Compaq Professional Workstation Key Technologies

The purpose of this paper is to provide an overview of the Key Technologies incorporated into the new Compaq Professional Workstations. This paper concentrates on covering those new features and technologies that have unique customer benefits and that demonstrate Compaq's technology leadership. The objective is to provide the technical information and benefits of these features, so that geographic regions can market them successfully

Notice

THE NEW COMPAQ PROFESSIONAL WORKSTATIONS KEY TECHNOLOGIES

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The New Compaq Professional Workstation

Compaq introduces another key component to enable the distributed enterprise. Compaq Professional Workstation is the first product targeted specifically at customers requiring all the performance and application integration of traditional workstations, combined with the industry standards, price/performance and flexibility of personal computers. Utilizing Intel's Pentium Pro 200 MHz processor with Microsoft's Windows NT Workstation operating system, Compaq's Professional Workstations provide customers with features and performance equivalent to traditional RISC/UNIX workstations without their traditionally high equipment price and support costs. This paper provides an overview of the new technologies on the Compaq Professional Workstation, including multiprocessing support using Intel's Pentium Pro microprocessors, high performance 3D graphics, DIMMs and ECC memory, the Wide-Ultra SCSI controller, the integrated NetFlex-3 Ethernet controller and Intelligent Manageability features.

Multiprocessor Support

All Compaq Professional Workstation models support dual Pentium Pro processors. Most models come standard with one processor, allowing customers to add a second processor when their applications require additional performance. For those customers requiring the performance of dual Pentium Pro processors from the onset, models are available with two processors installed.

Multiprocessing is one of the primary methods used to enhance performance. Multiprocessor systems share resources such as memory and the disk I/O system. Because the processors share memory, they are not required to talk with each other. Therefore, only a single instance of the operating system is required to control the activities of both processors.

The terms "multithreaded" and "thread" are commonly used in discussions regarding multiprocessor support. For this paper, these terms are defined as follows:

```
o A thread is a sequence of instructions that make up a program.
o A multithreaded process will have multiple threads, each capable of
  executing independently and each capable of executing on separate
  processors.
o A multithreaded program, if running on a computer containing multiple
  processors, will provide significantly better performance than a
  single-threaded program running on a single processor system.
```

Multiprocessor systems provide maximum performance gains when there is good coordination between the system design, the operating system, and the application. The Compaq Professional Workstations have been designed for efficient synchronization between Windows NT and multithreaded applications to provide maximum performance.

System Design

The Compaq Professional Workstation implements symmetric multiprocessing (SMP) through a shared memory architecture where multiple masters can share data and maintain data coherency and consistency. There are other computer architectures that achieve SMP using a different bus architecture (e.g. hypercube, cross-bar switch), however, a shared memory bus architecture offers the best price/performance of all possible implementations.

Operating System

Symmetric Multiprocessing support is a fundamental part of Microsoft Windows NT. Windows NT is capable of managing the work load of multiple processors by allocating operating system threads and user-mode threads to any available processors.

Although multiprocessor systems have been traditionally associated with servers and super computers, Windows NT Workstation will currently support up to four Pentium Pro processors.

Application

Applications that have been multiprocessor enabled (multithreaded) will provide the most performance benefit when running on dual processor configurations of Compaq Professional Workstations.

An application is typically a good candidate for a multithreaded design when there are instances where the application must wait for a resource or data (such as waiting for disk I/O to complete), which allows other work to be scheduled during these waits.

Some of the applications Compaq is testing and certifying that include multiprocessor capabilities are Kinetix 3D Studio Max and SoftImage's SoftImage 3D.

Cache Architecture

Cache memory improves system performance on Pentium Pro systems by acting as a buffer between the CPU and main memory. Frequently used commands are stored in cache memory which the CPU can access faster than main memory. Additionally, when a processor is accessing instructions and data from its cache, the main memory is open to accesses from other devices. For example, this allows for simultaneous operation of a second processor without waiting for the first processor to finish its memory request.

The Pentium Pro processors used on all models of the Professional Workstation include an integrated 256 KB write-back, four-way, set-associative secondary (L2) cache.

Pentium Pro and Windows NT Configurations

The Windows NT/Pentium Pro platform provides ISVs with a compelling reason to port their traditional workstation applications to the Windows world. Now customers have the ability to run their traditional 32 bit RISC/UNIX applications on industry standard systems without sacrificing performance, stability and ultimately, productivity.

All Compaq Professional Workstation models are configured with Pentium Pro processors and Windows NT. Professional Workstation provides traditional workstation-class performance by taking full advantage of the 32-bit capabilities of Windows NT, 32-bit applications and Pentium Pro technology.

```
NOTE: The majority of personal productivity application software on the
      market today is 16-bit, for which the Pentium Pro has not been
      optimized. With the introduction of Windows 95 in August 1995,
      application vendors have been porting their 16-bit applications to
      32-bit versions. The Pentium Pro processor will not accelerate
      16-bit applications and could actually underperform Pentium systems
      running the same 16-bit software and operating system.
```

For additional information on the Pentium Pro architecture, please access the Intel Website at http://www.intel.com/procs/ppro/info/index.htm.

For more detail on Windows NT Workstation, see other Deskpro White Papers available from Compaq.

Memory

Compaq Professional Workstations utilize high-performance, unbuffered, 60 ns, EDO Dual Inline Memory Modules (DIMMs) with Error Checking and Correcting (ECC) capabilities.

Depending on the model, the configuration will either have 32, 64, or 128 MB standard. The memory installed on these models are single-strip configurations (one 64-bit wide DIMM is needed to support the 64-bit wide main memory bus). The upgrade scheme allows the addition of a single DIMM in any size. Thus, for example, one 64 MB DIMM can be added to an existing 32 MB configuration to reach 96 MB. The Compaq Professional Workstations have four DIMM slots supporting a maximum memory capacity of 512 MB. To achieve the maximum memory of 512 MB, four 128 MB DIMMs must be used.

ECC

The Compaq Professional Workstation includes ECC memory to insure data integrity providing customers with the added assurance that they can confidently deploy Professional Workstations in their most business critical applications.

ECC stands for Error Checking and Correcting. ECC memory is used to increase the reliability of digital data in business critical applications. ECC memory tests for and corrects memory errors on the fly. It uses circuitry that generates check sums to detect and correct one bit errors and detect and report double bit errors. ECC allows a system to continue operating until the faulty memory is replaced.

Graphics

Two graphics solutions are available for the Compaq Professional Workstations. Both are PCI local bus implementations designed to maximize system performance and both have been tested to ensure optimum compatibility and reliability.

```
o For 2D applications, the Compaq Professional Workstations include the
  Matrox MGA Millennium graphics controller which provides fast 2D
  windowing for applications such as financial analysis and software
  development.
o For high performance 3D graphics needs, the Compaq Professional
  Workstation includes models with the GLoria-L graphics controller. The
  GLoria-L uses the 500 TX GLINT processor from 3D Labs, and comes standard
  with 8 MB of Frame Buffer VRAM memory and 8 MB of Z-Buffer DRAM memory.
  The Z-Buffer memory, used for texture, stencil, and Z-Buffering, is
  upgradable to 16 MB.
```

Compaq Graphics Driver Compatibility

Both controllers are high performance graphics solutions, optimized for Windows NT applications that require up to 16.7 million color processing and high resolutions. The drivers for each are developed by their respective manufacturers, and have been thoroughly tested to ensure compatibility with existing applications.

The Matrox Millennium

The Matrox Millennium graphics controller was first introduced to Compaq customers as a standard feature on the Deskpro XL, and is currently offered with the Deskpro family of desktop PCs.

The Millennium controller for Compaq Professional Workstations comes standard with 2 MB of WRAM memory. The accelerator is memory-upgradable to 4 or 8 MB to provide greater color depth in higher resolution modes. Compaq offers a 2 MB memory upgrade as well as a 6

MB upgrade.

Matrox Millennium Technical Specifications

```
Technical Specifications for the Matrox Millennium Graphics Controller
==========================================================================
Controller                            Matrox MGA 2064W
==========================================================================
Bus Type                              PCI
--------------------------------------------------------------------------
RAMDAC                                TVP 3026 220 MHz
--------------------------------------------------------------------------
Memory Type                           WRAM
--------------------------------------------------------------------------
Memory Amount                         2 + 2 or 6 MB
--------------------------------------------------------------------------
Maximum Memory                        8 MB
--------------------------------------------------------------------------
Memory Speed                          60 ns
--------------------------------------------------------------------------
Data Path                             64-bit
--------------------------------------------------------------------------
Controller Clock Speed                50 MHz
--------------------------------------------------------------------------
Maximum Vertical Refresh Rate         200 Hz
--------------------------------------------------------------------------
Maximum Horizontal Scan Rate          105.7 MHz
--------------------------------------------------------------------------
Maximum Pixel clock                   220 MHz
--------------------------------------------------------------------------
Video Features:
   Interface                          VGA Feature Connector
   MPEG HW Acceleration               Yes - Media XL option
   Scaling                            Yes
   Color Space Conversion             Yes
--------------------------------------------------------------------------
Engine Acceleration:
   BitBLT                             Yes
   Line Draw                          Yes
   Polygon                            Yes
   3D                                 Yes
--------------------------------------------------------------------------
Operating Systems                     Windows 95
                                      Windows NT 3.51
                                      Windows NT 4.0
==========================================================================
```

The ELSA GLoria-L

Select models of Professional Workstation ship with the high performance GLoria-L graphics controller to meet the requirements of customers running complex 3D applications.

The ELSA GLoria-L graphics controller provides an optimized hardware pipeline for acceleration of floating-point intensive 3D graphics, including hardware support for texture mapping. The GLoria-L graphics controller delivers among the fastest 3D performance available on high-end professional graphics applications requiring texture mapping in the CAD/CAM and animation arenas.

The GLoria-L uses high-performance, dual-ported Video RAM (VRAM) for the frame buffer. The GLINT processor used on the GLoria-L also has a separate DRAM-based Z-buffer for Z-coordinates (the third dimension in 3D), alpha data (e.g., transparency and fog effects), stencil buffer, and texture maps. The GLoria-L also incorporates the S3 ViRGE processor for VGA support, which has its own dedicated DRAM-based frame buffer. The GLoria-L is DRAM memory-upgradable, PCI-based, and supports resolutions as high as 1600 x 1280. It is also capable of processing 16.7 million colors in most resolutions.

The GLoria-L comes standard with 8 MB of VRAM frame buffer memory, 8 MB of DRAM Z-buffer memory for the GLINT processor, and 1 MB DRAM Frame Buffer memory for the S3.

The Z-buffer memory is upgradable to 16 MB DRAM to provide greater Z-buffer, alpha, and texture-mapping depth in higher resolution modes. Compaq will offer an 8 MB Z-buffer memory upgrade option. The maximum resolutions, colors, and refresh rates are outlined in the chart below; lower resolutions are selectable.

```
Maximum Resolutions, Colors and Refresh Rates
=========================================================================
                                          GLoria-L
Resolution; Colors                        Maximum Hz
=========================================================================
1600 x 1200; 32k/16M                      83/77
1280 x 1024; 32k/16M                      120/110
1152 x 864; 32k/16M                       160/140
1024 x 768; 32k/16M                       200/180
=========================================================================
```

GLoria-L Features

Features of the GLoria-L graphics card include:

```
o Support for major industry 3D APIs, including:
  - OpenGL - Open Graphics Library is a software interface to graphics
    hardware developed by Silicon Graphics Inc.
  - Direct3D - A set of APIs for real-time 3D graphics that are an
    addition to the Microsoft DirectX interactive media technologies. They
    provide a comprehensive 3D solution for software developers building
    interactive media programs and games
  - Heidi - 3D API from Kinetix (an AutoDesk company) that provides an
    immediate 2D and 3D mode drawing interface for 3D Studio Max.
  - Display list drivers - provide performance acceleration for AutoCAD
    R13 and Microstation 95.
o On-board VGA support with S3 ViRGE chip for full-screen DOS box support
  on Windows NT Workstation 3.51 and 4.0
o Hardware accelerated 3D, 32-bit Z-buffering for realistic depth
  perception and texture mapping
o Full, 32-bit double buffering for smooth animation by allowing the next
  image to be created in off-screen memory while showing the current image.
o Gouraud shading for smooth surfaces
o Texture mapping for creating realistic images
o Fog for fading effects, atmospheric effects and depth-queuing
o Anti-aliasing to provide smooth colors for rendered scenes by blending
  the colors of neighboring pixels
o Alpha-blending for creating transparent effects such as an object behind
  a window
o 500,000 Gouraud shaded, depth buffered, 25 pixel triangles per second
  with 32-bit color, 32-bit Z-buffer, dithering, stenciling, clipping and
  fogging enabled
o 25 million texture mapped pixels per second with full per-pixel
  perspective correction using a dual processor configuration
```

Elsa GLoria-L Technical Specifications

```
Technical Specifications of the GLoria-L Graphics Controller
=========================================================================
3D/2D Controller                          3Dlabs GLINT Delta + 500TX
=========================================================================
VGA Controller                            S3 ViRGE
-------------------------------------------------------------------------
Bus Type                                  PCI
-------------------------------------------------------------------------
RAMDAC                                     IBM RGB526DB 220 MHz
```

```
--------------------------------------------------------------------------
Memory Type                         VRAM and DRAM
--------------------------------------------------------------------------
Frame Buffer Memory Amount          8 MB VRAM
--------------------------------------------------------------------------
Z-Buffer and Texture Mapping
Memory Amount                       8 MB DRAM (GLINT)
                                    upgradable to 16 MB,
                                    1 MB DRAM (S3)
--------------------------------------------------------------------------
Memory Speed                        60 ns VRAM, 50 ns DRAM (GLINT)
                                    70 ns DRAM (S3)
--------------------------------------------------------------------------
Data Path                           64-bit (GLINT)
                                    32-bit (S3)
--------------------------------------------------------------------------
Controller Clock Speed              50 MHz (GLINT 500TX)
                                    40 MHz (GLINT Delta)
                                    50 MHz (S3)
--------------------------------------------------------------------------
Maximum Vertical Refresh Rate       200 Hz
--------------------------------------------------------------------------
Maximum Pixel clock                 200 MHz
--------------------------------------------------------------------------
Hardware Accelerated 3D:
  32-bit Z-buffering                Yes
  Gouraud shading                   Yes
  Stencils                          Yes
  Texture mapping                   Yes
--------------------------------------------------------------------------
Operating Systems                   Windows 95
                                    Windows NT 3.51
                                    Windows NT 4.0
==========================================================================
```

Monitors

The recommended monitors for Professional Workstations are the Compaq P70, 17 inch and QV210, 21 inch.

The Compaq P70 monitor - designed for the most demanding applications provides:

```
o State-of-the-art Trinitron-based design for crystal clear images
o Trinitron CRT (15.6 inch Viewable) providing corner-to-corner focus
o 1600 x 1200 at 65 Hz and 1280 x 1024 at 85 Hz
o 0.26 mm Aperture Grill stripe pitch
o Colorific Software support
o On-screen display with advanced user controls
o New ergonomic design
o AssetControl
```

The Compaq QVision 210 monitor - The QVision 210 - A powerful combination of performance features for demanding technical and professional users that provides:

```
o Larger 21 inch (19.5 inch Viewable) Display
o Delivers 60% larger viewing area than a 17 inch monitor
o 1600 x 1200 at 75 Hz and 1280 x 1024 at 85 Hz, high resolutions ensure
  sharp images while maximizing productivity
o 21 inch CRT with .26 mm dot pitch for crisper images and finer detail
o On-screen display and user controls for advance screen adjustments
  including tilt, Vertical/Horizontal Size/Positioning, Color temperature,
  Language Selection, Parallelogram
o PC World "Best Buy" January 1996
```

New Wide-Ultra SCSI Controller

The Compaq Professional Workstations include a Symbios Wide-Ultra SCSI host adapter to provide a powerful and expandable multitasking, bus-mastering interface between the PCI bus and SCSI devices. Wide-Ultra SCSI is the next generation controller replacing the previous Fast-SCSI-2 and Ultra-Narrow SCSI. Wide-Ultra SCSI provides a 16-bit bus master interface capable of data transfer rates up to 40 MB per second. A total of fifteen SCSI devices can be connected to the internal or external SCSI connector. Examples of SCSI devices include hard drives, CD-ROM drives, scanners, tape backups, and removable media drives.

The driver for this controller is the same one that is used with Compaq server products. SmartStart for Workstations installs this driver for the customer during set-up.

Hard Drive Performance

The Compaq Professional Workstations feature either a 2.1 GB or 4.3 GB Fast-Wide SCSI-2 hard drive. These drives include prefailure alerting technology designed to notify the user and network administrator before a hard drive failure occurs.

Below is an overview of the features and performance levels of the hard drives utilized on the Compaq Professional Workstations:

```
2 GB Fast-Wide SCSI-2 Hard Drive
==============================================================================
Capacity                         2.1 GB
==============================================================================
RPM                              7200 rpm
Seek time average                10.0 ms
Latency average                  4.17 ms
Transfer rate:
  Sustained average              5.04 - 7.68 MB/sec
  Interface                      Up to 20 MB/sec
==============================================================================
4 GB Fast-Wide SCSI-2 Hard Drive
==============================================================================
Capacity                         4.3 GB
==============================================================================
RPM                              7200 rpm
Seek time average                9.5 ms
Latency average                  4.17 ms
Transfer rate:
  Sustained average              6.14 - 8.29 MB/sec
  Interface                      Up to 20 MB/sec
==============================================================================
```

Integrated Compaq NetFlex-3 Controller

The Compaq Professional Workstations come standard with the NetFlex-3 Ethernet controller integrated on the system board. The NetFlex-3 Controller is a dual-speed, 32-bit bus-mastering controller, designed to take full advantage of the Peripheral Component Interconnect (PCI) bus architecture. It delivers excellent network throughput and low CPU utilization for both client and server connections. This controller automatically senses the network speeds and configures itself to operate in either 10Base-T or 100Base-TX networks.

Special features of the NetFlex-3 Controller are:

```
o Fully complies with IEEE 802.3 and 802.3u specifications to ensure
  compatibility with all industry-standard 10Base-T and 100Base-TX devices.
o 32-bit bus-mastering data transfer provides the highest level data
  transfer method between network and workstation. Bus-mastering relieves
  the CPU of managing the controller for high throughput and low CPU
  utilization.
o PCI Plug-and-Play compliance allows the 10/100 TX PCI UTP Controller to
  automatically configure interrupt and memory addresses to conflict-free
```

```
    settings.
  o Operates over 10Base-T or 100Base-TX so customers can maintain their
    investment in current 10 Mb/sec Ethernet networking, while also allowing
    easy migration to high-speed networks as the need arises.
  o Auto-negotiation support lets the 10/100-TX PCI UTP Controller
    automatically determine the proper network speed.
  o Full duplex capable for increased bandwidth up to 20 or 200 Mb/sec.
  o Diagnostic LEDs indicate network speed, link integrity, and network
    activity for "at-a-glance" troubleshooting.
  o Boot ROM socket provides the use of a remote reset ROM to allow diskless
    workstations to connect to the network for easy maintenance and
    increased security.
  o Operates with virtually all network operating systems including NetWare,
    Windows NT, Windows 95, Microsoft LAN Manager, IBM LAN Server, and
    SCO UNIX.
```

8X CD-ROM

All models of the Compaq Professional Workstations include the 8X CD-ROM Drive. The 8X
CD-ROM utilizes an Enhanced IDE controller for the host interface. This drive delivers faster
data transfers and higher performance over dual, quad-speed, and 6X CD-ROMs.

```
Technical Specifications:
  Access Time                  150 MS
  Transfer Rate                1200 KB/second
```

Enhanced Business Pro Audio

All models of the Compaq Professional Workstation include integrated Enhanced Business
Audio utilizing the ESS1868 chipset. Compaq Enhanced Business Audio delivers 16-bit sound
and is compatible with industry-leading sound cards. Business Audio provides OPL3 FM
SynthesisTM to ensure quality audio reproduction and MIDI playback. An integrated
loudspeaker is implemented within the PC chassis. External stereo speakers can be added.

Line-in, line-out, headphone and microphone connectors are available to add additional
multimedia components. A microphone is included with every Workstation.

Integrated Software Platform

The Integrated Software Platform for Professional Workstation consists of a powerful software
base which is thoroughly tested, easily installed, managed, and maintained, and which reliably
supports a wide range of applications. Microsoft Windows NT Workstation 4.0 and Compaq
support software can be easily optimized and set up using Compaq SmartStart for
Workstations. SmartStart for Workstations also enables easy access to UNIX environments
utilizing Hummingbird connectivity applications. Intelligent manageability features and
strategic partnerships with systems management software developers enhance the
manageability of the Professional Workstation.

Compaq has pulled together all of these software components to provide customers with the
Integrated Software Platform delivered on the Professional Workstation.

Compaq SmartStart For Workstations

To ensure easy, problem free set-up and integration, the Professional Workstation comes
standard with SmartStart for Workstations. Leveraging SmartStart 3.0 technology developed
by the Compaq Server Division, SmartStart for Workstations provides flexible, optimized
installation and integration of the operating system, support software, and selected Try and
Buy applications. While SmartStart for Workstations draws technology from SmartStart 3.0
for servers, certain architectural changes have been implemented to provide for the use of off-

the-shelf software CDs such as Win NT 4.0 from Microsoft.

The following table describes the primary features in the relative order they appear when a customer uses SmartStart for Workstations.

```
Primary Features When Using SmartStart For Workstations
========================================================================
Pre-Install Inspect:
  Functions                   Checks the integrity of the
                              factory-installed diagnostic partition
                              and recreates it if necessary.
                              Inspects the pre-installed Compaq utility
                              versions and automatically updates them if
                              necessary.
  Benefits                    Improves supportability by providing the
                              user with the latest Compaq utilities and
                              a reserved location for storing and
                              accessing them.
------------------------------------------------------------------------
Hardware Validation:
  Functions                   Asks the user if additional hardware has
                              been installed, and if so, automatically
                              launches Compaq Setup to configure this
                              additional hardware before returning the
                              user to SmartStart.
  Benefits                    Improves effectiveness by providing
                              seamless access to Compaq Setup without
                              disrupting the install process, and by
                              validating that the hardware is properly
                              configured prior to software installation.
------------------------------------------------------------------------
System Integration Guide:
  Functions                   Provides complete on-line documentation
                              and context sensitive help to guide the
                              user through the installation process.
  Benefits                    Saves the user time by providing
                              comprehensive help that is available
                              on-demand when and where the users
                              require it.
------------------------------------------------------------------------
Software Features Preview:
  Functions                   Informs the user about all the management
                              features and UNIX interoperability
                              applications.
  Benefits                    Allows the user a convenient way to review
                              product features and functionality.
------------------------------------------------------------------------
OS Installer:
  Functions                   Installs Microsoft Windows NT.
  Benefits                    Improves OS install flexibility by
                              providing access to familiar Microsoft OS
                              installation processes and the ability to
                              customize install parameters according to
                              user requirements
------------------------------------------------------------------------
Workstation Optimization
Manager (Optimizer):
  Functions                   Copies and/or installs Win NT drivers and
                              Compaq utilities.
  Benefits                    Saves time by preventing the user from
                              having to locate and load drivers
                              manually.
                              Automatically places useful Compaq
                              programs and reference in a Compaq folder
                              for easy access.
------------------------------------------------------------------------
Try and Buy Applications:
  Functions                   A new feature that makes useful
                              applications available for immediate
                              installation and usage.
```

```
        Benefits                        Users become productive immediately by
                                        installing necessary applications using
                                        SmartStart for Workstations.
--------------------------------------------------------------------------
Workstation Integration
Manager (Integrator):
   Functions                            Consistently and reliably installs
                                        "Try and Buy" applications
   Benefits                             Provides users with the confidence that
                                        Compaq-supplied applications have been
                                        tested and configured to provide optimum
                                        integration.
--------------------------------------------------------------------------
Workstation License Manager
(Licenser):
   Functions                            This program is automatically installed
                                        by Optimizer and enables users to
                                        conveniently convert "Try and Buy"
                                        products to permanently licensed
                                        applications.
   Benefits                             Prevents customers from having to reinstall
                                        permanently licensed applications after the
                                        license is purchased.
--------------------------------------------------------------------------
Workstation Reference Guide:
   Functions                            This guide is automatically installed by
                                        Optimizer and supplies the user with
                                        important post-install information.
   Benefits                             Helps customers keep their Professional
                                        Workstations operating at peak efficiency
                                        by allowing them to easily obtain
                                        information for updating and maintaining
                                        their Professional Workstations.
==========================================================================
```

Management Features

Compaq realizes that Professional Workstation will be used in a variety of environments, from small workgroups in CAD departments, to large financial networks in distributed enterprise environments. With that in mind, Professional Workstations management features have been designed to provide customers with the ability to manage and control Professional Workstations from within local workgroups or from centralized enterprise management consoles. Compaq accomplished this by integrating management capabilities from both the Desktop and Server Divisions.

Intelligent Manageability

Professional Workstation provides asset, fault, security, and support software management features similar to those found on Compaq Deskpros. In addition, the Workstation Division has leveraged the Desktop Management Solutions Partner Program to provide Compaq workstation customers with access to ProActive Backup under Win NT. The table below compares how management functionality is implemented between Compaq Professional Workstations and Compaq Deskpros.

```
Management Functionality Between Professional Workstations and Deskpros
==========================================================================
Management Software:
   Workstation Implementation
                                        Ships Compaq Insight Manager and
                                        the Compaq Systems Management
                                        Toolkit with each Professional
                                        Workstation for remote management
                                        capabilities.
                                        Local management software is
                                        planned for 1Q97.
   Deskpros Implementation              Includes Compaq Insight Manager
```

```
  Deskpro Implementation            Includes Compaq Insight Manager
                                    Personal Edition with each
                                    Deskpro for local management
                                    capabilities.
                                    Supports Insight Manager for
                                    remote management.
-------------------------------------------------------------------------
Asset:
  Workstation Implementation        Local asset viewing through Compaq
                                    Inspect for Workstations (F10).
                                    Remote asset viewing, reporting,
                                    and database exporting through
                                    Compaq Insight Manager.
                                    Remote asset collection and
                                    viewing through integration with
                                    Microsoft Systems Management
                                    Server.
                                    Optimized for Windows NT
                                    environments, therefore no Win95
                                    management support is provided.
  Deskpro Implementation            Provides Compaq Insight Manager
                                    Personal Edition with each Deskpro
                                    for local asset viewing.
                                    Remote asset viewing through Compaq
                                    Insight Manager.
                                    Remote asset collection and viewing
                                    through integration with Microsoft
                                    Systems Management Server.
                                    Support 3rd party Win95 management
                                    applications through the Desktop
                                    Management Solutions Partner
                                    Program for remote asset viewing.
-------------------------------------------------------------------------
Fault:
  Workstation Implementation        Compaq Diagnostics for Workstations
                                    (F10) and POST error messages
                                    provide fault condition information
                                    Local alert capability is planned
                                    for 1Q97.
                                    Remote fault information is
                                    provided by Compaq Insight Manager.
                                    Supports Compaq Insight Manager
                                    for OpenView and TME 10 NetView
                                    for enterprise fault monitoring.
                                    Includes support files for MIB
                                    integration with HP, IBM/Tivoli,
                                    and SUN frameworks for enterprise
                                    fault monitoring.
                                    Testing and forthcoming support
                                    for Windows NT management
                                    applications from Compaq Systems
                                    Management Partners will provide
                                    enterprise fault monitoring
                                    capabilities.
  Deskpro Implementation            Provides local alert for
                                    pre-failure events through Compaq
                                    Insight Personal Edition and
                                    Inspect (F10).
                                    Remote fault information is
                                    provided by Compaq Insight Manager.
                                    Supports Compaq Insight Manager
                                    for OpenView and TME 10 NetView
                                    for enterprise fault monitoring.
                                    Supports for MIB integration with
                                    HP, IBM/Tivoli, and SUN frameworks
                                    for enterprise fault monitoring.
                                    For additional remote fault
                                    information, Deskpros support 3rd
                                    party Windows 95 management
                                    applications through the Desktop
                                    Management Solutions Partner
                                    Program.
```

```
--------------------------------------------------------------------------
Pre-Failure Warranty:
  Workstation Implementation          Supports CPU, DIMMs, hard disk,
                                      temperature.
  Deskpro Implementation              Supports hard disk, and temperature
--------------------------------------------------------------------------
Security:
  Workstation Implementation          Both product lines similarly.
  Deskpro Implementation              --
--------------------------------------------------------------------------
Support Software:
  Workstation Implementation          Compaq Insight Management Agents
                                      and Console are available through
                                      the Compaq Management CD
                                      Subscription.
                                      Included with the Systems
                                      Management Toolkit are software
                                      distribution files and scripts
                                      that enable support software to
                                      be distributed through Microsoft
                                      SMS and Symantec Norton
                                      Administrator for Networks (NAN).
  Deskpro Implementation              Compaq Insight Desktop Management
                                      Agents and Compaq Insight Manager
                                      Personal Edition are available
                                      through the Compaq Support Software
                                      CD Subscription or Compaq Web site.
==========================================================================
```

Compaq Server Management Features Found on the Compaq Professional Workstation

Due to the business-critical nature of many workstation applications, we equipped the Compaq Professional Workstation with management features that rival those found on Compaq enterprise servers. By using the same management agents as Compaq servers, we were able to incorporate Compaq Insight Manager features that were previously only available on Compaq servers. The following list highlights the enhancements that Compaq Workstation customers will benefit from:

```
o Device Listing – allows a group of systems to be defined for monitoring
  and managing.
o Threshold Settings – enables threshold settings to be set for dynamic
  elements such as CPU, bus, and NIC and static elements such as hard
  drives.
o System Utilization – assists in performance management by providing
  real-time system utilization data in a graphical format.
o Correctable Memory Log – saves correctable memory events in a log that
  can be reviewed.
o Tape Backup Alerts – notifies administrators when tape subsystems have
  failed.
o Alphanumeric Paging and Forwarding – sends messages to established list
  of administrators when thresholds are exceeded and fault events occur.
o Asynchronous Management/PPP – allows remote console, capture and viewing
  of critical information to aid in diagnosing problems, and remote reboot
  capabilities.
o Version Control – inspects each workstation's drivers and firmware
  version to determine whether upgrades are required. It also provides
  information on importance, compatibility, and benefits of the upgrade.
o Automatic Data Collection – provides historical performance and
  utilization data based on a defined group of systems and polling
  intervals.
o Reporting – extensive performance and inventory reports can be generated
  and or exported to ODBC-compliant databases.
o Data Graphing – displays real-time performance data in a graphical format
  for easy interpretation.
```

Try And Buy Applications

Rather than build the cost of seldom-used applications into every Professional Workstation

Rather than build the cost of supplemental applications into every Professional Workstation, Compaq has innovated a new "Try and Buy" program that enables customers to evaluate fully-functional versions before deciding to purchase them. After installing a "Try and Buy" application, the customer can use its full capabilities for up to thirty days before a license key is required to permanently license the application. Our first "Try and Buy" partner is Hummingbird.

UNIX/Host Interoperability

For seamless connectivity into corporate internetwork environments, Compaq has included "Try and Buy" UNIX interoperability products from Hummingbird. With these products, customers can use PC X-Server, NFS, and terminal emulation to share files, programs, and computing resources on their legacy UNIX and mainframe systems.

Hummingbird Profile

Hummingbird Communications Ltd. develops and markets a complete line of PC to enterprise internetworking software products. According to an IDC 1995 PC X-Server Market Review, Hummingbird continues its market leadership position with a 46.3% market share. The Hummingbird product family consists of the award winning Exceed PC X servers, the high performance NFS Maestro Network File System product line, and Columbus, the first intranet desktop software product providing Portable Electronic Document technology for collaborative computing.

Exceed 5

Exceed 5 is a powerful PC-to-enterprise software suite that delivers transparent PC integration to many different types of computing environments, such as UNIX, VMS, X-Windows System, IBM mainframes and the Internet. Built upon open standards, Exceed 5 provides all the components necessary to easily integrate PC users into the corporate computing environment. While maintaining all the advantages of the personal computer, the user is shielded from the complexities of network computing by working within the familiar graphical environment of Microsoft Windows.

Highlights

```
o 32-bit PC X Server: X11 R6 compliant with optimized performance
o New improved Telnet with additional Wyse 50, Wyse 60, ANSI, SCO ANSI and
  BBS emulations.
o TN3270: Providing IBM mainframe terminal emulation
o TN5250 Support
o Exceed/Xpress for remote access to X, enhanced with modem compression
  capabilities
o Exceed/Xpress supports IP enabling Xpress to run over TCP/IP SLIP or PPP
o Rconfig, Sconfig: Centralized desktop administration, configuration and
  installation facilities
o Email - supporting SMTP, POP2, POP3, and MIME standards. Provides MAPI
  interface to support mail-enabled applications
o Threaded News Reader provides simple access to USENET news groups
o Common Desktop Environment (CDE) support: new standard which gives the
  same look and feel across UNIX platforms
o XIE support for high performance image handling
o Hummingbird BASIC scripting for building sophisticated, powerful
  administration scripts
o Support for OpenGL 3D X applications
```

Exceed 3D

Hummingbird's Exceed 3D is the first PC X-Server to support OpenGL (R), an industry-standard graphics software interface developed by Silicon Graphics, Inc. Exceed 3D gives

standard graphics software interface developed by Silicon Graphics, Inc. Exceed 3D gives users the tools to work with still and animated 3D color applications located on remote UNIX systems and complements Hummingbird's award-winning Exceed PC X server software. Plus, with Hummingbird's XDK, the Exceed 3D package enables programmers to develop 3D OpenGL applications on the Workstation. Exceed 3D requires Exceed 5.

Features

```
o Simultaneous multiple server visuals
o Overloaded X visuals to support GLX extended attributes
  (e.g. single/double buffering)
o RGBA color mode
o Color Index color mode
o Viewing and modeling transformations
o Lighting and shading
o Anti-aliasing
o Texture mapping
o Hidden surface removal (Depth Buffer)
o Atmospheric effects (fog, smoke, haze)
```

NFS Maestro

Hummingbird's NFS Maestro provides high-performance NFS client solutions. NFS Maestro provides seamless access between Win NT networks and host computer systems, including UNIX, VMS, Mackintosh, and IBM mainframes, and computers operating over the Internet. NFS Maestro allows Win NT users to easily access file and printer services across the network, as if they are local. NFS Maestro integrates a graphical Telnet application, Hummingbird's Columbus Lite Internet utilities, TN3270 and TN5250 terminal emulation, true 32-bit file locking, FTP, NIS support, SOCKS V4 R2 security, and Sconfig.

Features

```
o 32-bit Network File System (NFS) client for seamless access to file and
  print services across multiple platforms
o Coexists alongside existing network operating system clients such as
  NetWare
o Graphical Telnet application provides support for OLE Automation
  Controllers, includes DDE server, and more
o Sconfig, for customized installation (Windows NT and 95)
o E-mail - Supporting SMTP, POP3, and MIME standards
o TN3270 and TN5250
o Drag-and-drop FTP application
o Columbus Lite, providing Internet applications such as Web browser,
  E-mail, News Reader, FTP, NetBook, and more
o BASIC language Workbench for writing scripts to automate repetitive tasks
o Launch Pad - User programmable menuing and Virtual Desktop facility
o Extensive set of network monitoring and troubleshooting utilities
o Both client and server versions of many applications
o Socks V4 security support
```

NFS Maestro Solo

Hummingbird's NFS Maestro Solo product provides high-performance NFS client solutions for use with Hummingbird's Exceed PC X server software for Windows NT without the additional suite of programs included with NFS Maestro.

Serviceability Features

One way Compaq is lowering the cost of ownership with the Compaq Professional Workstations is by engineering built-in serviceability features to minimize the time involved with maintaining the system. The Compaq Professional Workstations are easy to service and upgrade. The following is an overview of the innovative serviceability features built into the

upgrade. The following is an overview of the innovative serviceability features built into the new Compaq Professional Workstations.

```
NOTE: Power should always be disconnected before removing hood or other
      system components.
```

A Quickly Removable Cover means there are no tools required to remove the cover from the Workstation. Instead, each new Compaq Professional Workstation comes standard with three thumbscrews that can be removed by hand to ensure easy cover removal and easy access to the internal components of the workstation.

Removable Expansion Card Cage allows easy access to add-in cards and the system board. Add-in cards are attached to a riser card on the expansion cage. Cables attached to add-in cards do not need to be detached to remove the card cage. This means that all peripheral add-in cards are removed in one step to enable quick and easy access to the system board.

Slide-Out System Board provides quick and easy removal of the system board. No tools or screws are required to remove the board. The power cables and disk drive cables are the only things that need to be unplugged. All other cables connected to external ports on the board (serial, parallel cables) remain connected.

Slide-Out Drive Cage provides easy access for installation or removal of the disk drives. The bezel of the desktop snaps off easily. Two screws need to be removed and the entire drive cage slides forward. The drive cage accepts industry-standard drives without proprietary drive rails.

Appendix

Questions And Answers

Software Installation and Setup

Q1. What is the SmartStart for Workstations License Key Fax Form?

```
A1. This form is included with each unit and is used to purchase licenses
    for Try-and-Buy software. The customer or dealer can complete it and
    once processed by Compaq, a key to activate the software is generated
    and faxed to the designated recipient.
Q2. What is involved in copying, configuring, and installing drivers and
    agents?
A2. Optimizer will automatically copy, configure, and install Insight
    Management Agents, SCSI, NIC, and health drivers for NT. The Matrox
    and Elsa video, as well as ESS audio drivers include applets for
    customizing their settings. Consequently, to maintain end-user
    control and flexibility, SmartStart will automatically copy these
    drivers to the hard drive but allow the user to complete the
    installation process by configuring their settings.
Q3. What options do customers have when installing Windows NT through
    SmartStart in terms of partition size, type, and quantity?
A3. The Microsoft Windows NT 4.0 and 3.51 OS allow the user to have
    full control over hard disk carving options as supplied by Microsoft.
```

Try-and-Buy Software

Q1. How does the Application License Manager work?

```
A1. After a customer receives their license key from Compaq, they run
    Licenser from the Compaq Utilities Group and enter in the key along
    with their binder serial number to permanently license Try-and-Buy
    applications.
Q2. If a customer knows they want the Hummingbird software in advance,
    what is the procedure for installing Hummingbird software?
```

A2. The same installation procedure applies. The customer installs the
    software using the Integrator, submits the license key fax form,
    receives the license key from Compaq, runs Licenser and enters the
    license key along with their binder serial number. Licenser then
    converts the Try-and-Buy program into a permanently licensed
    application.

Management

Q1. How do the management features of the Compaq Professional Workstation
    compare to the management features of the Deskpro?
A1. In general, the Compaq Professional Workstation and the Compaq Deskpro
    provide similar management functionality. The two products differ in
    their agents as well as support for certain Insight Manager features.
    Below is a comparison of the management features between the
    Professional Workstation and the Deskpro.

Comparison of Features Between the Professional Workstation and Deskpro

Description	Professional Workstation	Deskpro
Inventory Management:		
Asset Control Features	Yes	Yes
Compaq Inspect	Yes	Yes
Desktop Management Solutions Partners Program	Yes	Yes
Insight Personal Edition/ Diagnostics for Windows	1Q97	Yes
Compaq Insight Manager (System Serial Number, System Manufacturer and Model, Asset Tag, System Board Revision Level, ROM Revision Levels, Hard Drive Manufacturer, Model, and Serial Number, Monitor Manufacturer, Model, and Serial Number)	Yes	Yes
Enhanced Support Under Compaq Insight Manager (Version Control)	Yes	--
Microsoft Systems Management Server	Yes	Yes
DMI Compliance	Yes	Yes
DMI Instrumentation	--	Yes
Security Management:		
Security Control Features	Yes	Yes
LS-120 Media Lock	--	Yes
Smart Cover Sensor	Yes	Yes (except 2000)

Description	Professional Workstation	Deskpro
Fault Management:		
SCSI Hard Drives	Yes	Yes
SMART SCSI and IDE Hard Drives	--	Yes
Proactive Backup (optional)	Yes	Yes
Power Supply Surge Protector	Yes	Yes
Thermal Sensor	Yes	Yes
Insight Personal Edition (Diagnostics for Windows)	1Q97	Yes
Compaq Insight Manager (Hard Drive Faults and Excessive Temperature Conditions)	Yes	Yes
Enhanced Support Under Compaq Insight Manager (DIMM and CPU Faults, Remote Sets, Threshold Alerts, Remote Reboot, Data Collection, Graphing and Reporting, Async Management, Alpha-Numeric Paging, Device List Filtering)	Yes	--
Systems Management Partners	Yes	--
Compaq Systems Management Toolkit (MIB Integration)	Yes	Yes

```
                                            ---                         ---
  Compaq Insight Manager for OpenView
  and TME 10 NetView                        Yes                         Yes
-------------------------------------------------------------------------
Software Support Management:
  Support Software CD                       Yes                         Yes
  Enhanced Support Under Compaq
  Insight Manager (Version Control)         Yes                         --
  Enhanced Support Under Compaq
  Systems Management Toolkit (SW
  Distribution with SMS and NAN)            Yes                         --
=========================================================================
```

System Board

Q1. What chipset does Compaq Professional Workstation use?

```
A1. Compaq Professional Workstation uses the new high performance chipset
    from Intel called the 440FX.
```

Q2. How is the 440FX chipset different from the Orion chipset?

```
A2. The 440FX chipset provides three main improvements over the Orion
    chipset:
    1. Better price/performance ratio
    2. Optimized for the Pentium Pro with 32-bit performance enhancements
       and Concurrent PCI for faster and smoother multimedia operation and
       improved scalability
    3. 2-chip solution versus 3 chips, reducing system board space
       requirements
```

Q3. Why doesn't the Workstation include a 512k cache model?

```
A3. Although the Pentium Pro processor comes in 256k cache and 512k cache
    versions, only the 256k version is currently offered for the Compaq
    Professional Workstation. All Pentium Pro 512k cache processors
    allocated to Compaq are currently being used with our server products.
    As allocations increase in early 1997, removing the potential risks to
    our customers due to availability issues, we will add 512k cache models
    to our product line.
```

Processors

```
Q1. How does the performance of the Pentium Pro processor compare to the
    performance of the Alpha, PA-RISC, UltraSPARC, MIPS and other major
    RISC processors?
A1. Here are published benchmarks for processor performance from the
    Standard Performance Evaluation Corporation (SPEC).
Published Benchmarks for Processor Performance
=========================================================================
Processor                       SPECint_base95          SPECfp_base95
=========================================================================
Intel Pentium Pro 200/256k      8.09                    5.99
AlphaStation 600 5/333
(Alpha 21164/333)               8.42                    12.4
HP 9000/J210XC
(PA RISC 7200/120)              4.64                    8.3
HP 9000/K460EG
(PA-RISC 8000/180)              10.8                    18.3
IBM 6000 43P (PPC 604/133)      4.55                    3.59
IBM 6000 R24 (Power2/71.5)      3.32                    9.47
SNI RM 600-420
(MIPS R4400/250)                4.91                    4.72
Sun Ultra 2 Series 2200
(UltraSPARC/200)                6.88                    13.3
=========================================================================
```

The Pentium Pro processor delivers excellent integer performance, and in fact, out performs many RISC processors from vendors such as IBM, Sun and HP.

The Pentium Pro delivers more than a 100% improvement in floating point performance over Pentium processors, which is particularly important for 3D graphics and CAD applications. The Elsa 3D graphics card uses the Glint Delta processor, which off-loads many of the floating point intensive 3D setup calculations from the Pentium Pro processor's floating point unit, thereby reducing the need for fast floating point performance from the processor itself.

Memory

Q1. What's the difference between DIMMs and SIMMs?

```
A1. Single Inline Memory Modules (SIMMs) have, until recently, been the
    standard for memory. SIMMs are either 32-bits or 36-bits wide
    (4 extra bits for parity or ECC). They use 60 ns, 70 ns or 80 ns
    DRAMs, with the majority today using 60 ns memory. Originally, SIMMs
    used Fast Page Mode (FPM) DRAMs but are now available with the
    speedier Enhanced Data Out (EDO) memory.
    Dual Inline Memory Modules (DIMM) are fast becoming the new standard
    for memory. They are either 64-bits or 72-bits wide and are also
    available with FPM or EDO memory. DIMMs usually come with 60 ns or
    70 ns DRAMs. Additionally, DIMMs are either buffered or unbuffered.
    Both the Pentium and Pentium Pro processor have a 64-bit bus (with
    8-bits for parity or ECC). Because SIMMs are 32-bits wide, it takes
    2 SIMMs versus one 64-bit wide DIMM to provide data to the processor.
```

Q2. Is there any performance improvement with DIMMs vs. SIMMs?

```
A2. The performance difference is not between DIMMs and SIMMs themselves,
    but between the type and speed of the memory. For example, 80 ns
    DRAMs provide increased performance over 60 ns and 70 ns DRAMs. In
    addition, EDO memory provides faster access to the data than does FPM.
    Performance differences can also be found between buffered and
    unbuffered DIMMs. Depending on the chipset, unbuffered DIMMs can be
    faster. Professional Workstations use the Intel 440FX chipset which
    provides enhanced performance using unbuffered DIMMs.
    Professional Workstations use 60 ns unbuffered EDO DIMMs which,
    combined with the 440FX chipset, provides the fastest memory
    subsystem currently available.
```

Q3. Are customers required to upgrade the memory in pairs?

```
A3. No, customers can upgrade their workstations with one DIMM module at
    a time. Professional Workstations use 72-bit DIMMs which are 64-bits
    wide with 8-bits for ECC. The Pentium Pro processor also uses a
    64-bit bus so a single DIMM can be used to supply data to the CPU.
```

Q4. Can customers mix memory of different speeds?

```
A4. Although customers can add DIMMs of different speeds, it is not
    recommended because the system adjusts the entire memory subsystem
    to run at the speed of the slowest memory module.
Q5. With only 4 memory slots, why does the 128 MB SKU come with two 64 MB
    DIMMs?
A5. Professional Workstations are upgradable to 512 MB of system memory
    using 128 MB DIMMs. The cost of each 128 MB DIMM is more than twice
    the cost of two 64 MB DIMMs. The two 64 MB DIMMs provides a
    cost-effective solution for customers who will not need to upgrade to
    512 MB of system memory.
```

Q6. Is this parity or non-parity memory?

```
A6. Professional Workstation uses ECC memory instead of parity memory.
```

Parity only reports that an error has occurred. With ECC memory, any
single bit failure is detected and corrected on the fly and double bit
errors are detected and reported. This provides Professional
Workstation with better reliability and data integrity, given they
will be deployed in mission-critical applications.

SCSI Controller

Q1. What is the benefit of the Wide-Ultra SCSI controller?

A1. The Wide-Ultra SCSI controller provides a transfer rate of up to
    40 Mb/sec, which doubles the 20 MB/sec rate of Fast-Wide SCSI. The
    increased transfer rate allows data to be transferred across the SCSI
    bus at a much faster rate, which improves overall system performance.

Q2. How is Wide-Ultra SCSI different from Ultra SCSI and Fast-Wide SCSI-2?

A2. "Wide" refers to the width of the data path. Both Wide-Ultra and
    Fast-Wide use a 16-bit data path to transfer data. However, the
    controllers differ with regard to the speed at which data is sent.
    Fast-Wide SCSI only allows data to be transferred at 10 MHz or 20
    Mb/sec where Wide-Ultra SCSI transfers data at 20 MHz or 40 Mb/sec.

SCSI Types

```
===============================================================================
Description            8-Bit                      16-Bit
===============================================================================
10 MHz                 Fast-SCSI-2                Fast-Wide SCSI-2
                       10 MB/sec                  20 MB/sec
-------------------------------------------------------------------------------
20 MHz                 Ultra SCSI (narrow)        Wide-Ultra SCSI
                       20 MB/sec                  40 MB/sec
===============================================================================
```

Q3. Will customers be able to add additional Fast-Wide SCSI-2 and Ultra
    SCSI devices to the "Wide" cable?

A3. Yes. Wide-Ultra SCSI is backward-compatible to Ultra SCSI and
    Fast-Wide SCSI-2 technology. Each Professional Workstation comes
    with an adapter that allows a narrow SCSI device (8-bit, 50-pin
    connector) to be connected to the "Wide" SCSI cable. The adapter is
    located on the SCSI cable to prevent it from being misplaced or lost.

Q4. Why is the 8X CD-ROM an EIDE implementation on the Professional
    Workstation where SCSI is the standard controller?

A4. SCSI CD-ROM drives are more expensive and provide minimal performance
    benefit over IDE CD-ROM drives. Other SCSI devices that have both read
    and write capability, such as hard disk drives and the PD-CD Drive,
    benefit more with a SCSI controller implementation. A CD-ROM drive,
    however, will not benefit as much since it is not limited by I/O
    bandwidth.

Hard Drives

Q1. Why are the hard drives used on Professional Workstation Fast-Wide
    SCSI when the SCSI controller is Wide-Ultra?

A1. Initially, the hard drives used for Professional Workstation will be
    Fast-Wide SCSI. The Wide-Ultra hard drives will be phased in as they
    become available from suppliers and pass Compaq's rigorous testing.

Q2. Are the Professional Workstation hard drives S.M.A.R.T.?

A2. Initially, Professional Workstation will come standard with drives
    that do not include S.M.A.R.T. technology. Professional Workstation
    will transition to S.M.A.R.T. drives as soon as they are available
    from the vendors and pass Compaq's rigorous testing.

Networking

Q1. How is the NetFlex-3 implementation on the Workstations different

~ ....
      from that of the Deskpro?
A1. Professional Workstation is targeted at demanding power users who
      require the highest performing sub-systems available. Thus, it has
      been equipped with an integrated 10Base-T/100 Mb/sec TX Ethernet
      network interface. This NIC is autosensing so it automatically
      configures the system based on the customers' network. When a
      customer with a 10Base-T network is ready to upgrade, the
      Professional Workstation will automatically switch to accommodate
      100 Mb/sec performance without any additional investment. The Deskpro,
      which is targeted at a broader, mainstream audience, does support both
      10 MB/sec and 100 MB/sec. However, customers must purchase the
      100 Mb/sec TX upgrade when they are ready to upgrade their network.

COMPAQ

access

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