WHITE PAPER

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Prepared By
 Workstation Division

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Compaq Computer
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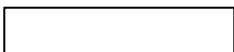
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Abstract.

The close partnership between Compaq and PTC makes Compaq workstations the best choice for many PTC users. Compaq workstations provide the best price/performance available for many PTC solutions. This whitepaper details the Compaq/PTC relationship and the benefit it brings to PTC users.

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Better Solutions for Parametric Technology Corporation's Customers

COMPAQ WORKSTATIONS FOR PTC CUSTOMERS

OVERVIEW

PTC is the leading supplier of CAD/CAM/CAE software tools used to automate the development of a product from its design concept through production. More than 24,000 companies worldwide use PTC's integrated software technologies to reduce time to market, improve engineering processes, and optimize product quality.

Pro/ENGINEER®, PTC's leading software application, is a highly advanced product development software tool that supports collaborative product commerce in the areas of industrial design, mechanical design, functional simulation, and manufacturing. Through the use of Pro/ENGINEER on Compaq Professional Workstations, multiple disciplines within a company can contribute simultaneously to a single product model, thereby reducing the company's overall time to market.

Compaq is the leading supplier (#1) of workstations to PTC customers - as announced on December 2, 1999. Compaq also has nearly twice the Windows NT and Windows 2000 market share of its nearest competitor, according to PTC's new license registrations for the MCAD market. Compaq has achieved this level of market acceptance as a result of the following:

Leading Performance - Compaq workstations provide leadership performance technology at competitive prices, enabling engineering managers to achieve shorter development times through higher engineering productivity. This, coupled with Compaq's leadership in graphics, allows engineers to easily see and understand their designs, check out fresh ideas and concepts, test and analyze these concepts, share them for review, and convert them to cost-effective designs with documentation for production.

Compaq Engineering Excellence - With Compaq's intensive engineering efforts, Compaq's workstation family can consistently offer the latest Intel and graphics technology, and be the first to market with new products while providing high quality and reliability. In one recent example, Compaq shipped the Intense 3D Wildcat graphics technology over 3 months ahead of the competition. In another example, Compaq announced new workstation products, and took orders on the same day Intel announced the availability of its new chip.

Award Winning Design - Compaq workstations consistently win awards for their performance. One of the recent awards was Bench99, sponsored by Connect Press Inc. the publishers of *ProE The Magazine*. Compaq won in the categories of the fastest Windows NT workstation, the fastest CPU and the best price/performance. Leading workstation vendors submitted a combined total of 21 systems.

Technology Change Protection - With technology changing rapidly, hardware vendors must not only keep pace, but do so in a way that provides quality Pro/ENGINEER solutions. Compaq maintains a technical lab at PTC in Waltham, where we test our new workstations with Pro/ENGINEER regression tests well before they make it into customer's hands. Compaq tests new PTC applications on older hardware so that customers are not required to upgrade their Compaq systems when they want to implement the newest versions of Pro/ENGINEER.

Specific PTC Solutions - Compaq Workstations also have many unique features that help Pro/ENGINEER users, such as the largest available internal memory for Intel-based machines (4 Gbytes). Needed by some customers to handle large assemblies, this memory option significantly speeds up model manipulation by allowing the model and Pro/ENGINEER software to be memory resident. Engineering departments are finding this to be more of a requirement as model sizes increase during the development cycle.

Another feature gaining in popularity is that Compaq workstations can be used with dual screens.

For example, one screen can be focused on Intranet research identifying the least costly part, while the other is used to enter the information into the design using Pro/ENGINEER.

Added Productivity - For users who manipulate and modify designs repeatedly throughout the day, the Compaq Spaceball can provide up to a 30 percent productivity improvement by allowing more rapid positioning. Also, its default Pro/ENGINEER commands allow users to eliminate multiple mouse clicks and rapidly step through layered menu selections.

Unique Software Advantage - With the added software features of a Compaq Workstation, IT departments can effectively manage the desktop with minimal disruption to the engineer. For instance, Unattended Install allows IT managers to replicate the same software configuration from desktop to desktop during installation, reducing the time needed at the engineer's desk. Another example is Insight Manager, with its disks monitor function, it can predict when a disk will fail and communicate that to the IT manager, allowing it to be changed before valuable data is lost.

In many ways Compaq gears its workstations for the success of Pro/ENGINEER users and the new Windchill Collaborative Product Commerce environment.

A NEW WORLD OF COMPUTING

The new computing environment currently emerging is one in which all information is online and people can securely access information, communicate, and conduct electronic commerce from any place at any time. This new computing environment will radically affect the technology of the engineering development process, affecting the way engineers, designers, customers, suppliers, manufacturing, analysts and managers communicate and work on a design. This new computing environment is referred to as Collaborative Product Commerce. These customer and supplier relationships, established electronically, will enable a new framework for competitive advantage. While enormously powerful, the complexity and scale of this change and its implementation can be overwhelming for engineering departments and large enterprises alike. So IT managers and engineering managers need an information technology (IT) partner that can efficiently deliver simple and useful computing solutions that truly empower them in the Internet world.

Compaq has everything it needs to be that partner—and the best computing company in the world. Compaq's unique approach to computing—industry standards, deep partnerships, useful innovation, and customer responsiveness—has established it in a leadership position in nearly every part of the market. Compaq offers an extended range of products, services, and solutions, from hand-held devices to ultra-large servers. In support of this huge marketplace change, Compaq is driving all its products to support eBusiness, from web servers to the PC. For example,Compaq currently provides servers for 70 percent of the world's busiest web sites , six out of the eight top ISPs, 106 out of the 112 largest stock exchanges, 60 percent of the world's banks, and has the number one market share for Windows NT servers.

Compaq's goal is to establish itself as the market share leader, commanding the number one position in all its targeted markets, and to establish the highest level of customer satisfaction and loyalty.

Innovative Solutions for Engineers

Compaq offers the widest range of affordable, industry-standard products from the palmtop to the data center. Our goal is to take the best, innovative, and most deserving technologies and drive them towards wider acceptance and greater affordability.

The Aero 1500 and Aero GSM connectivity suite

Our Aero 1500 is only .5" (1.27 cm) thick and weighs only .33 lbs. (5 oz. or 150 g). It is the smallest, lightest handheld with Windows CE on the market today. When connected to our industry-leading Global System for Mobile (GSM) communications connectivity suite and a GSM phone, you can get wireless access to the Internet from anywhere. Wherever you travel you can stay in touch.

Wireless LAN

Compaq led the industry with the first comprehensive wireless local area network (LAN) solutions and it is the first fully packaged, serviceable, wireless LAN at 11 megabits per second. Our WL products address every aspect of a wireless network environment including the client access devices, the connectivity devices and the services that aid in the deployment and management of the network.

Roam About Engineering

With a Wireless LAN system you can roam throughout your building with an Armada M300 or M700 laptop and stay connected to the Internet. Compaq has the most comprehensive end-to-end

portable solutions including the Armada M700 - which at 4.3 lbs (1.95 kg) is a no-compromise thin and light mobile solution, augmented by a range of common docking solutions. The Armada M300 is a breakthrough design in a 3 lb (1.44 kg) notebook.

Design Projection and 3D Team Reviews

Using your Wireless LAN system and your Armada M300 or M700 laptop computer, you can add an MP1600 projector. The MP1600 is the world's first micro-portable projector. It weighs only 4.2 lbs (1.9 kg) and is easy to set up. When the MP1600 was announced at PC Expo, it was named a finalist for the Best Business Computing Hardware. It replaces the expensive projectors typically required to display 3D CAD models. The MP1600 boasts a native XGA (1024 X 768) resolution capacity and employs AutoSynch technology to recognize the signal from the host PC and make adjustments (from VGA to SXGA) required to fit the screen.

For design review hardware, simply connect your MP1600 projector to your laptop, run a Windchill browser on your laptop, and access your data files through your Wireless LAN. If you design large parts, the MP1600 provides a low-cost way to view a larger image than on a typical computer screen. This is the new paradigm shift for Internet access, access it anywhere, anytime, and display it for one or many.

eEngineering Workstations

With the web's continued impact on design, engineers need more screen space. Compaq provides a dual-screen solution, which is certified for ProENGINEER. The engineer can use one screen for design research on the web, and the other for Pro/ENGINEER software.

In Windows NT/Windows 2000 Server–based environment

With the continued acceptance of Windows NT/Windows 2000, standards-based computing is reaching higher and higher into the enterprise. Compaq is a market leader in providing robust, scalable solutions for Windows NT/Windows 2000. Today Compaq ships more computers than any company in the world. Compaq provides best-in-class costs and delivery times, while driving innovative new technology into industry standards.

64-bit computing

Compaq enjoys a five-year head start in 64-bit computing, with more than 5,000 64-bit applications currently running on Alpha-based UNIX systems all over the world. Additionally, Compaq continues its very close relationship with Intel and is working on products for the IA64 architecture. Pro/ENGINEER and Pro/MECHANICA have been available as 64-bit applications on Tru64 UNIX since 1992.

Windows 2000

Windows 2000 was designed, tested and deployed on Compaq products, and Compaq has more Windows 2000 engineering expertise than anyone except Microsoft. Our engineers actually developed pieces of the code. Also Compaq is the only Microsoft Worldwide Prime Integrator, which means we are the Microsoft recommended service arm for those who need help in implementation. Compaq has the most platforms certified for Windows 2000, including 35 percent more than IBM, 85 percent more than Dell, and and 324 percent more than HP. (According to the Microsoft Hardware Compatibility List, 1/1/00, http://www.microsoft.com/windows2000/upgrade/compat/search/default.asp)

Fast at Solutions

Compaq is the industry-leading supplier of partner solutions. We have sought the best minds in the industry so that together we can find the best answers—everything from Internet commerce to outcomes-based decision support. The MCAD and Collaborative Product Commerce markets are part of this effort.

But in a highly-competitive market, having the right solutions is not enough. You have to be able to implement them faster than the competition. Compaq has made the investments to achieve this.

Peak Performance through Partnerships

Compaq partners with companies such as Parametric Technology Corporation to delivery complete solutions of the highest quality for our customers, more rapidly and consistently than our competitors. To ensure this happens quickly and with the highest quality, Compaq maintains multiple testing labs. One is located at PTC in Waltham, MA. Compaq software engineers are on site to work with PTC's application designers and QA department. In Compaq's labs in Littleton, MA and Houston, TX, PTC software is used as part of the workstation development process. The goal of these labs is to maximize the performance of our new workstations running PTC software, prior to the first customer shipment, and to formally certify these products to PTC's rigorous QA certification process as rapidly as possible. With this process in place, customers get top quality hardware designed to run at peak performance with their favorite PTC applications. Most of our competitors do not have this level of investment in application quality testing and solution assurance.

Responsive

Compaq is committed to forging stronger relationships with our customers through focused, global enterprise account management, industry-leading service and support, and a commitment to sell the way customers want to buy. Compaq now has one of the world's greatest service and support organizations: some 27,000 IT experts in more than 100 countries providing a central source of advice, assistance, and accountability for even the most complex multivendor network.

We offer a comprehensive portfolio of support services delivered by certified and trained experts.

The Compaq Workstation Advantages

Using Compaq workstations with PTC applications offers the following benefits:

- Web-enabled Professional Workstations
- Industry leading performance and technology (processor, memory, graphics, bus structure, disk access, network access)
- Visualization excellence for complex 3D models, and range of graphics choices
- Tested, certified, and optimized for Pro/ENGINEER and other PTC applications
- Maximum performance for PTC applications
- Exceptional manageability features, reducing cost of ownership
- Three-year warranty
- Windows 2000 certified
- Worldwide service organization
- Tru64 UNIX where required

- Exceptional add-ons, flat panel, multiple screens, Spaceball, fingerprint technology
- Affordable prices, leveraging PC economics
- Unique solutions for PTC customers (such as the large assembly solution)

Did You Know?

Compaq is one of the premier IT suppliers around the world:

- Compaq is the Windows NT market share leader with more than 36 percent of all Windows NT servers sold.
- Compaq was rated the #1 systems integration company for IT consulting by *ComputerWorld*.
- Compaq is number three in systems market share for business intelligence. (Source: Palo Alto Management Group)
- More than 70 percent of Oracle Data Mart Suites are implemented on Compaq servers.
- Compaq is the number one Windows NT platform for Oracle customers.
- Compaq is the number one Windows NT platform for SAP customers.
- Compaq is number one for AlphaServer storage. (Source: Market Perspectives)
- According to Dataquest's July 1999 report Compaq is the number one worldwide supplier of Windows NT workstations supporting Mechanical Computer Aided Design (MCAD). In the Microsoft Windows NT MCAD segment, Compaq's share is 18.2 percent, over 60 percent more than the nearest workstation competitor.
- Compaq has the number one Windows NT marketshare with all of the following strategic partners:
    - NT Market 36%
    - Novell Market >40%
    - Oracle NT Market 36%
    - SAP NT Market 47%
    - Lotus 53%
    - PTC NT Market 26%
    - PeopleSoft 50%
    - Siebel 42%

BETTER COMPUTING SOLUTIONS FOR MANUFACTURING COMPANIES

The New World of computing has arrived for manufacturing companies. As such, these companies need an IT partner they can trust to bring them solutions for multiple applications. From complex material requirements planning systems, to order management, financial control, or engineering new product development - Compaq has the partner relationships to bring competitive success to its customers, and a service organization to help in implementation and support.

Compaq demonstrates these solutions at its key expertise centers around the world. Compaq's eBusiness solutions are geared towards manufacturing, and provide the power for the worlds busiest web sites and most demanding Intranets. Compaq's service organization has the skills to support these implementations, and is the world leader in implementing Windows NT and Windows 2000. Compaq's service organization has implemented over 2 million Microsoft Exchange seats.

Windows 2000 Solutions

Compaq's expertise in Windows 2000 can help you to take advantage of all of the improvements in the Windows environment. The Microsoft Windows 2000 family of operating systems has been enhanced to address hardware, software, and system management issues that affect reliability and availability. Enhancements to the development and testing process have also contributed to the improved stability. Some of these new improvements include: a reduction in the number of system failures through extensive code review and testing; a reduction in the number of conditions that forced an operator to reboot the system; reduced recovery time; an improved installation procedure, which prevents crucial system files from being overwritten; improved device drivers which were frequently the source of system failure; better tools for developers, for diagnosing potential causes of system failures, and for storage management.

With Total Cost of Ownership such a high priority for businesses, many are migrating from UNIX systems to Windows 2000. Compaq can lead you smoothly through your migration.

Compaq provides exactly the right level of service in planning, designing, implementing, managing, and maintaining IT solutions worldwide. Full lifecycle services allow the customer to choose the services that are needed, when, and where. Compaq offers the industry's most flexible, comprehensive service portfolio with: IT consulting, systems integration, network services, installation and startup services, migration support, maintenance, operation management, and outsourcing solutions. Services can be tailored to support the customer's unique business requirements.

Multivendor solutions incorporate the best technology for the job with proven experience, partners, and resources to keep multivendor IT solutions working together with support for more than 14,000 products from 1,300 suppliers. A single point of contact and accountability means the customer makes one call to get the needed support. Compaq offers support agreements with key technology partners, such as Microsoft, Oracle, SAP, Computer Associates, PTC, and MCI, to ensure that Compaq Services can deliver integrated service.

With a service network of 27,000 service professionals (including more than 2,500 Windows NT certified engineers, 2,500 Internet and Networking engineers, more than 3,000 UNIX engineers, and 15,000 Microsoft trained specialists) at work in 550 locations in 114 countries, Compaq's reach is global. Compaq is there 24 hours a day, 365 days a year, ready to support customers in the way that best suits their computing and business environment.

Compaq Services has received the following awards and commendations:

- Number One in customer satisfaction according to a ComputerWorld Reader's Survey

- One of the top two systems integrators according to Information Week

- One of the top four Internet/Intranet integrators according to Gartner Group

- Best NT-UNIX Integration Program according to IDC

- Number One Microsoft Worldwide Prime Integrator for Windows NT

- Novell Service Excellence Award

Workstation Solutions

Using PTC on Compaq workstations is a solution that is helping many of our manufacturing customers increase their efficiency:

- *"With Compaq and PTC, we have reduced our 3D modeling time by 30 percent over our former solutions, at a fraction of the cost. By switching to Compaq workstations, we have been able to lower our initial investments for new projects, achieve higher performance and lower our overall cost of ownership. This allows us to provide services at a more competitive cost, produce results more efficiently and increase our profit margins." - K. Ashok Kumar - vice president, Engineering Services - Satyam Computer Services, LTD.*

- *Five years ago, designing by hand, a frame layout team could design approximately six trucks in a day. Thanks to mechanical design automation through computer simulation, Western Star can layout approximately thirty-one trucks a day. - Lee Johnson, CAD Support Specialist at Western Star*

- *"Our engineering systems costs used to be astounding, we spent over $30,000 per engineer to put a UNIX workstation and a separate desktop solution for documentation, office communications and other administrative functions. With Compaq and the flexibility provided by NT and Intel architectures, we are able to replace those two machines with a single workstation that can run Pro/ENGINEER at several times the speed, plus handles e-mail, runs Microsoft Office and Windows-compatible applications, and does it for less than 25 percent of the cost." - Milton Orloff - senior systems programmer for Steelcase, Inc.*

The affordability of Compaq solutions, and their focus on low cost of maintenance, allows manufacturing companies to maintain their own cost competitive structure.

Cost Effective/High Performance Solutions Through Partnering

Compaq (including Digital prior to the acquisition by Compaq) and PTC have had a business partnership for over 14 years. In fact, Compaq uses PTC software to design its workstations, PCs and servers, and PTC uses over 1,000 Compaq workstations and servers worldwide. Compaq provides more Windows NT solutions to PTC customers than any other company.

Together, Compaq and PTC offer scalable solutions from the desktop to the data center. Through the Compaq/PTC partnership, Compaq workstations are designed, fully tested, and certified for PTC software.

Cost effective/high performance solutions require a commitment to partnering at a technical level. At the PTC corporate headquarters, Compaq's fully-staffed labs work with PTC application engineers for certification, software testing, Alpha optimization, quality assurance, and on-site technical support of customer issues. At this lab Compaq maintains multiple generations of systems and tests PTC's new releases on them to ensure PTC applications will continue to operate smoothly on our older equipment.

Another example of partnering, Compaq workstation products are designed for leadership Pro/ENGINEER 2000i[2] performance, especially with large files, which is a concern to many PTC

customers.

PTC applications are also optimized with code changes and special compilers to speed up PTC applications on Compaq XP workstations by taking advantage of the Tru64 UNIX operating system and Alpha chip architecture - this ensures the ultimate in best performance from a Compaq UNIX solution.

This level of partnership means Compaq hardware will work with PTC software whenever either company launches a new product. Specifically, applications will run smoothly, to the latest releases, at the best performance. Customers using Compaq workstations can be confident in success as they implement the constant engineering productivity improvements with every new PTC product version release.

Compaq's regional engineering support centers and field engineers have a formal process of documenting customer support issues and elevating these within Compaq. For issues involving PTC these problems are coordinated through our on-site lab at PTC. This lab is also connected to PTC's own customer support group. This ensures that Compaq's customers get knowledgeable and supported local service staff to handle their needs. Compaq's field service has access to configurations and tuning unique to PTC applications and has the infrastructure to quickly resolve problems.

Compaq's Windchill implementations are easily scalable, with network loading planned, resulting in high user productivity. They are based upon Microsoft's latest operating system, Windows 2000. This provides the maximum cost savings by adopting leading-edge technology-allowing customers to establish a leadership position over their competition. Today, Windchill is developed on Compaq servers running NT and then ported to UNIX. Compaq, Microsoft, and PTC are jointly working on porting to Windows 2000 and expect the complete PTC suite of Windchill server modules shortly. Pilots can be started on Windows NT immediately.

Compaq has extensive expertise on NT projects, and is the class leader for most Enterprise NT solutions platforms including: Oracle, SAP, Exchange, Notes, Citrix and Baan and is the leader for all PTC on NT solutions. How has Compaq established this leading position for NT platform selection? Compaq is the leader in many server areas:

- **Scalability** – Compaq can supply from single- to 32-processor Intel machines today.

- **Reliability** – Compaq servers are designed to provide "Non-Stop" uptime. The servers typically used for Windchill have no single point of failure, as they leverage our cluster technology. Compaq is the leading partner with Microsoft in developing cluster technology, providing exceptional resilience in the Windows 2000 or NT environment. Compaq has more Microsoft-approved cluster configurations than any other platform provider.

- **Serviceability** – Compaq continues to develop enhancements that reduce the cost of product support. All our servers have a three-year on-site warranty that can be enhanced for up to a 99.99 percent uptime guarantee. Compaq expects to extend this to 99.999 percent for the Windows 2000 operating system.

- **Manageability** – All Compaq servers come with the Insight Manager product, a comprehensive system management tool. This can be enhanced with the latest Remote Lights Out capability delivering the most comprehensive remote support capabilities; ideal where data centers are being consolidated but compute power needs to remain distributed.

- **Performance** – Compaq recognizes that performance cannot be sacrificed to the pursuit of cost reduction. Compaq works with the major enterprise solution providers to ensure our systems are optimized for maximum cost/performance results. For example, Compaq and Oracle have delivered a record-breaking six-node Oracle Parallel Server with the number one TPC-C performance.

- **Innovation** – Compaq strives to lead the market with innovations. Two are relevant for Windchill. The first is the recent development by Compaq and Corollary of an eight-processor (eight-way) Intel server. The result, the ProFusion Architecture, is now used by all other manufacturers. All eight-way systems have a Compaq chip design at their heart. Second, Compaq continues to enhance the resilience of its systems and has designed fault prediction software applicable to memory and disk drives. We call this pre-failure warranty, enabling customers to replace failing products BEFORE they fail and to do so free under warranty with no data loss.

THE NEW PTC MECHANICAL ENGINEERING SOLUTIONS

Compaq Workstation Family Overview

Compaq offers several workstations to meet the needs of its customers – they are certified to optimally run PTC applications. These include: the Affordable Performance line, the AP250, the AP550; in the Scalable Performance line, the SP750; and in the Extreme Performance line, the XP1000.

Following are the suggested workstation configurations for optimal performance for your PTC applications. All configurations include a three-button mouse, a Compaq P110 21" monitor, and a three-year warranty. Common upgrades to all systems include additional memory, additional storage (9GB or 18 GB), Spaceball 4000 FLX Motion, Iomega Zip Drives, and the TFT8020 18" flat panel.

Pro/DESKTOP

Pro/DESKTOP provides power for conceptual designers. The recommended configuration for Pro/DESKTOP is the **Compaq Deskpro Workstation AP250.** The AP250 offers the best price/performance for Pro/ENGINEER. It is extremely affordable for cost conscious users. Its predecessor the AP200 with Oxygen GVX1 was the Bench 99 price/performance winner. The suggested AP250 configuration includes:

- 866 MHz Intel® Pentium III processor (Shortly to be 1 GHz)
- 256MB - 512MB ECC RDRAM (256MB recommended for Pro/DESKTOP)
- 9.1GB Wide Ultra3 or ATA SCSI 10,000 rpm hard drive
- 10,000rpm hard drive
- AGP 4x graphics
- ELSA Synergy II graphics controller or Oxygen GVX1 or VX1
- Intel 820 chip set with 133 MHz front side bus
- Integrated 256-KB level two cache
- 40X Max CD-ROM
- Microsoft Windows NT® Workstation 4.0 or Windows 2000
- Intel PRO/100+ Management Adapter NIC
- 5 slot/4 bay desktop or 8 slot/5 bay minitower
- Integrated PremierSound™ featuring AC '97 audio

Pro/ENGINEER 2000i[2] and CADDS5i[2]

Pro/ENGINEER 2000i[2] provides the power to do challenging and innovative designs. CADDS5i[2] is typically used in large-scale design. The recommended configuration for Pro/ENGINEER and CADDS5 is the **Compaq Professional Workstation AP550.** The AP550 is more expandable than the AP250. It allows the use of either one or two processors, offers excellent price/performance and a full range of graphics. The recommended configuration includes:

- 866 MHz Intel Pentium III processor (Shortly to be 1 GHz)
- 256MB - 2GB ECC RDRAM (512 Mbytes recommended)
- 18.2GB Wide Ultra3 SCSI 10,000 rpm hard drive
- ELSA Gloria II graphics controller
- Intel® 840 chipset with 133MHz Front Side Bus
- Low Profile Desktop (AP400) or AP550 Tower
- Scalable Bandwidth Technology
- Dual memory controllers
- AGP 4X Graphics

- Integrated 256-KB level two cache per processor (supports up to two processors)
- Microsoft Windows NT® Workstation 4.0 or Windows 2000
- 40X Max CD-ROM
- Integrated Intel PRO/100+ Management Adapter NIC
- 5 slot/5 bay convertible minitower
- Integrated 16-bit PremierSound™ featuring AC '97audio

Pro/ENGINEER 2000i² (power users and large assembly usage) and Pro/MECHANICA 2000i²

Pro/ENGINEER 2000i² can also be used for large assemblies or complex parts which take up large amounts of virtual memo ry and **Pro/MECHANICA 2000i²** is used for complex analysis. The recommended configuration for these users is the **Compaq Professional Workstation SP750**. The SP750's dual architecture provides the best Intel solution for large file sizes, complex analysis or multiple sessions of Pro/MECHANICA. The suggested configuration includes:

- 866 MHz Intel Pentium III Xeon processor (Shortly to be 1 GHz)
- 2 processor capability (recommended for the next release of Pro/MECHANICA)
- 512MB - 4GB ECC RDRAM (1Gbyte+ is recommended)
- 18GB Wide Ultra III SCSI 10,000 rpm hard drive
- Intense3D wildcat 4210 PRO graphics controller
- AGP 4x for faster 3D graphics performance for large files.
- Full-featured Intel® 840 chipset with 133-MHz front side bus
- integrated 256-KB level two cache per processor (supports up to two processors)
- Microsoft Windows NT® Workstation 4.0
- 40X Max CD-ROM
- integrated Intel PRO/100+ Management Adapter NIC
- 7 slot/7 bay rack-mountable minitower
- integrated 16-bit PremierSound™ featuring AC '97 audio

Largest Pro/ENGINEER and CADDS 5i² assemblies and most complex Pro/MECHANICA analyses

CADDS 5i² is often used for the largest and most complex assemblies. The recommended configuration for CADDS 5i² is the **Compaq Professional Workstation XP1000 with Tru64 UNIX**. The XP1000 provides the performance needed for large computations. For customers who want an Intel-based solution we recommend the previous **AP550** configuration.

Pro/ENGINEER Large Assemblies: The XP1000 configuration is also recommended for ultra large Pro/ENGINEER files, or complex analysis with **Pro/MECHANICA**. Large files in Pro/ENGINEER are usually much larger when brought into main memory from the disk, as they pull in other linked parts and data libraries. Up to 2 Gbytes will fit into memory on a Windows NT Client system, but our Alpha 64-bit architecture can access much larger files (up to 8 terabytes) and still treat it as a single file.

The XP1000 has the fastest CPU performance in the Pro E Bench99 benchmarks, and is also the world's fastest workstation with a SPECint95 rating of 37.5 and a SPECfp95 rating of 65.5. Alpha's world record floating point performance delivers the ultimate in Pro/ENGINEER and Pro/MECHANICA Performance.

The suggested configuration includes:

- Tru64® UNIX™ 4.0E
- 667 MHz Alpha 21264 (EV6) processor

- 4MB L2 external cache (supports one processor)
- High Bandwidth Systems Architecture
- 512MB - 2 GB memory (1 Gbyte recommended)
- 18.2 GB Wide Ultra2 SCSI 10,000 rpm hard drive
- PowerStorm 350 graphics controller
- 32X Max CD-ROM
- Intel 21143PD Fast Ethernet (10/100 Mbps)
- 5 slots/6 bays
- 16-bit SoundBlaster® compatible audio

Comparison Chart for Compaq Workstations

Use the following chart to help you choose the system that is right for your solution:

	PTC Entry System (Intel Pentium III)	PTC Professional User (Intel Pentium III)	PTC Exceptional Power (Intel Xeon)	PTC Ultimate Power (Alpha)
System	AP250 Windows NT	AP550 Windows NT	SP750 Windows NT	XP1000 Tru64 UNIX
Memory	256MB – 512MB ECC Rambus	256MB – 2GB ECC Rambus	512MB - 4GB ECC Rambus	512MB - 2GB
Graphics	G.Synergy II Or Oxy.VX1,GVX1	ELSA Gloria II	Intense 3D 4210 Wildcat	PS350
Hard Drive	9.1GB 10,000 rpm ATA or Ultra3	18.2GB 10,000 rpm Ultra 3 SCSI	2 x 9.1 GB 10,000 rpm Ultra 3 SCSI	2 x 9.1 GB 10,000 rpm
Best Use	• Best Price/Performance • Upgrade to the AP200 which was Rated #1 in ProE The Magazine's Bench99 for Best Value • Ideal for cost conscious users, who want great performance	• More expandable than the AP250. • One or two processors • Excellent price/performance • Expandability required if file sizes are medium but expected to increase	• Dual Architecture provides the performance needed for large computations • Recommended for large ProE files (up to 4GB), complex analysis, or multiple sessions of Pro/MECHANICA	• Performance needed for large computations • Recommended for ultra large ProE files (required if files> 4GB) or complex analysis with Pro/MECHANICA

Intel Architecture for Year 2000 and beyond

Intel has been developing the IA-64 processor family to meet the emerging demands of e-business. Building on the broad support and remarkable value of the IA-32 server platform, IA-64 is positioned to help your business excel at the hard work of e-Business. A native 64-bit version of Microsoft Windows 2000 is being developed for IA-64.

Through the deployment of worldwide Application Solution Centers (ASCs) of which Compaq has one in Littleton, MA, - Intel is helping improve the development efforts of hardware and software vendors. These ASCs provide vendors with an opportunity to port, test and tune their software in a state-of-the-art environment. These managed facilities ensure timely and effective joint development of advanced solutions for the IA-64 platform.

Compaq is part of an industry working group, including Intel, that has published the Developer's Interface Guide for IA-64 Servers. The guide specifies a common baseline hardware interface for IA-64 solutions. It provides developers with the tools and information they need to successfully implement reliable, scalable and interoperable IA-64 processor-based server solutions within complex enterprise-wide environments. The guides include migration tools, test criteria and validation test suites, and a three-year road map to help developers plan and create reusable and lasting designs.

These sustained efforts are designed to help deliver to IA-64 the same powerful advantages that make IA-32 so compelling. The broad support of the developer community, the widest operating system and application choice, and the benefits of a high-volume computing platform will combine to make IA-64 the ideal platform for tomorrow's e-Business solutions.

Performance Selections

Chip Selection

The AP250 series uses the Intel Pentium III processor, with the 820 chipset.

The AP550 series uses the Intel Pentium III processor, with the 840 chipset.

The SP750 series uses the Intel Xeon processor, with the 840 chipset.

The XP1000 series uses the Alpha 21264 processor and its own dedicated motherboard design.

Floating Point Vs Integer Performance

It's important to note that Pro/ENGINEER and to an even larger extent Pro/MECHANICA demand large floating-point performance from the base level processor. Integer performance is important, but floating-point performance significantly drives the application speed.

Cache Selection

The AP250 series has integrated 256 KB level two cache.

The AP550 series and the SP750 series has integrated 256 KB level two cache per processor, with up to two processors supported.

The XP1000 series has a 4MB level two cache per processor.

Multiprocessor selection

Multiple processors should only be selected when the underlying application shows a performance advantage. Pro/MECHANICA is being upgraded to take advantage of multiprocessors. Pro/ENGINEER is designed for a single processor, except for one small piece, which shows slight improvement with a second processor.

Memory selection

Rambus is a memory technology company that has developed the next generation of memory technology called Rambus or RDRAM. RDRAM is capable of delivering 1.6GB/s per channel bandwidth because its interface is 2 bytes wide running at 400MHz clock, double pumped. This is a streamlined approach to memory access, and RDRAM delivers three times the effective bandwidth of PC100 SDRAM.

Direct RDRAM supports 32 devices per channel, each of which supports three RIMM connectors/modules, with maximum memory determined by the 32 devices used on each RIMM.

Thus maximum memory is as follows: 64 Mbit RIMMs provide a maximum memory size of 256 Mbytes; 128 Mbit RIMMS provide 512 Mbytes; 256 Mbit RIMMS provide 1 Gbyte.

The robust RIMM modules allow for easy and reliable upgrades while maintaining full 1.6MB/s bandwidth capability.

Disk Access Architecture

Compaq Professional Workstations use Ultrawide SCSI III.

Graphics Excellence Program

The Compaq Graphics Excellence Program is designed to allow Compaq to quickly identify, test, certify, and introduce innovative new graphics solutions on Compaq Workstations. Through agreements with industry-leading graphics vendors this program delivers a broad portfolio of graphics solutions for demanding Compaq Workstation customers.

The cornerstone of Compaq's Graphics Excellence Program is a new dedicated facility and technical team to work with leading graphics partners such as 3Dlabs, Intense3D, ELSA, nVIDIA, S3, Matrox, and Appian. Working directly with the engineers of these graphics suppliers, Compaq engineers test and provide information that improves the graphics performance and functionality. The engineer-to-engineer relationships, the sharing of tests, test processes, and test data allows Compaq to test and qualify new graphics options for PTC applications much earlier in the development cycle than our competitors. The Graphics Excellence Program allows Compaq and its partners to deliver a graphics product portfolio that addresses a broader range of customer requirements.. The program ensures well-integrated and tested workstation solutions, and provides the fastest time to market with new graphics technology without sacrificing stability or customer choice. It is an excellent example of Collaborative Product Commerce.

One success of the Graphics Excellence Program is with the Intense3D Wildcat 4110 graphics controller. Working closely with Intense3D to test and optimize the next generation Wildcat 4110 graphics controller, Compaq was the first workstation manufacturer to deliver a fully qualified Intense3D Wildcat 4110 PRO. This graphics card, available on Compaq Professional AP550 and SP750 workstations, was available three months ahead of our competition - underscoring the importance of this program to customers.

Compaq has recently assisted ELSA, 3Dlabs, S3, and Appian with certification of three new specialty program solutions. The addition of the Gloria II, Oxygen VX1, Fire GL 1, and Jeronimo Pro expands the rich graphics product line available on Compaq's Deskpro and Professional workstations.

Graphics Drivers

Graphics performance is constantly being improved, through graphic driver upgrades. This is one of the central benefits of the Graphics Excellence Program. To take advantage of this performance, load the latest graphics drivers periodically, as found at:

www.compaq.com/products/workstations/drivers.html

Graphics Choices

Low-end

For corporate power users and technical professionals alike, Compaq offers 2D/Multi-Display 2D graphics with uncompromising 2D performance, true color image quality at high resolutions, and

space saving multiple display support. Pro/ENGINEER and Pro/MECHANICA users typically require 3D graphics cards.

Entry 3D

ELSA Synergy II

Compaq's Entry 3D product, the AGP-based ELSA Synergy II, is an affordable solution for a wide range of 3D applications with support for resolutions up to 1920 x 1200. The Synergy II is an ideal solution for CAD/CAE professionals who need fast 2D and robust, yet affordable 3D performance and features. This powerful entry 3D graphics accelerator is also an excellent solution for GIS and DCC application users, or for any application involving the creation and viewing of basic 3D images.

- Based upon NVIDIA RIVA, TNT2 processor
- 32MB of SDRAM
- 24 bit TrueColor resolutions up to 1920 x 1200
- Support for AGP 2X and 4X
- Supported on Deskpro Workstation AP240 (Intel® 820 chipset) and AP250, Professional Workstations AP200, AP400, AP500, AP550, SP700, and SP750 (supported on Pentium III and Pentium III Xeon processor systems)
- Operating system support for Windows NT Workstation 4.0 and Windows 95 and 98

Mid-range 3D

Our midrange and enhanced 3D solutions with the advanced 3D features required by technical professionals. Compaq Professional 3D graphics are distinguished by high performance, full featured 3D, and the added value Compaq brings to quality and application performance.

3Dlabs Oxygen GVX1 (This was the Bench99 winner for best price/performance)
- 32 MB SGRAM for unified frame buffer and texture memory
- True color resolutions up to 1920 x 1200
- AGP form factor
- Stereo support
- Support for dual-display (one AGP-based Oxygen GVX1 combined with one PCI-based Oxygen GVX1)
- Supported on AP200, AP250, AP500, AP550, SP700, SP750 (supported on Pentium III and Pentium III Xeon processor systems)
- Operating system support for Window NT Workstation 4.0

Compaq PowerStorm 350 (Use with XP1000)
- 15 MB 3DRAM for frame buffer
- 16MB CDRAM as texture memory
- True color resolutions up to 1280 x 1024
- AGP form factor
- Supported on AP200, AP400, AP500, SP700 and XP1000

ELSA Gloria II (recommended for Pro/ENGINEER and Pro/MECHANICA)
- Based on NVIDIA Quadro™ Graphics Processing Unit
- 64MB SDRAM for unified frame buffer and texture memory
- True color at resolutions up to 1920 x 1200

- Supports 24-bits double buffered with 24-bit Z-buffer, overlay planes, alpha planes, and stencil planes simultaneously
- Support for AGP 2x/4x
- Supported on AP250, AP550, and SP750
- Operating system support for Windows NT 4.0

High End Enhanced 3D

Enhanced 3D is for the most demanding technical professionals. Offering leadership texture memory support, z-buffer depth, application performance and dataset handling capabilities.

Intense3D Wildcat 4110 PRO
- 64 MB SDRAM dedicated frame buffer memory
- 64 MB SDRAM for texture memory
- True color resolutions up to 2048x1152
- 24 and 32 bit z-buffer support
- AGPPRO slot
- Quad-buffered stereo support
- DVI-I digital output
- Supported on Professional Workstations AP550 and SP750
- Operating system support for Windows NT 4.0

Intense3D Wildcat 4210 PRO
- 128 MB SDRAM dedicated frame buffer memory
- 128 MB SDRAM for texture memory
- 32MB DirectBurst memory for pipeline optimization
- True color resolutions up to 2048x1152
- dual pipeline featuring 256-bit frame buffer and 128-bit texture buffer
- Superscene antialiasing
- 3D volumetric texture support
- 24- and 32-bit z-buffer support
- 64 bit hardware accumulation buffer
- 96, 128, 160 and 192 bits/pixel modes
- AGPPRO 110 slot
- Frame sequential and stereo support
- Complete OpenGL 1.2 geometry acceleration
- Dual DVI-I digital output (dual display mode supported with Windows 2000)
- Genlock and Multiview support
- Supported on Professional Workstations AP550 and SP750
- Operating system support for Windows NT 4.0 (Windows 2000 later)

Compaq PowerStorm 350 (with XP1000)
- 30 MB 3DRAM for frame buffer
- 32 MB CDRAM as texture memory
- True color resolutions up to 1900 x 1200
- Stereo support up to 1280 x 1024, with full 3D feature set
- PCI form factor
- Supported on AlphaStation XP900, XP1000, and DS20E systems
- Support for Compaq Tru64 UNIX operating system

Productivity Software

All Compaq workstations ship with productivity software including System Software Manager (SSM), Compaq Insight Manager, and Restore CD. Compaq is unique among hardware vendors with this level of software bundled with workstations.

System Software Manager (SSM)

SSM simplifies and automates software changes by providing a single tool for unattended installation of Compaq Workstation, Deskpro, and Laptop system software. SSM allows for easy distribution from a centralized directory, with no software distribution infrastructure required. SSM reduces the headaches associated with system management by simplifying the rollout of system software updates and helps optimize workstation performance with system software during initial deployment and throughout the product lifecycle.

SSM's robust feature set includes:

- Detection and upgrade/installation of drivers, system agents, and system ROM on multiple clients simultaneously

- Installing and upgrading drivers for PCI and Plug and Play (PnP) cards and System ROMs in a post Operating System installation environment

- Integration with a variety of software delivery mechanisms. The mechanisms can include the execution via a logon script, software distribution application, email, or local execution from a CD

Compaq Insight Manager

Compaq Insight Manager Lite Console (LC)

Compaq Insight Manager Lite Console (LC) provides asset tracking and security, fault notification and recovery, and receives fault and security alerts. It also allows you to: view system information, asset and configuration data; change security settings and asset tag information; run diagnostic tests; and update HW device drivers.

Compaq Insight Manager LC provides the fastest time to a workstation management solution. You don't need a dedicated server or workstation. No database or other management applications are required. Just select one of your networked workstations for the management station where you'll install Insight Manager LC. Select the "standard" installation of the highly automated setup utility and Insight Manager LC is quickly installed. You don't need to know anything about network addresses or domains or setting trap targets.

The first time you run Insight Manager LC, it automatically discovers all workstations on the same domain or workgroup and displays at the management console. You can change the workstations discovered through an Administrative Setting. It uses a familiar, browser-based user interface so there is a minimal learning curve. Color coded indicators show the status of all workstations and devices. Two visual indicators for alerts are also provided. When the console receives an alert, the Insight Manager LC icon in the system tray will blink and the Alerts icon in the user interface changes color.

Insight Manager LC includes technology which manages a "store" of system software updates. When you want to update a Workstation or PC, the system SW levels on the Workstation or PC are compared against the SW levels available for update from the "store." Insight Manager LC automates downloading the latest system software updates into the "store" from the Compaq Web site or the Support Software CD.

Compaq Insight Manager XE

Compaq Insight Manager LC can be upgraded to Compaq Insight Manager XE. This provides web-based management for Compaq servers, and any HTTP, SNMP MIB-2, or DMI v2 compliant device. The strength of Compaq Insight Manager XE lies in its ability to provide system administrators real control through an easy-to-use industry-standards-based web interface. It's feature rich, intuitive, extensible, and designed to unlock the built-in manageability of Compaq hardware.

Compaq Insight Manager XE was built from the ground up as a web application to work with industry-standard management agents. With its integrated Cluster Monitor, Compaq Insight Manager XE provides system managers with a single monitor point for both stand-alone systems and Compaq ProLiant Clusters with Microsoft Cluster Server (MSCS). The Cluster Monitor provides aggregated system data and presents it to administrators as a single view of their cluster configuration.

Compaq Insight Manager XE's user interface is intuitive and packed with functionality. Accessed from anywhere in the Intranet, systems administrators can manage devices, manage events, and administer Insight Manager XE. Pre-configured common system views and customizable queries and events provide out-of-box productivity. Predictive fault management and Pre-Failure Warranty protect your storage, memory, and CPU investment.

RestoreCD

The RestoreCD simplifies the reinstallation of the original software image in the unlikely event of disk corruption or hard drive failure. RestoreCD contains all supported CPU languages. It will reformat and partition hard disk drive (HDD) based on the same drive partition scheme used in the pre-installation process. RestoreCD will include any software order, content dependencies, and/or tweaks performed during the pre-installation process.

ActiveUpdate

This web-based application maintains constant contact with Compaq and proactively notifies and delivers the latest software, ROM images, device drivers, management agents, and Compaq utilities. The end user subscribes by providing hardware profiles such as Armada, Deskpro, Workstation, or ProLiant. Software updates are automatically detected at Compaq and delivered to the end user's local drive or network share with intuitive titles and descriptions, and organized by platform.

WINDOWS 2000 AND WINDOWS NT MIGRATION FOR WORKSTATIONS

Microsoft Windows 2000 Professional offers a very powerful operating environment for PTC customers. It is a more robust desktop environment than Windows NT, provides lower cost of ownership, and the opportunity to leverage critical tools.

Windows 2000 provides a variety of enhancements and improvements to earlier versions on Windows NT, especially in the areas of system reliability, new system services for software installation and trouble prevention and management tools, and support for mobile users and roaming data. The Windows NT File System has been updated to introduce encryption of files. Other new features include Plug and Play device detection and configuration and support for new device types, including Universal Serial Bus (USB) devices, high-capacity removable drives, infrared and digital cameras.

Some of the reliability improvements include:

- Reduced system failures through extensive code review and testing

- A reduction in the number of conditions that forced an operator to reboot the system

- Reduced recovery time

- An improved installation procedure, which prevents crucial system files from being overwritten

- Improved device drivers which were frequently the source of system failure

- Better developer tools, for diagnosing potential causes of system failures

- Better tools for storage management

Windows 2000 Migration Services

With Total Cost of Ownership such a high priority for businesses, many are migrating from UNIX systems to Windows 2000. Compaq can lead you smoothly through your migration. Microsoft Windows 2000 Professional is not a simple incremental upgrade, but is a significant new design. The entire infrastructure must be reviewed and aligned. A full-service provider like Compaq can offer customer assistance through all the phases of migrating to Windows 2000. Windows 2000 Migration Services include:

- **Readiness Assessment:** Estimates the effort required to integrate current environments, assesses the impact of Windows 2000 on your existing business applications, and identifies new applications that can benefit from Windows 2000.

- **Design Review:** Identifies elements that are not ready for a smooth migration to Windows 2000 and documents changes that must be made before upgrading to Windows 2000.

- **Proof-of-Concept Pilot:** Verifies interoperability of your existing environment and applications with Windows NT, analyzes different configurations for optimum performance and manageability, and tests components in a controlled environment so that any implementation issues can be addressed before deployment.

- **Planning and Design:** Maps the Windows 2000 capabilities to your business and technical objectives, designs the Windows 2000 infrastructure and topology, plans the steps to integrate with and migrate to Windows 2000, and identifies Windows 2000 administration tasks.

- **Implementation/Integration:** Implements your Windows 2000 solutions.

- **UNIX to Windows 2000 Porting Assistance:** One of the Compaq services groups who does this work is the Compaq Systems Application Integration Engineering (CSAIE) group located in Nashua, NH. CSAIE has completed more than 1000 projects in successful software porting and migration, including UNIX to Windows NT/Windows 2000 migration. They work with customers from all over the world. CSAIE has over 50 engineers and access to countless others. They are experienced in mission-critical application migration, and have analysis tools, skills, and experience to estimate and plan, making the job's schedule predictable. If you have written your own applications, or layered code on top of your existing applications, they can help you to make a smooth transition.

COMPLEX WORKSTATION SOLUTIONS FOR PTC CUSTOMERS

eEngineering Solutions

PTC customers are continuing to incorporate web access into all aspects of design, including business-to-business communication. This access often requires the use of browsers and email, and taking this information and converting it into the design. Engineers find dual screens useful to do this successfully to provide more viewing space. Compaq is the leader in multiple screen workstations, and has a solution that supports this for Pro/ENGINEER. The recommended dual-screen solution is based on the Compaq Professional Workstation AP550, and includes:

- 866 MHz Intel Pentium III processor (Shortly to be 1 GHz)
- 256MB - 2GB ECC RDRAM (1Gbytes recommended)
- 18.2GB Wide Ultra3 SCSI 10,000 rpm hard drive
- 2 Oxygen GVX1 graphics controllers
- Intel® 840 chipset with 133MHz Front Side Bus
- AP550 Tower
- Scalable Bandwidth Technology
- Dual memory controllers
- AGP 4X Graphics
- Integrated 256-KB level two cache per processor (supports up to two processors)
- Microsoft Windows NT® Workstation 4.0 or Windows 2000
- 40X Max CD-ROM
- Integrated Intel PRO/100+ Management Adapter NIC
- 5 slot/5 bay convertible minitower
- Integrated 16-bit PremierSound™ featuring AC '97audio

Large Assembly Solutions

Intel-based

Large assemblies with file sizes of less than 2 GB can take advantage of the unique dual architecture of the SP750 with scaleable bandwidth technology using the 840 chip set. It provides exceptional performance for large files. Since 2 GB is the Windows NT 4.0 Client addressable limit, greater than 2 GB requires Windows NT Server. This solution allows the user to bring the entire file and the application into memory, the result is much faster 3D model manipulation, revision, etc. Ideally users should try to get the maximum memory required for their design, so they do not page to disk during their normal daily work.

Four GB is the addressable file size limit for 32-bit computer systems (includes Windows NT Server). Windows NT Server is certified for the SP750 as well. Using the SP750 customers can leverage a maximum of 4 GB of main memory in an Intel-based solution.

Alpha-based

The answer to the large assembly problem of files greater than 4 GB is the XP1000 (Alpha with Tru64 UNIX). Alpha systems have offered proven 64-bit technology since 1992. Pro/ENGINEER has been available on Alpha 64-bit systems since 1992. Files are completely addressable for up to 8 Terabytes of virtual direct addressability. The XP1000 is the only system available in this class, and has a proven history of running PTC applications. Pro/ENGINEER was ported to Tru64 UNIX in

1992 and is a true 64-bit application, this is not true with some of our competitors versions on their 64-bit platforms. Therefore, since they use Pro/ENGINEER as a 32-bit application, running on a 64-bit platform, they are subject some of the 32-bit limitations.

Finite Element Solutions

The SP700 with its dual architecture is an ideal Intel-based solution for Pro/MECHANICA. Its dual architecture, including dual memory controllers, gives it speed in processing complex data sets. It also has dual processor capability. When Pro/MECHANICA is released as a threaded application (expected soon) this product can take advantage of it.

For those who need maximum power, the AlphaStations are the best. With the world's best floating point numbers, the Alpha excels at computation computing. Pro/MECHANICA, as well as other FEA applications require high computational computers. The XP1000 with a PS350 is ideal. The AlphaStation family comes with multiple processor systems and entry level offers.

Windows/UNIX Interoperability

The one constant in the computing world is change, and as engineering computing environments evolve, Compaq is in a unique position to deliver integrated computing solutions that span multiple computing technologies. Windows has become the predominant engineering desktop environment, especially for CAD, while UNIX is still the predominant environment for large compute-intensive systems used for CAE. This includes Compaq's new AlphaServer GS series and AlphaServer SC series running Tru64 UNIX, delivering supercomputer performance for the largest and most complex engineering simulations. Between these extremes lie a mix of systems used for everything from file and print services to web hosting to smaller CAE simulations. But, whether the need is as basic as common access to printers and files in another computing environment or as extensive as creating a single integrated computing environment with one-step management across platforms, distributed security, and a common software development environment, Compaq has the software and services to pull your worlds together and make it work. Compaq has leadership products and services for integrating UNIX and Windows.

Share files and printers between Windows and UNIX

Example: Advanced Server for UNIX (ASU) software, included with Tru64 UNIX software implements Windows server services and functionality on an Alpha system running the Tru64 UNIX operating system software. The Tru64 UNIX system on which the ASU software is running appears as a Windows server to other Windows systems and to users of Windows systems.

Develop software across diverse platforms

Example: The Compaq Enterprise Toolkit extends the reach of the familiar Microsoft Visual C++ and Compaq Visual Fortran environments to make it possible to code, build, and debug applications to support two major platforms: Windows (Win32) and UNIX (Tru64 UNIX, LINUX and others). For application providers who have chosen to standardize on distributed applications across UNIX and Windows using Microsoft's COM, Compaq provides a fully 64 bit port of COM for Tru64 UNIX.

Manage a mixed Windows and UNIX environment using either UNIX or Windows Tools

Example: Compaq's Tru64 UNIX offers administrators the ability to manage UNIX using out of the box Windows administrative tools or to manage Windows using out of the box UNIX tools. Either way, the administrator uses the tools they prefer, reducing complexity and training costs with a "one step management" approach across platforms.

Set up a single infrastructure for a mixed environment

Example: With Tru64 UNIX users do not have to be burdened with the complexity of a mixed environment of UNIX and Windows to gain the advantages of using it. Compaq is leading with technology that:

- allows users to log in once and gain access to resources across UNIX and Windows, without sacrificing security
- defines their account once across all organization platforms
- eliminates the need for users to log into applications separately

WORKSTATION OPTIONS

TFT8020 Flat Screen Monitor

The Compaq TFT8020 flat panel monitor is the most technologically advanced large screen flat panel monitor. This monitor is designed to provide exceptional screen performance and configuration flexibility. The impressive 18.1" active matrix display guarantees a flicker-free picture brighter, sharper, and more vibrant than that of a CRT monitor. Supports wide-angle 160° viewing, 16.7 million colors and full motion video.

- Large 18-inch (45.7 cm) viewable area display
- 1280 x 1024 resolution, plus full-screen support for lower resolutions
- Wide viewing angle to allow viewing from a sitting or standing position, or moving side-to-side
- Tilt and swivel adjustment capabilities
- Removable base for flexible mounting solutions
- Includes two signal connectors:
    - Standard 15-pin VGA connector (cable included); does not require a special graphics adapter card
    - DVI connector (digital cable included); requires a DVI compatible graphics adapter card that supports analog and/or digital video signals
- Plug and play capability if supported by your system
- On-screen display (OSD) adjustments in six different languages: English, Dutch, French, German, Italian, and Spanish for ease of setup and screen optimization
- CD-ROM includes an information file (INF), Image Color Matching file (ICM), Colorific calibration software, the Compaq LCD Display Assistant setup and configuration utility, the Compaq Display LiteSaver utility, and product documentation
- Programmable sleep mode timer
- Energy Saver feature for Energy Star® compliance
- Monitor base includes a housing space for an optional USB hub
- Security lock slot
- AssetControl

Desktop Security

Compaq Fingerprint Identification Technology, developed in partnership with Identicator, a leader in biometric identification technology, eliminates the need for end-user passwords, tightens network security, simplifies the login process, and reduces the costs associated with managing corporate networks.

The one-time registration of an individual's fingerprint takes only minutes. A tiny camera in the Fingerprint Identification Reader captures an image of the fingerprint and uses complex algorithms to convert the image into a unique "map" of minutiae points. This map of minutiae points (not the actual fingerprint) is then encrypted and stored within the network. Individuals need not be concerned about personal privacy issues as the fingerprint is not stored and cannot be recreated from the minutiae points.

Once an individual's fingerprint is registered, the network login process is simple and fast. By placing a registered finger on the reader attached to their PC, the end-user instantly logs on to the network. No other end-user passwords are required.

Compaq Fingerprint Identification Technology dramatically improves network security because it eliminates the need to enter passwords. It essentially replaces end-user passwords with something that can't be stolen or duplicated - a human fingerprint that is unique to every individual.

Tighter network security usually means more work for administrators, but Compaq Fingerprint Identification Technology actually reduces network management costs. IT groups commonly report that up to 50 percent of help desk calls are for forgotten or expiring passwords. By eliminating the need for end-user passwords, Compaq Fingerprint Identification Technology reduces the number of calls to your IT Help Desk and lowers your network administration costs.

Compaq Spaceball

The Compaq Spaceball 4000 FLX 3D motion controller option increases productivity by allowing you to simultaneously zoom, pan and rotate 3D models in every direction. It is like holding your model in your hand - interacting in 3D as you do in the real world. Fully featured with 12 hardware buttons, 10-bit electronics, and ergonomically designed to minimize wrist and arm stress, the Spaceball 4000 FLX is the perfect complement to a Compaq workstation - providing a complete 3D solution. A set of default commands programming the 12 buttons for Pro/ENGINEER provides users with exceptional productivity improvements.
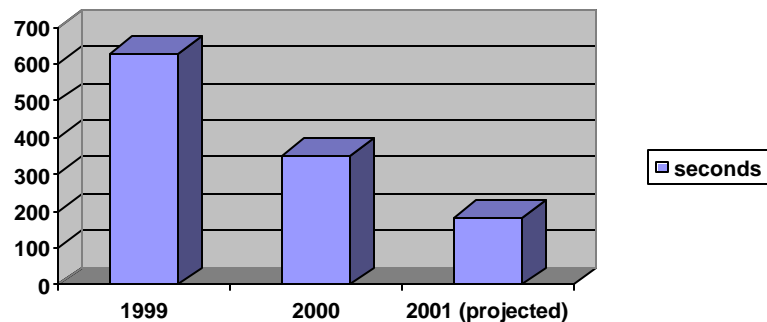
A NOTE ABOUT WORKSTATION BENCHMARKS

Pro/E Benchmark Rating

When Compaq submitted three Windows NT systems for Bench99 testing with Pro/ENGINEER, the following results were shown (as printed in *ProE: The Magazine*):

- The XP1000 (667Mhz) with a Compaq PowerStorm 350 graphics card was the fastest Windows NT workstation and Fastest CPU

- The AP200 with an Oxygen GVX1 graphics card has the best price/performance and best value

- Because of improvements in design due to constant changes in technology, workstation performance continues to dramatically improve. Here's an example of performance improvements year over year using the exact same Bench99 test (lower is better):

Compaq Workstation Performance Over Time

Running Your Own Benchmark

There is no better benchmark to compare performance than one that you create and run yourself using your own assemblies/parts and the Pro/E features you use most often.

1. When running a benchmark comparison, make sure you have enough memory installed to prevent paging to disk. Once a benchmark pages to disk, it becomes disk i/o bound, and will not give a true measure of overall system performance. Paging to disk occurs when the memory required to run the benchmark is greater than the amount of physical memory available.

2. For a quick estimate of how much memory a benchmark requires, run the benchmark right after a reboot. Go into the Windows NT Task Manager select the Performance tab, and look at the Peak Commit Charge (K) number. This is the maximum amount of memory used. This number should be smaller than the physical RAM you have on the workstation. If not, you are paging to disk and not getting an accurate picture of the overall workstation performance. (If you find that peak memory used is greater than the amount of RAM available a majority of the time, then you will want to consider increasing the amount of memory on the workstation.)

3. To measure workstation performance, run the benchmark locally. That is with local parts, and Pro/E installed locally. Remove the network connection if possible. This will remove the possibility of network data transfer from causing performance variability.

4. Make sure you have the latest BIOS and drivers before starting.

5. Be consistent when comparing different workstations:
   - same memory amount
   - same screen settings (resolution, frequency, vsync on/off)
   - same Pro/Engineer version and datecode

Web Sites of PTC benchmarks

The following web site is from the Pro/USER community and represents a variety of user activities:

http://utopia.knoware.nl/~ocorten/

What kind of actions does it test?
- Wireframe redraws
- Shaded mouse spins
- Shaded redraws
- Shade calculations
- Regenerations
- Menu redraws
- Saves
- Dialogue box redraws
- Mouse zooms
- Patterned X-section creation
- Family Table Verify
- Assembly creation
- Explode translations
- Screen updates
- Model Tree expansions
- Automatic Regenerations
- Perspective views

The SPEC APC for Pro/E 2000i website, which uses a very large model, is a benchmark to compare graphics cards:

http://www.spec.org/gpc/

WEB REFERENCES

For more information about:	Got to the following web page:
Adding Compaq Windows NT Professional Workstations to a UNIX Pro/ENGINEER Environment	www.compaq.com/products/workstations/intsol/index.html
Compaq Workstations	http://www.compaq.com/products/workstations/index.html
Compaq graphics options	http://www.compaq.com/products/workstations/graphics/index.html
Compaq XP1000	http://www.digital.com/alphaserver/workstations/xp1000/index.html
Compaq fingerprint ID option	http://www.compaq.com/products/options/fit/index.html
Parametric Technologies Corporation products	http://www.ptc.com
Products certified for Microsoft Windows 2000	http://www.microsoft.com/windows2000/upgrade/compat/certified.asp
Products certified for PTC applications	http://www.ptc.com/partners/hardware/21/support.htm

SALES INFORMATION

To reach:	Call:
Compaq Product/Service Information line	1-800-AT-COMPAQ
Compaq Technical Support Center	1-800-OK-COMPAQ

To:	Go to:
Buy AP200, AP400, AP500 or AP700 online	http://www.directplus.compaq.com/default.asp?page=product&product_line_id=25
Find a local Compaq reseller	http://www.compaq.com/products/workstations/locate/index.html
Find a recommended configuration for your applications	http://www.compaq.com/products/workstations/recommended/index.html

SUMMARY

Compaq Professional Workstations offer many solutions for Pro/ENGINEER customers - whether they are in need of the best available price/performance or the highest possible performance. The range of available solutions - including hardware, operating system, graphics options and other leading-edge offerings - can meet the needs of any PTC customer. With the Compaq/PTC relationship we are always striving to offer the best possible solutions to PTC customers, and to ensure that when PTC has a new version of Pro/ENGINEER, we are ready to support it in new and existing solutions.