

## **Desktop PC Life: Four Years for the Mainstream**

**PC hardware evolution, static user application demands and a shift to thin applications position PC desktop hardware to live longer.**

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### **Core Topic**

Hardware Platforms: Client Platforms

### **Key Issue**

How will desktop and mobile client platforms evolve during the next five years?

### **Strategic Planning Assumption**

By 2004, 75 percent of enterprises will adopt a four-year PC desktop replacement strategy for 85 percent of their PC users (0.7 probability).

“How long should I keep our desktop PCs?” is a common question raised by Gartner clients. Historically, Gartner has recommended a PC life cycle strategy to match the warranty and useful life, typically three years (see “PC Life Cycle: How Long Should I Keep My PCs?” — DF-10-3178). However, the dynamics of the assumptions around the three-year life cycle have changed, requiring an update to our recommendation. We recommend that enterprises segment their users based on need, and that low-end/mainstream users adopt a four-year useful life for their PCs. The four-year useful life is not appropriate for all users, however, as most organizations have a subset of high-end users (i.e., engineers, financial analysts, scientists) who are still best-served by a three-year or less refresh cycle. We estimate that, by 2004, 75 percent of all enterprises will adopt a four-year PC desktop replacement strategy for up to 85 percent of their users (0.7 probability). Here’s why.

**Rate of Hardware Change vs. Software Change:** From 1990 through 1997, new software requirements ushered in change in PC hardware. As users identified with productivity gains from new PC platforms, PC-DOS-based systems running on 80286 hardware were replaced with 80386/80486 systems running Windows 3.x. 80386/80486 systems were again replaced with Pentium hardware (along with other subcomponent improvements, such as more/faster memory, hard disks, networking and video) as enterprises migrated to Windows 9x/NT. During that time, the combination of major software updates on new hardware platforms ushered in higher levels of productivity for the end users. However, when Pentium II systems were released, in 1997, there was little distinguishable productivity gained from the hardware change. Hardware advancement provides more capability than software needs dictate, and, for the most part, Windows 9x/NT performed equally well for most typical (i.e., office suite, browser, e-mail) users on hardware systems Pentium II and above. The trend of minimal

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productivity improvements that started with Pentium II has carried over to Pentium III/4-based systems for most users running Windows. See associated research, “Are the Benefits of Moore’s Law Still Relevant for PC Users?” (SPA-03-3557), for the genesis of this position.

**New Software Development Models:** While faster and more-sophisticated capabilities have been the trend in hardware, applications development has taken a different approach to progress. Stalwart PC-centric software, such as office suites and Windows, continues its heavy dependence on local processing. But most new development has focused on using a Web interface, where the application interface is handled via the browser. Using the browser as the common client solves the traditional problem of not knowing the state/condition of the PC. In addition, organizations are relying on the browser for mission-critical applications; doing so alleviates much administrative work because there is no longer a need to be concerned with distributing local software to each PC, as was previously done with traditional client/server applications (e.g., a Visual Basic front end with an Oracle back-end database). Also contributing as an alternative development model are the maturity and use of thin-client architectures (e.g., Windows Terminal Server, Citrix) in lieu of relying on client-side processing.

**Managed Diversity Taking Hold:** Unlike with PC migrations of the early-to-mid 1990s, organizations are having a more difficult time establishing strong justification for mass migrations. The traditional approach for mass migrations was the replacement of hardware and software for most, if not all, users. However, the minimal justifiable differences between versions of Windows and applications have enterprises keeping hardware longer with the software platform. Therefore, a more common approach being employed by organizations is “managed diversity,” which indicates a mixture of hardware models and software versions in production (i.e., users with Pentium II/III systems running Windows 98, NT and 2000 — see “PC Operational Efficiencies: Like Getting Blood From a Beet,” TG-13-1854). Typical PC refresh strategies that organizations employ involve introducing new hardware/software configurations for only those systems that are at end of life and in need of replacement. All other systems in production (those less than two years old) remain unchanged.

**No “Killer App” on the Horizon:** PC usage remains primarily in “momentum mode,” where most requirements of the future are the requirements of today. Common feedback from end users echoes their struggle with an inundation of too many features. What is more desirable is a simpler, easier, more reliable computing experience. So although such technologies as voice

recognition, peer-to-peer and handwriting recognition continue to make progress in features and usability, these technologies will be limited to niche uses for several more years. Other applications, such as videoconferencing, show promise in delivering new desirable features; however, videoconferencing has other dependencies revolving around the network (i.e., adequate bandwidth, network latency, ubiquitous coverage) that will limit wide-scale adoption.

**Reliable Vendors and Quality Components Are Key:** Opting for a four-year refresh strategy exposes an enterprise to an additional risk of vendor failure and market uncertainty. Although quantifying the risk is unlikely, we do recommend that enterprises align their desktop selections with offerings from fiscally sound vendors that use quality components in their systems. Additional vendor due diligence should be performed to make certain that long-term viability, service and support are available for the life of the equipment.

#### Note 1

##### Four-Year Life Cycle Issues

*Warranty:* Most corporate PCs come with a three-year warranty. Enterprises considering a four-year refresh cycle should either 1) at the time of acquisition, purchase an additional fourth year of warranty (typically \$75 to \$125 per unit) at the time of acquisition, or 2) adopt a PC sparing-pool strategy that allows for a temporary PC while a new one is acquired (that is, PCs that fail in the fourth year should be replaced and not fixed). Complete details of this strategy are found in "PC Desktop Hardware Beyond Three Years: Fix or Replace?" (TG-09-7561).

*Depreciation Schedules:* Sound accounting practices dictate that depreciation schedules should match an asset's useful life. However, most enterprises find it difficult to track PC assets and, because of the PC's continuing dropping price, have migrated away from depreciating PCs. Gartner's recommendation is to depreciate assets over a three-year (or less) period if organizations are in fact capitalizing assets.

*Licensing:* Microsoft recently changed its policy regarding support for legacy products — namely, its OSs. Depending on when organizations adopt a new standard OS, enterprises that adopt a four-year life cycle may find support for the OS nonexistent from Microsoft for the final year — see "When Should You Migrate to Windows 2000 on Client PCs?" (SPA-13-6008). Enterprises should understand the support life cycle of the OSs they are using and make sure the support Microsoft will provide is within their tolerance for risk. For all but critical and security-sensitive users and applications, we believe enterprises can use a client OS for about 18 months with minimal risk after Microsoft withdraws support.

#### Acronym Key

**OS** Operating system  
**RAM** Random-access memory

**Do Notebooks Move to Four Years Too?** Although mobile PCs have benefited from the rapid changes in technical innovation as well, other usage dynamics cause notebooks to maintain a three-year life cycle. For the most part, mobile PCs are fragile devices. Mobile PCs are subjected to harsh environmental conditions, including cold, heat, shock and dirt. Users also play a major role in the demise of functionality, as they often unknowingly contribute to the failure of mobile PCs — e.g., by dropping them, using inappropriate carrying cases, damaging them on airplanes ("reclining-seat scenario") or leaving them in trunks of cars on hot days. Normal failure rates for notebooks during their normal three-year life are approximately 20 percent; extending the life to four years would dramatically raise the percentage closer to an estimated 50 percent.

We recommend that enterprises begin the due diligence within their own organizations to determine whether a four-year replacement strategy is applicable. For some high-end users (i.e., financial modeling, application developers, engineers), maintaining a shorter desktop life (i.e., three years or less) is still valid. For the remaining "typical" users (word processing, browsing the Web, e-mail) — a segment that we believe is growing — the quality and capability of the desktop hardware will be sufficient beyond the warranty period of three years, with many remaining useful for four years. Adopting a four-year replacement cycle does introduce new issues, such as depreciation, licensing, warranty and sparing requirements, that will need to be planned for (see Note 1).

**Bottom Line:** Today's PCs (Pentium III/4, 256MB RAM) have sufficient "horsepower" to support typical PC use for four years.

We encourage enterprises to evaluate their own application requirements and adopt a hardware life cycle strategy that best meets their needs.