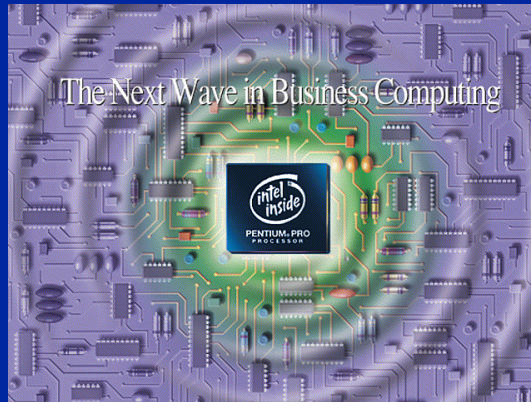


Pentium® Pro processor Desktop Systems

**The Next
Wave in
Business
Computing**

August 1996

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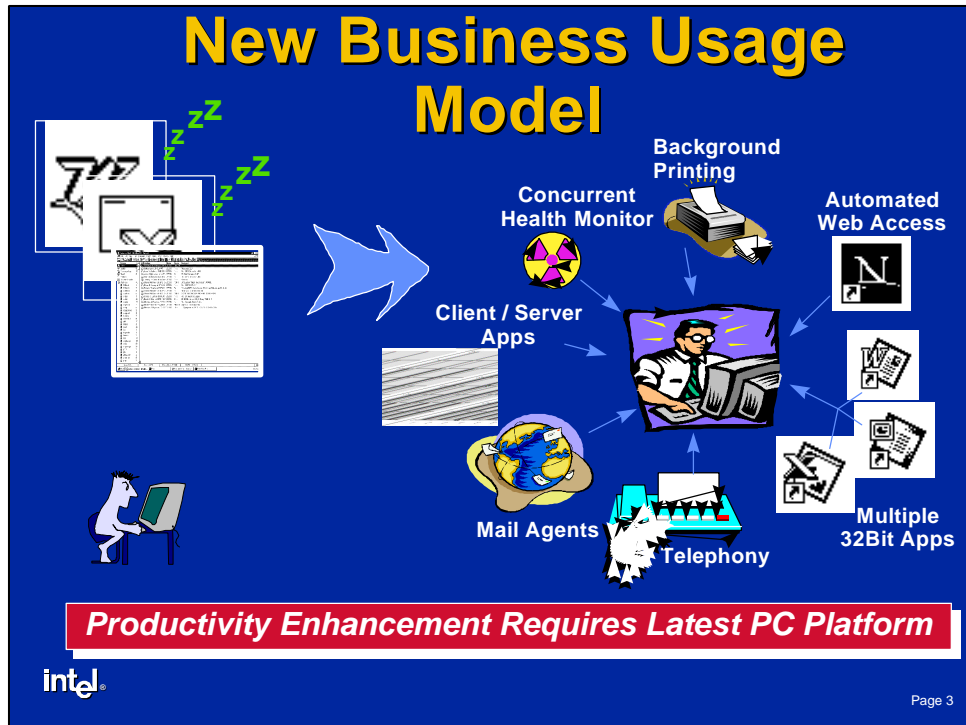
Discussion Topics

- Desktop Business Environment
- Desktop Processor Roadmap
- Pentium® Pro processor based system is the ideal platform for new purchases
 - Provides advanced manageability features
 - Optimized for 32-bit software environment
 - Delivers superb multitasking performance



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- Today we'll discuss Pentium® Pro processor based desktop systems
- First, we'll discuss why today's business environment needs the Pentium Pro processor based system. We'll then discuss the roadmap through the end of 1996. Then, we'll wrap up with why Pentium Pro processor based systems are ideal for new purchases. It is because Pentium Pro processor based PCs provide advanced manageability features, are optimized for 32-bit software environment, and deliver superb multitasking performance.



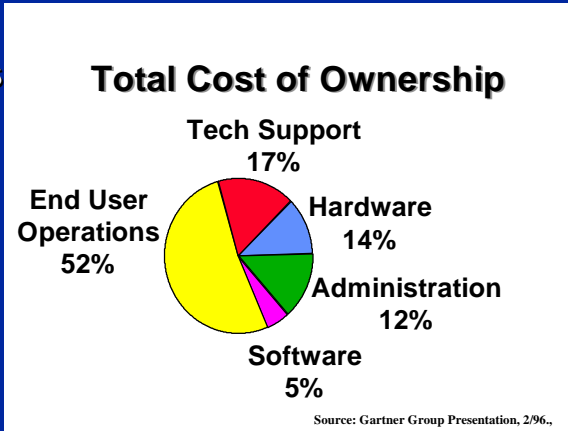
- End users demand the latest PC platform because of the new ways they use the PC.
- Software (OS and applications) is moving to 32 bits. The shift in OS will lead to a shift in how the PC is used. In most current environments, the system (and the user) is really limited to performing one task at a time. Applications in the background are asleep.
- With Windows NT* and Windows* 95, real multitasking is possible. This can significantly improve productivity as the user no longer needs to wait for one application or utility to finish before continuing on with his or her work. Range of things that might be performed:
 - -Background printing (don't underestimate this downtime)
 - -Querying a database, using new, automated web download tools (e.g. Web Whacker*)
- Obviously, 32-bit software and multitasking greatly enhances productivity in the workplace. To take advantage of the new capabilities, you need to get the latest PC platform. 32-bit software needs more performance to run efficiently.
- 32-bit operating systems enable the new usage model and Pentium® Pro processor with Dynamic Execution delivers the performance to handle this.

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Total Cost of Ownership

Major cost areas

- Support / operations costs are 69% of TCO.
- Hardware is a minor part of overall cost -- 14%.
- CPU is less than 2% of TCO.

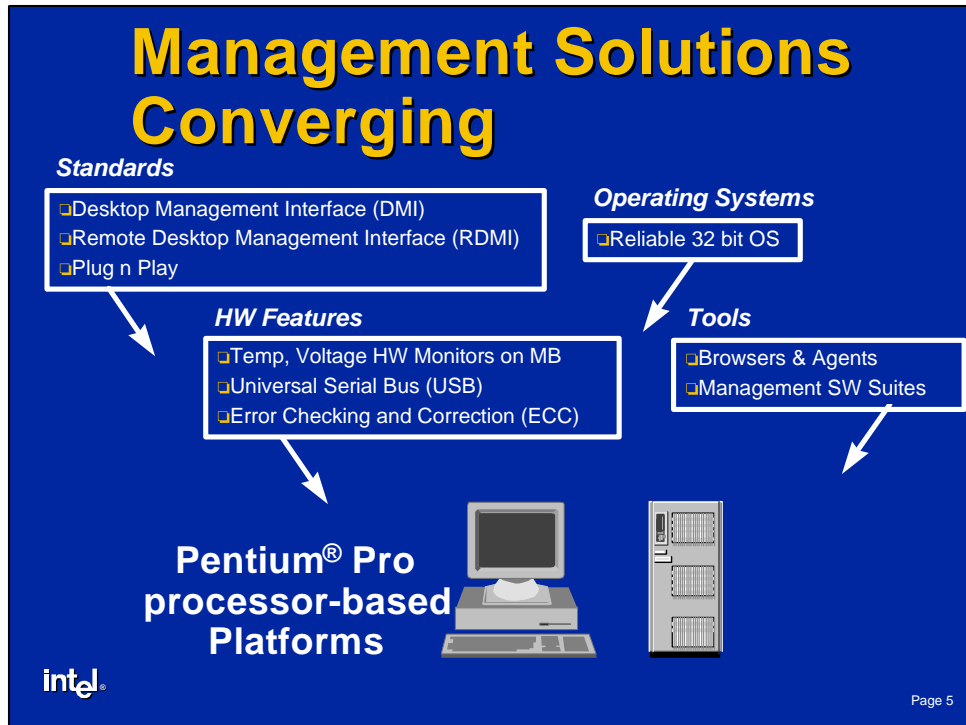


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- Besides the new business usage model, rising Total Cost of Ownership is a growing concern, and that is another reason why you need the latest platform.
- Contrary to popular opinion, the major areas of cost associated with a PC are due to the end user and support costs, not hardware or software.
- Hardware costs are relatively minor in comparison to the total TCO -- the 1996 Gartner Group study on TCO places only about 14% of the TCO cost with hardware.
- The microprocessor is even less of a factor in TCO, account for two percent or less typically.
 - ✓ Assuming a desktop PC with a end user sales price of \$3000 and a microprocessor OEM cost of \$500. Mobile and server computer platforms will find that microprocessor cost is less than 2% of the TCO, typically.
- According to a Gartner Group study, between 1987 and 1993, personal computer (PC) TCO climbed over 100%. Companies today can expect to pay approximately \$40,000 over the life of the system for every computer they purchase. The magnitude of this cost is why so many companies are focusing efforts to reduce it.
- Another Gartner Group study shows that deploying Windows NT* 4.0 can reduce TCO over Windows* 3.1 by \$997 per year. As a single unit that may not sound like a lot but multiple that by the total number of a corporate desktop users (10,000 X \$997). The delta between Windows* 95 and Windows NT* is approximately \$146.
- 32-bit OSs reduce TCO, and Pentium® Pro processor based systems are optimized for 32-bit OSs.

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- In 1996, we'll see the convergence of manageability solutions.
- Standards -- Standards have been accepted for local and remote access to management information. e.g. Desktop Management Interface (DMI)
- HW Features -- New capabilities directly on the hardware -- monitors to alert system failures, data security on servers through RAID, and standardized attachments through universal serial bus to allow new capabilities to be added quicker and cheaper.
- Operating Systems -- Deployment of more reliable, manageable Operating systems like Windows NT* and Windows* 95.
- Tools -- Introduction of SW management tools, from local browsers to remote enterprise suites, that help reduce the costs of managing the whole infrastructure down to the workgroup servers and desktops.
- As business computing moves to 32-bit OSs and 32-bit applications and more manageable environments, the logical hardware platform will be the Pentium Pro processor. This is because the Pentium Pro processor has been optimized for 32-bit code and because Pentium Pro processor based platforms will include the most up-to-date set of management features.

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Pentium® Pro Processors for the Mainstream Business Desktop

The diagram illustrates the integration of Pentium Pro processors with 32-bit operating systems and applications. It features the 'intel inside' logo, a bidirectional arrow connecting it to the text '32bit OS & Applications e.g. Windows NT* or Windows* 95', and another bidirectional arrow connecting it to a computer icon labeled 'System Management'.

- Addresses Manageability & Cost of Ownership
- Optimized for 32-bit Environment
- Delivers Superb Multitasking Performance

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- Pentium® Pro processor based platforms move into the mainstream.
- Why now? Because they help address the needs of today's business users and I.T. depts.
- Specifically,
 - - Platforms help address corporate concerns over total cost of ownership through HW and SW management features and platform completeness.
 - - Optimized for the 32bit software environment, such as Window NT* or Windows* 95
 - - Delivers superior performance
- As of today, Pentium Pro processor based desktop systems are available from most major PC manufacturers, and they are affordably priced. Fully configured systems are coming in under \$3,000.
- * Other brands and names are the property of their respective owners.

Desktop Roadmap

Pentium® and Pentium Pro Processor roadmap

System Price Point	Q3 1996 Forecast	Q4 1996 Forecast
Professional Desktop >\$4K	Pentium Pro proc. - 200, 180	Pentium Pro proc. - 200
Performance Midrange \$3-4K	Pentium Pro proc. - 200, 180 Pentium processor - 166	Pentium Pro proc. - 200, 180
Midrange \$2-3K	Pentium processor - 166, 150, 133	Pentium Pro proc. - 180 Pentium processor - 200, 166, 150
Entry Level <\$2K	Pentium processor - 120, 100	Pentium processor -133, 120

- Business desktop converting to Pentium® Pro processor for manageability and performance

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Source: Intel, as of July 1, 1996

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In Q3 and Q4, we'll see the Pentium® Pro processor becoming mainstream on the desktop, with the rapid deployment of 200 MHz leading the push into Performance Midrange Segment. By year-end 120 and 133MHz Pentium processors completely fill demand at the entry-level.

Look for the 180MHz Pentium Pro processor based system to fall below \$3K in late Q3'96.

Pentium processor 200MHz appears in late Q3, more of a niche product offering with a few OEMs making it available for the business segment.

Desktop Presentation

2H '96 Business Desktop Systems

<u><i>Volume Systems</i></u>			<i>Professional</i>
Entry Level	Midrange	Perf. Midrange	
 Pentium® Processor-120,133 <ul style="list-style-type: none"> • 8 MB • 850 MB HDD • 14", 1024x768 • DMI/Browser • Full Duplex Aud <p><u>ADDERS*</u></p> <ul style="list-style-type: none"> • 256K PB L2 • 4XCD • 10/100 Mb LAN • 16-bit Audio • Extd Warranty/Support <p>≤\$2000</p>	 Pentium® Pro processor - 180 Pentium processor-150,166 <ul style="list-style-type: none"> • 16MB • 256K PB L2 (for PP) • 1.2 G HDD • 15", 1024x768 • Mgmt. HW/SW (DMI) • Full Duplex Audio <p><u>ADDERS*</u></p> <ul style="list-style-type: none"> • 4XCD • 10/100 Mb LAN • Voice C&C plus Headset • Extd Warranty/Support <p>\$2-3000</p>	 Pentium® Pro processor-200, 180 <ul style="list-style-type: none"> • 16-32MB • 1.6 G+ HDD • 15", 1024x768 • Mgmt. HW/SW (DMI) • Full Duplex Audio • 64-bit Graphics <p><u>ADDERS*</u></p> <ul style="list-style-type: none"> • 6XCD • 10/100 Mb LAN • Voice C&C plus Headset • Video Conferencing HW, App & Camera • Extd Warranty/Support <p>\$3-4000</p>	 Pentium® Pro processor-200 <ul style="list-style-type: none"> • 32-64MB • 2G HDD • 17", 1024x768 • 10/100 Mb LAN • Mgmt HW/SW (DMI) • Full Duplex Audio • 64-bit Graphics • 8XCD <p><u>ADDERS*</u></p> <ul style="list-style-type: none"> • SCSI HDD • 3D HW Acc'l • Voice C&C plus Headset • Video Conferencing HW, App & Camera • Extd Warranty/Support <p>≥\$4000</p>

**Adders may result in \$100-500 additional price*

Source: Intel, as of July 1, 1996

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■ For each system price point, we show a core configuration, plus possible 'adders' that may bump up the final price. These adders may come from the OEM or reseller. This may include adding videoconferencing capability or voice command and control or service and support.

■ Definitions:

■ Voice C&C-Voice Command and Control

■ DMI/Browser-DMI compliant systems with a 'management browser' like Compaq's Insight Manager.

■ 256K PB L2-PB=Pipeline

Desktop Presentation

Aggressively Priced



“[Compaq] said that its cheapest desktop powered by the Pentium® Pro would start at \$2,899”

Wall Street Journal 5/8/96

“With lower price points and fast adoption of Windows NT*, we expect over 50 percent of [shipments] will be Pentium® Pro by the end of the year.”

Boris Elisman, Marketing Mgr HP, CRN 6/10/96



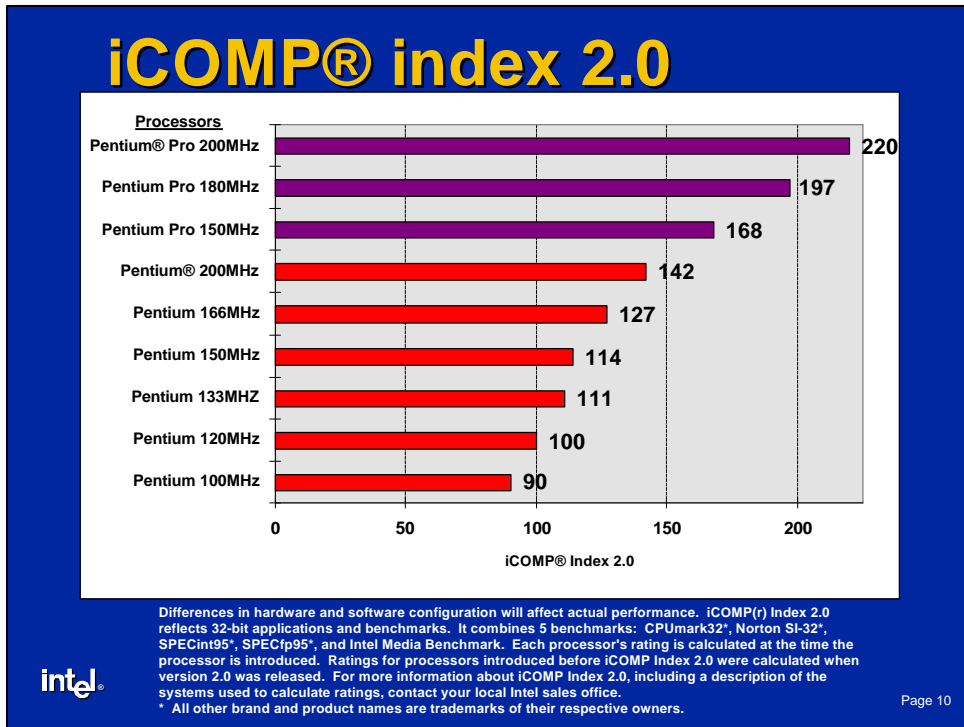
VAR Business, Week of 4/1/96

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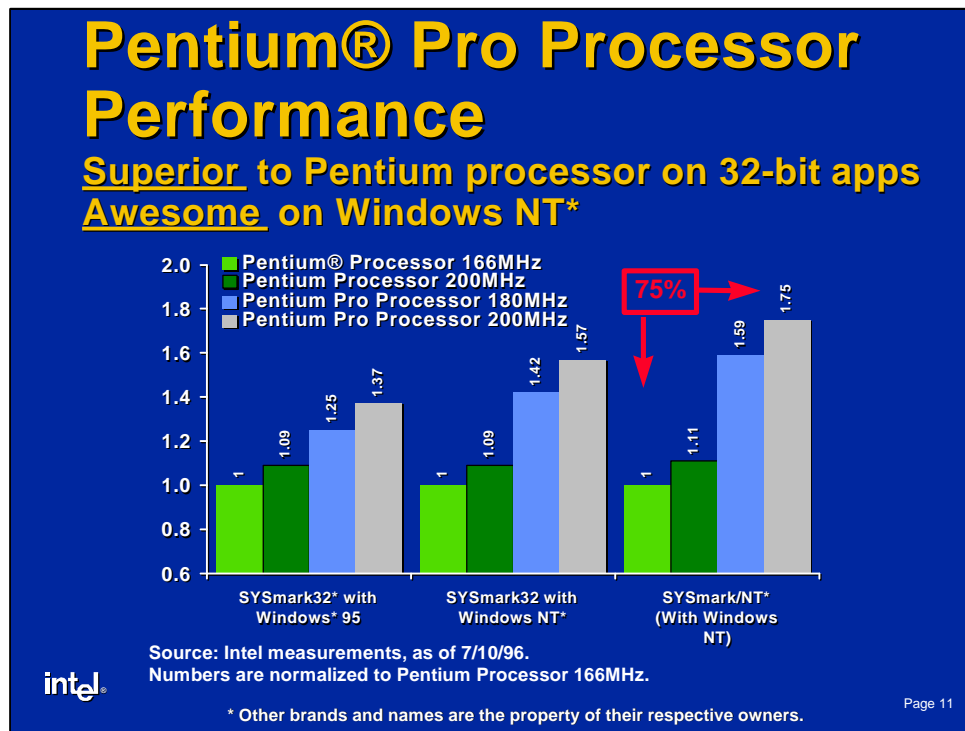
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- ALR ad from VAR Business from the week of 4/1/96. The \$2995 price tag proves our roadmap aggressiveness
- More significantly, major OEMs such as Compaq and HP are offering systems at a mainstream price point.

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- The iCOMP® 2.0 index is an indicator to compare relative performance of Intel processors. The Pentium® Pro processor at 200MHz is about twice as fast as the Pentium processor at 133MHz.



■ With a Pentium® Pro processor, the user will have the best performance under the 32 bit app / OS environment. Biggest bang is on Windows NT* but Windows* 95 also shows good performance for 32 bit apps. Based on SYSmark/NT*, the 200MHz Pentium Pro processor is 75% faster than the 166MHz Pentium processor.

■ For businesses that are migrating to 32 bit any time in the next few years, the RIGHT CHOICE TODAY is the Pentium Pro processor. (Note that all the new apps are going to be 32 bits.)

■ Also note that the 32-bit office apps under Windows NT* were run with 32MB. With the more typical 64MB, performance of the Pentium Pro processor will improve.

■ These benchmarks are based on:

■ SYSmark32* with Windows* 95 (CorelDRAW*, Excel*, Freelance*, PageMaker*, Powerpoint*, Word*, Word Pro*, Paradox*) -- 32-bit office apps

■ SYSmark32 with Windows NT* (Same applications as previous)

■ BAPCo* SYSmark/NT* (Word, Excel, Texim Project*, OrCAD MaxEDA*, Powerpoint [16-bit]) -- 32-bit advanced apps & 16-bit Powerpoint

■ BACKUP: Platforms tests were run on:

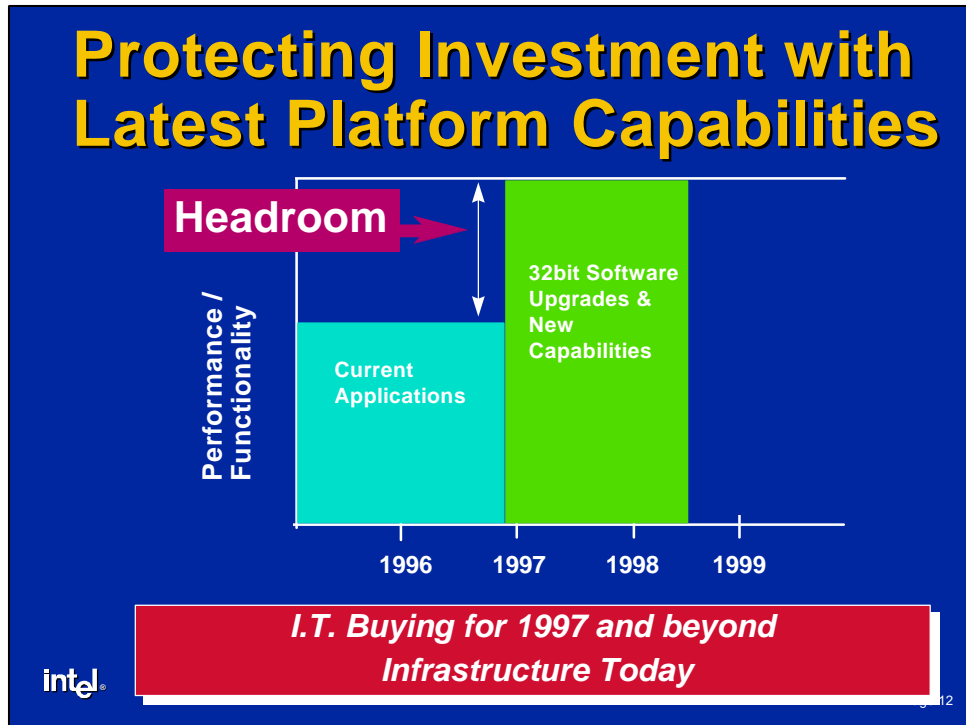
■ Pentium Pro Processor systems are Performance/VS:

- Intel Performance/VS Motherboard
- 256K L2 cache
- 64MB of DRAM (32M for SYSmark32)
- 82440FX PCIset
- Adaptec* 2940UW SCSI/PCI
- Seagate* ST31250W
- Matrox Millennium*

Pentium Processor system Dell Dimension* XPS

- 512K L2 cache (WB burst)
- 64MB EDO (32M for SYSmark32)
- 82430VX PCIset
- Adaptec 2940UW SCSI/PCI
- Seagate ST31250W
- Matrox Millennium

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■ The added performance is a major financial benefit. By having both the best available performance and functionality in the system purchased today, businesses do not have to incur additional costs later. Remember that the choice in 1996 is the basis for 1997 and beyond infrastructure too. Costs manifest themselves in terms of

✓ *the competitive costs of not having providing end users with new capabilities over time* -- Market is moving very quickly. If the organization does not have the latest, it will lose the competitive edge!

✓ *the costs of upgrading the infrastructure* -It costs money every time I.T. has to go out and touch the box.

✓ *also, the obvious cost of buying twice (2 upgrades) in 3 years*

■ So users want to have the best available platform technology. Latest Platform Technology: Pentium® Pro Processor, Audio, Graphics, Fast Connectivity, Concurrent PCI, USB (Universal Serial Bus)

■ USB lets IT add new capabilities without opening the box -- lower support costs. It will be widely available by Q1'97.

Summary

- **Address new PC usage model and rising TCO**
 - Via manageable systems, 32-bit environment, and multitasking performance
 - Provided by Pentium® Pro processor based PCs
- **Pentium Pro processor based systems**
 - Ideal for mainstream desktop new purchases
 - Protect your investment with capabilities for the future



Desktop Presentation

