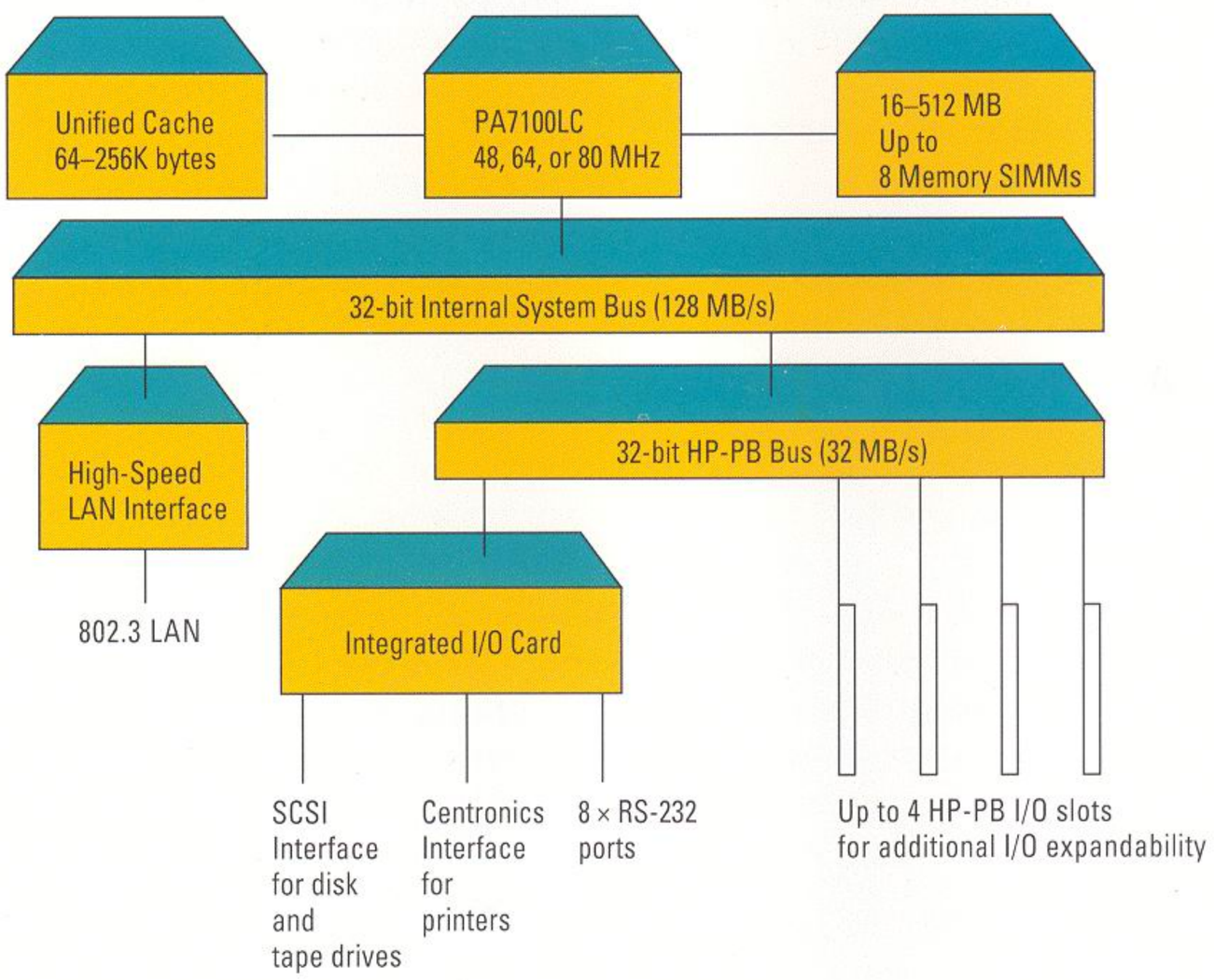
Unmatched reliability
HP utilized state-of-the-art design and manufacturing technologies to ensure that the E-Class servers maintain HP's high quality and reliability standards. These servers use a single-chip processor as well as integrated I/O devices to minimize product complexity. These features combine to provide unmatched system reliability for the E-Class models, with mean time between failures (MTBF) of approximately 5 years.

HP-UX, the industry's most reliable open systems computing environment, also increases total system availability. HP does extensive and thorough testing before all major releases of the HP-UX operating system to ensure that customers can develop and run applications with confidence.

High availability
In addition to high quality and reliability, HP provides a robust suite of high-availability features such as unique disk array technology, transparent disk mirroring through MirrorDisk/UX, on-line backup utilities, and an automatic processor recovery capability called SwitchOver/UX, to ensure your system is available to users at all times.

These capabilities have allowed HP's Series 800 systems to consistently rank at the top in industry reliability surveys.

Figure 3. Block Diagram of Architecture



Robust Commercial Operating Environment

To address such system-critical issues as distributed computing, application longevity, commercially tuned performance, and information integration, HP has fortified the HP-UX computing environment with enhanced commercial capabilities that are based on industry standards.

Leading distributed computing solutions
The Series 800 provides a solid foundation for implementing distributed, client/server applications in an open systems environment. HP's Distributed Computing Environment (DCE) is the industry's most comprehensive implementation of the OSF DCE suite. In addition to a robust and high-performance offering, HP DCE also offers industry-leading development, debugging and management tools, as well as comprehensive support, training, and education. With HP's DCE products, customers can have enterprise-wide, fully distributed applications with security, resource management, and file sharing handled transparently and automatically.

Full data integrity in distributed OLTP applications is ensured on the Series 800 with a suite of transaction processing monitor technologies, including Encina, Tuxedo, and CICS® for HP 9000.

The open system standards-based solution
The HP 9000 family is based on open systems standards. For example, HP-UX is X/Open* branded for XPG4. XPG4 is the open system portability standard backed by OSF,™ UNIX International (UI), and all major computer vendors. In addition, the HP 9000 Series 800 systems conform to IEEE's POSIX 1003.1, 1003.2, and Federal Process Spec (FIPS) 151-1. A more recent example of standards leadership is HP's commitment to Common OS Application Programming Interface (SPEC 1170). Compliance with these standards facilitates porting of applications to other standards-based operating systems, preserving application longevity.

Performance enhancements
To meet the varied demands of a commercial enterprise, HP optimized the HP-UX environment for single-threaded batch applications as well as for OLTP (on-line transaction processing) and decision support applications. HP is unique in offering industry-leading performance in all three areas.

Client/Server-based information integration
HP's cooperative computing solution strategy is an integrated, client/server-based system for the HP 9000 Series 800 Business Servers that allows complete information integration in a heterogeneous environment—uniting corporate systems, PCs, peripherals, and applications. HP offers transparent integration to desktop PCs with our support of Novell NetWare and Banyan Vines. We have enhanced our offering of LAN Manager/X to provide support for Microsoft LAN Manager 2.1 clients. HP also supports Pacer Software's Pacerprint, Pacershare, and DAL to provide connectivity to Apple Macintosh clients. This allows business-critical applications running on the robust Series 800 platform to be smoothly integrated with existing PC LAN networks.

Leading Enterprise-wide System Management Tools

As computing power continues to migrate from centralized to distributed client/server environments, network and system complexity greatly increase. To address this new computing paradigm, HP provides a comprehensive set of integrated system and network management products called HP OpenView to manage enterprise-wide, distributed, heterogeneous environments.

Distributed system and network management
HP's OperationsCenter provides an answer to customers looking for a solution to effectively manage multivendor distributed systems. It allows you to perform operations and problem management from a single, central location. Software Distributor, one of the HP OpenView management applications, is a full set of sophisticated tools that perform distributed management and updates of application software across the network. HP's OpenSpool/UX and OmniBack/Turbo provide simplified network spooling and high-speed network backup capabilities that are unique in the industry.

HP's OpenView Network Node Manager provides fault, configuration, and performance management for multivendor TCP/IP networks. In addition, HP's OpenView Interconnect Manager/UX combines the power of our SNMP market-leading products to deliver a single-view management system for global networks.

HP OpenView, the industry's leading network and system management solution, and the framework for the Open Software Foundation™ (OSF) Distributed Management Environment (DME).

System management
A comprehensive set of system administration tools (the Systems Administration Manager, SAM) is available to control system installation, operations, configuration, and use. Also, the E-Class servers have been designed with remote console capability to allow geographically distributed locations to be managed at a single remote site. This feature, combined with HP's robust suite of system administration and management tools, will give your business the competitive edge in distributed application management. For example, performance management and capacity planning may be managed remotely and in real-time, without requiring costly system administration

* X/Open is a trademark of X/Open Company Limited in the UK and other countries.

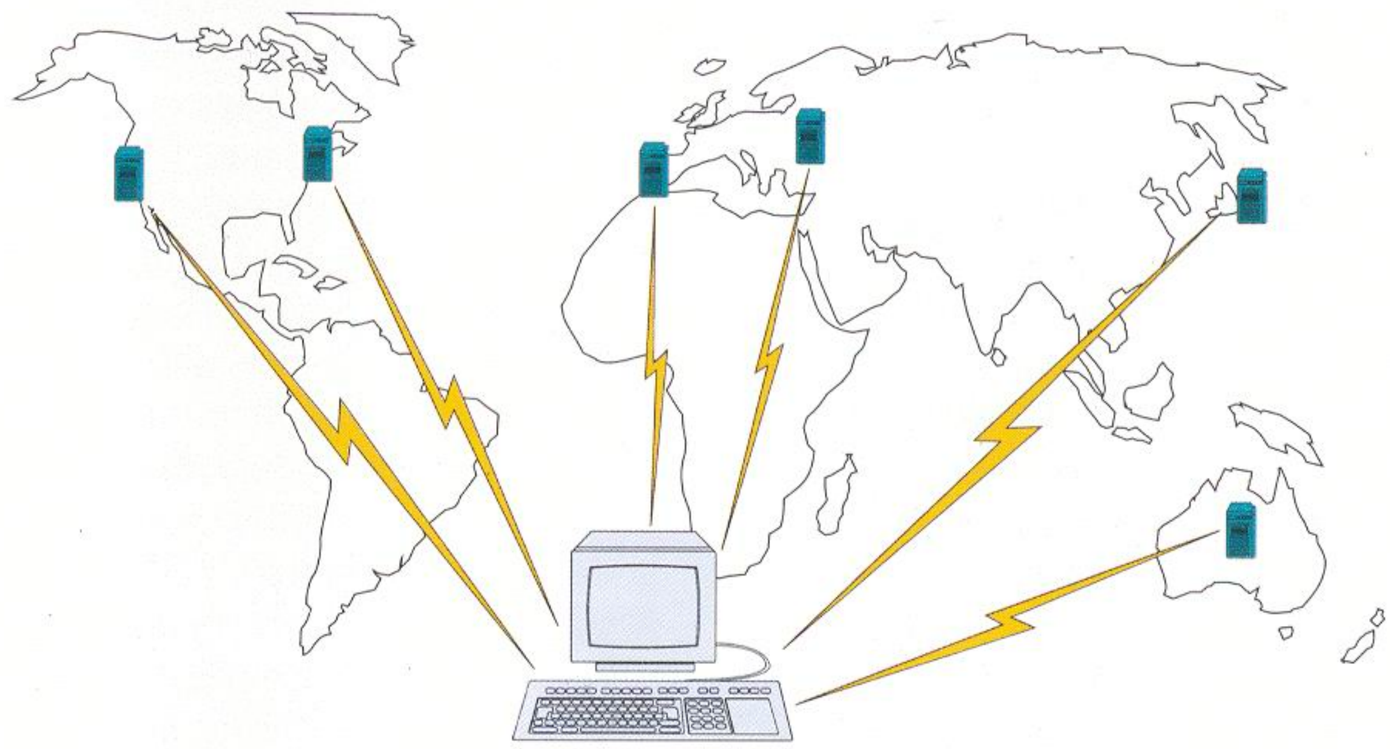
resources to be utilized locally. In addition, GlancePlus/UX, RX Forecast, Laser RX/UX and PerfView are industry-leading performance management and capacity planning tools and services that can optimize system and network performance as well as user productivity.

Large Application Solution Portfolio

Since HP is the leading midrange UNIX systems vendor in the world, nearly all leading software companies have ported their software to the Series 800 platform. This popularity combined with HP's leading channel partner programs provide you with over 5000 choices of best-in-class, industrial-strength applications.

Preferred status with RDBMS leaders
HP's strategy is to continually ennance our relationship with each of the leading database vendors to guarantee freedom of choice and excellent support for our customers. These relationships result in premier porting status for excellent software availability, optimized performance, and the sharing of technology and codevelopment of new products, which ultimately assure you of the best possible database server solutions.

Figure 4. Remote Console Improves Administration Efficiency



First-Class Worldwide Support

Over the past several years, HP has consistently ranked the highest in support and service in Datapro surveys of minicomputer users rating maintenance effectiveness, maintenance responsiveness, troubleshooting, documentation, education, and software support. With over 10 years of experience with UNIX-based systems, HP has the expertise to assure you of the best possible support solution. In addition, HP has a vast array of hardware, software, and professional support services available to fit your needs.

Replicated site support
HP offers services to plan, implement, and provide ongoing support for distributed, replicated site implementations. HP's broad range of consulting services—from strategic IT planning to implementation and support—provides you with expert guidance throughout the entire information technology life cycle.

HP has proven methodologies and experience in managing replicated site implementations. Once the replicated site solution has been rolled out, HP offers a wide range of support capabilities that can be combined to create an ongoing support solution tailored to your needs.

HP 9000 E-Class Servers Technical Specification Summary

	E25	E35	E45
Processor Performance*			
Clock speed	48	64	80
SPECint92	44	65	80
SPECfp92	66	98	120
OLTP TPS	80	125	155
Memory/Cache			
Standard memory	16	16	16
Maximum memory	512	512	512
Cache size (combined instruction and data)	64	256	256
Mass Storage			
Maximum internal disk capacity	2 × 2 GB	2 × 2 GB	2 × 2 GB
Maximum internal QIC	2	2	2
Maximum internal DAT	2	2	2
Maximum external disk capacity			
with Single-Ended SCSI disk	70 GB	70 GB	70 GB
with Fast and Wide SCSI disk	60 GB	60 GB	60 GB
with Fast and Wide SCSI disk arrays	112 GB	112 GB	112 GB
with Fast and Wide SCSI disks and arrays	144 GB	144 GB	144 GB
with HP-FL (not supported)	NA	NA	NA
with HP-FL disk arrays (not supported)	NA	NA	NA
Maximum external tape	8	8	8
Connectivity			
Maximum HP-PB I/O slots	4	4	4
Standard RS-232 ports	8–16	8–16	8–16
Maximum RS-232 ports	144	144	144
Physical Characteristics			
Height	430 mm	430 mm	430 mm
Width	222 mm	222 mm	222 mm
Depth	533 mm	533 mm	533 mm
Weight	32 kg (70 lbs.)	32 kg (70 lbs.)	32 kg (70 lbs.)
Acoustics	<4.7 Bel <31C	<4.7 Bel <31C	<4.7 Bel <31C
	<5.1 Bel >31C	<5.1 Bel >31C	<5.1 Bel >31C
Racking cabinet acoustics	<5.5 Bel <31C	<5.5 Bel <31C	<5.5 Bel <31C
	<6.0 Bel >31C	<6.0 Bel >31C	<6.0 Bel >31C
Electrical Specifications			
AC power input	100–120V and 200–240V Autorange 50–60 Hz		
Current draw			
120V	6.5 A @ 100V		
240V	3.5 A @ 220V		
Power dissipation			
Typical	375 Watts		
Maximum	400 Watts		
Environmental Specifications			
Temperature (operating)	+5 to +40C		
Maximum rate of temperature change	<10C/hr		
Relative humidity (operating)	20% to 80% RH, non-condensing		
Maximum rate of humidity change	<30% RH/hr		
Altitude (operating)	0–10K feet above sea level, 5 to 40C		
Regulatory Compliance			
Electromagnetic interference	Complies with FCC rules and regulations, Part 15, Subpart J, as a Class A computing device. Manufacturers Declarations to EN55022, class A. Registered with Japanese VCCI, class 1.		
Safety	UL Listed, ETL Listed, CSA Certified, compliant with EN 60950.		

*SPEC92 and TPS performance results are preliminary.

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