

# Strategies for Reducing the Total Cost of Ownership for Desktop PCs

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## *Executive Summary*

*Most likely, you have a strategy for standardizing desktop PCs in your computing environment and refreshing them on a regular basis. However, if your company is like most, the weak economy over the past few years has probably curtailed your IT capital spending. This may have left you with a mix of vintage Y2K systems and many disparate PCs you've purchased on an as-needed basis, contributing to an overly complex desktop PC installed base. This complexity in the computing environment requires you to manage aging hardware inventory and additional software images, hindering IT efficiencies and driving up support costs.*

That's where Intel and Dell can help. The Intel® Stable Image Platform Program (Intel® SIPP) offers components that can minimize the potential for required hardware driver changes for at least 12 months after an Intel SIPP launch. At the same time, Dell's OptiPlex™ desktop product line offers stability features including a 15-month minimum lifecycle, a 90-day transition period where both old and new products are available, the ImageWatch™ program to plan for any future changes to your platform, and the Stable Image Assurance Program for the new GX280 and SX280 products.

The Intel SIPP and Dell™ OptiPlex™ product introductions are synchronized according to a clear and predictable schedule. IT managers such as yourself can take advantage of this schedule and time your own platform transitions to coincide. That way, you can always have the latest, most stable systems deployed in your desktop environment while lowering hardware and software support costs. This helps strike a balance between IT capital spending and ongoing product support expenses.



*“Gartner recommends that enterprises lock down PC desktops as much as possible, because this provides the best route to total cost of ownership (TCO) savings.”*

—Michael A. Silver and Brian Gammage, *Using PC Virtualization Technology for Lockdown*, Gartner, June 2004

## The Cost of a Complex Hardware Environment

There are a number of factors that can increase complexity in your desktop-computing environment: a variety of aging PC models from a host of manufacturers; third-party vendors sporadically changing hardware components and software drivers; a lack of standard hardware configurations; spontaneous software image updates; and improvised deployment processes. All these factors can create an environment that drives IT support costs higher every day with increasing numbers of help desk calls, desktop visits to resolve issues, and overall management inefficiencies.

Most IT managers intuitively know that such complex environments are expensive and problematic. However, hard data to back up their assertions has been hard to come by. This white paper presents quantitative data that point out desktop-computing cost drivers and offer pragmatic strategies for lowering them. These strategies include aligning your business with Intel and Dell’s stable image programs, and refreshing your PC environment on a regular schedule, so you know that the new systems you purchase contain a stable collection of components with a defined lifecycle to save you money. Now is the time to consider strategies like these, as many organizations have cut their IT capital spending only to see their support costs escalate.

### CHANGING COMPONENTS MEANS TROUBLE

Every time a company purchases new PCs, it risks unexpected hardware changes in a qualified platform. Even a minor revision to a third-party component may require a new driver, with corresponding changes to the software image. At best, the environment becomes more complex and costly to operate. At worst, the platform must be requalified—a process that disrupts normal procedures and adds significantly to operational expenses.

That’s where Intel and Dell can add substantial value. Since Intel manufactures so many core PC components, it is uniquely qualified to manage component revisions and upgrades to optimize stability for corporate customers. Working together, Intel and Dell stable image programs offer IT organizations the ability to qualify a gold image on the first day a new platform ships, and have that platform available for a minimum of 15 months.

*“Minimizing TCO means much more than focusing on PC acquisition costs, which usually account for only 20 to 30 percent of the TCO. Instead, proactively reducing the complexity of the installed PC base can play a significant role in reducing overall costs.”*

—Intel, *PC Management: Benefits of Simplification*, 2004

### A WEAK ECONOMY CAUSES CHAOS IN THE INSTALLED BASE

The main reason there are such complex environments out there today is because of capital budget constraints. Companies have been holding onto their PCs longer than normal. In fact, Y2K systems are still very common in corporate environments. These PCs are now between four and five years old, but companies have held onto them because they were good enough to handle the workload at the time.

*“...extending PC lifecycles typically increases software deployment efforts by increasing the total number of deployed PC configurations.”*

—Wipro NerveWire Study, *New Insights on PC Management: Benefits of Controlled PC Hardware Diversity*, 2004

Add to this complexity all the strategies for standardizing and refreshing PCs that have been put on hold because of capital spending constraints. With their hands tied, IT managers have been limited on what PCs they could buy—severely impacting long-term standardization plans.

**“...adding one additional configuration into an environment of 50,000 desktop PCs can increase...total yearly desktop PC support costs by over \$600,000.”**

—Wipro NerveWire Study, *New Insights on PC Management: Benefits of Controlled PC Hardware Diversity*, 2004

Companies now find themselves with very real difficulties supporting all these different hardware configurations and software images. Efficiencies are down and costs are up.

Even the ability to roll out a critical security patch is now a complicated matter, as each software image has to be updated and deployed separately. This leaves companies open to virus attacks longer.

CTOs and CFOs need to realize that the bottom line in IT comprises both capital expense and support costs. Saving money in the short run, by not purchasing new PCs according to a strategic qualification and deployment plan, is costing companies much more in the long run in support costs. Not to mention the lost productivity that would have otherwise been gained with newer PCs on the desktop.

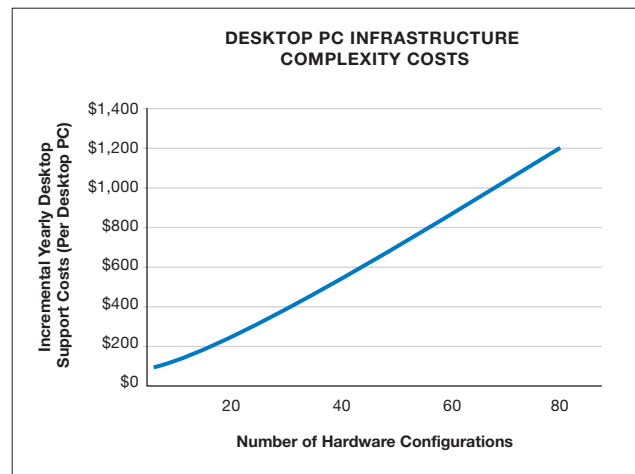
## Cost of Complexity Quantified

Today, many companies have held onto old PCs in an effort to conserve cash. This has resulted in an extremely complex and costly installed PC base. Figure 1 shows the first hard data that quantifies how holding onto old PCs impacts the cost of maintaining every other PC in the environment. From this, you get a sense of the importance of keeping the deployed PC base simple and why hanging onto old PCs simply because they can run the software stack is not necessarily a cost-effective idea.

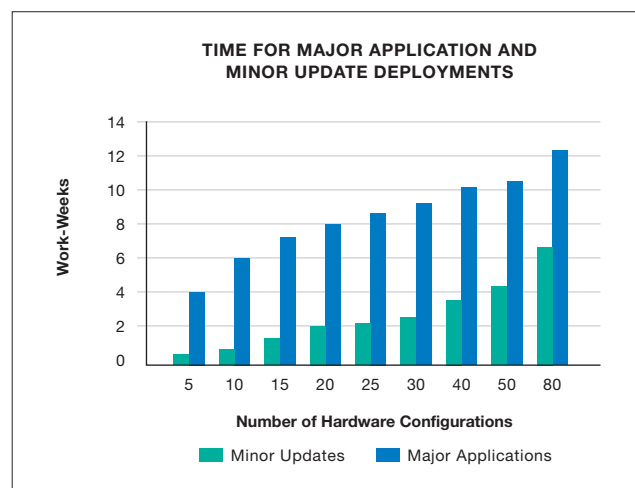
One key reason for the increased cost of complexity is the relationship between the number of deployed configurations and predeployment testing coverage for new software updates and security patches. As the complexity of the installed base increases, many companies simply do not have the time or personnel to exhaustively test each configuration. As a result, they cut the testing coverage, deployment failures rise, and resolution costs escalate.

Another key cost factor of complex environments is associated with speed of deployment—or the lack thereof. In a complex environment, it takes longer to deploy software updates and security patches across the installed base. This directly adds to support costs, and in the case of security patches, increases the risk of a virus affecting the business—an event that will drive up costs even more.

As you can see, keeping old PCs and complicating the desktop environment significantly impacts support costs.



**FIGURE 1: The more complex a desktop PC environment grows, the more costly it becomes to support.<sup>1</sup>**



**FIGURE 2: The amount of time IT staff spend deploying minor and major software updates is directly related to the number of desktop hardware configurations.<sup>1</sup>**

# Reduce Your Hardware Complexity

By reducing the number of hardware configurations that you're supporting, you can lower your support costs and improve your IT efficiency. Here's how:

- **Synch your platform qualifications with your vendor.**  
When you align your PC refresh cycle with the stable image programs from Dell and Intel, you can count on a clear and predictable schedule of product releases and upgrades. A schedule that you can take advantage of, timing your own platform transitions to enhance the stability of your desktop PC environment and lower TCO.
- **Upgrade to new Dell OptiPlex PC systems.** By refreshing your desktop PCs now, you can replace several old PC configurations with a single new one. Doing so positions your organization to enjoy a dependable, cost-saving lifecycle. Plus, your business immediately receives the benefits afforded by higher productivity.
- **Reduce your desktop refresh cycle to the optimum three years.** Keeping PCs in the installed base longer than three years leads to a more complex computing environment and higher support costs.

## SYNCH YOUR PLATFORM QUALIFICATIONS WITH YOUR PC VENDOR

When purchasing new PCs, it only makes sense to consider PCs that offer Intel and Dell's stable image programs:

- **Intel® Stable Image**

**Platform Program:** Intel SIPP components minimize the potential for required

hardware driver changes to your IT's gold software image for at least 12 months after an Intel SIPP launch. When you align your PC refresh cycle with the Intel SIPP, you can count on a predictable schedule of platform releases that you can synch your own platform transitions with, enhancing stability and lowering TCO. Specifically, Intel recommends completing desktop qualification and beginning deployment between June and August, then continuing deployment for the next 12 months or longer—through the next qualification period.



For additional information on the Intel SIPP, visit [www.intel.com/info/stableplatform](http://www.intel.com/info/stableplatform).

- **Dell™ OptiPlex™ Stability & Stable Image Assurance Program (SIAP):** Dell has consistently delivered systems with long, stable lifecycles and currently offers a minimum 15-month lifecycle with a 90-day transition period where both new and existing products are available. Dell is strengthening its stability promise by assuring that should Dell introduce a forced image change on the GX280 and SX280, Dell will implement the change for its Custom Factory Integration customers free of charge.

For more information on Dell SIAP, please visit [www.dell.com/stableimage.html](http://www.dell.com/stableimage.html).

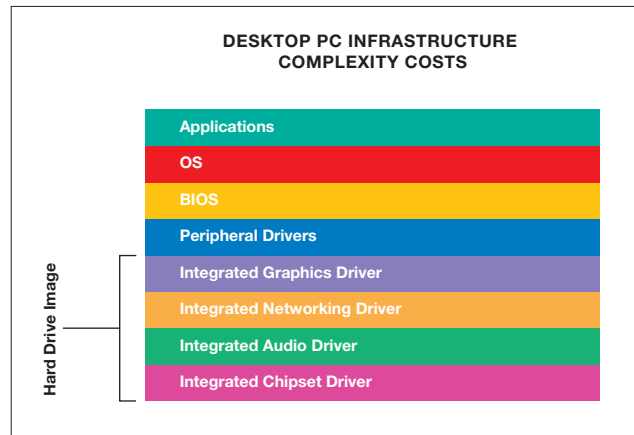


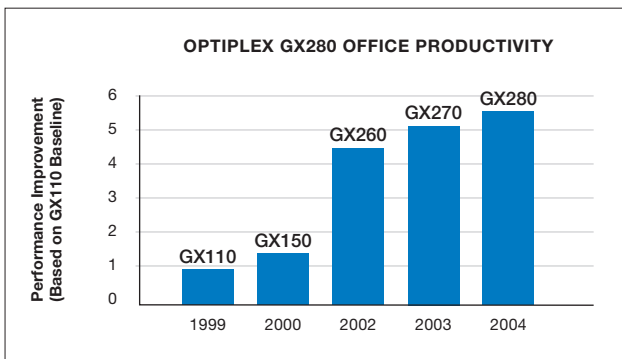
FIGURE 3: Hard drive image elements supported by Dell SIAP.

When you standardize on PC systems backed by these stable image programs, you can reduce the complexity of your hardware environment and the resulting number of software images that you have to maintain. This increases IT's ability to quickly and cost-effectively configure test and deploy applications, minor software updates such as security patches, and operating systems.

## UPGRADE TO NEW PC SYSTEMS

The technology packages that Intel and Dell are launching this summer prove that the time to upgrade is now. Refreshing desktop PCs now can help you replace several old PC configurations with a single new one. And you position your organization to enjoy a dependable, cost-saving lifecycle. Plus, your business immediately receives the benefits afforded by higher productivity.

Today's high-performance desktop PCs from Dell and Intel help your organization increase productivity. By upgrading to new PCs now, your employees can multitask like never before and take advantage of collaboration applications that let them work together more efficiently—and get more done in less time. What's more, they have the power to run powerful new applications such as those that rely on local data caching.



**FIGURE 4:** With new PCs from Dell and Intel, you get 5X performance gains over your old Y2K systems.<sup>2</sup>

When planning your next PC purchase, consider the new Dell OptiPlex GX280 and SX280 systems with the following features and benefits:

- **Faster processors with larger caches.** Processors such as the Intel® Pentium® 4 processor supporting Hyper-Threading Technology<sup>3</sup> and up to 1 MB L2 cache improve overall system performance. Systems that can handle more open applications, multitasking, and background computing increase employee productivity.

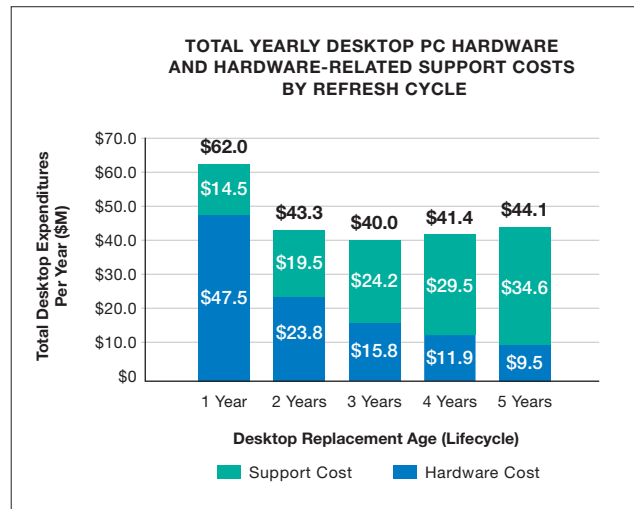


**Dell™ OptiPlex™ SX280:**  
*Easy to manage with proven stability*

- **Breakthrough I/O performance.** Bus technology like PCI Express\* delivers over 3.5X more I/O bandwidth than standard PCI<sup>4</sup> for improved system and application performance. PCI Express is Intel's most significant PC bus architecture change in over a decade.
- **Increased memory performance.** New memory technologies such as dual-channel 400-MHz DDR2 shared SDRAM deliver performance optimized for future system designs and faster CPUs. What's more, DDR2 is designed to provide a longer lifecycle than DDR memory.
- **Better networking.** Integrated Gigabit Ethernet coupled with the PCI Express interface provides incredible network throughput for accelerating transaction response, reducing contention for server resources, and improving productivity.
- **Improved security.** Systems built on the Intel Pentium 4 Processor with HT Technology have the multitasking power to run antivirus software, encryption, and compression utilities in the background, while reducing the impact on user productivity.

## REDUCE YOUR REFRESH CYCLE TO THE OPTIMUM THREE YEARS

Keeping PCs in the installed base longer than three years leads to a more complex computing environment and higher support costs. The number of deployed configurations can be reduced by moving to a shorter refresh cycle and ensuring that for every new configuration introduced into the system, an old configuration is decommissioned. Three years provides the optimal TCO by balancing IT capital expenditures with support costs.



**FIGURE 5:** Companies on a three-year lifecycle spend \$1.4M per year less on desktop hardware and support costs than those on a four-year lifecycle, and \$4.1M per year less than companies on a five-year lifecycle.<sup>1</sup>

## Steps for Simplifying Your Environment

Interested in reducing the number of deployed hardware configurations in your computing environment? PCs that are a part of the Dell and Intel stable image programs can help. Here is a suggested methodology for deploying new PCs to simplify your desktop PC environment:

1. Assess your PC inventory and identify your total number of deployed configurations.
2. Identify a target number of total configurations, and look for opportunities to replace several old PC configurations with a single new PC configuration. The optimal number of configurations is easily identified using Dell™ ImageWatch™, which lets you see at a glance all mandatory and voluntary system and peripheral changes planned for a particular product.
3. Identify and qualify a Dell OptiPlex GX280 or SX280 system featuring the Intel Pentium 4 Processor with HT Technology for stability over the next 15 months or longer. This enables your IT department to install and deploy systems with the optimal lifecycle. Be sure to minimize configuration variations during new PC acquisition and deployment.
4. Engineer and build a gold software image. While the image may change periodically to accommodate application and operating system updates and security patches, the hardware platform should remain the same. If there is an unexpected platform change, newly acquired PCs may not work with the gold image, and PC deployment can be disrupted until compatibility issues are addressed and the image is requalified on the new PC hardware.
5. Consistently deploy the gold software image and migrate data to new PCs built on stable platforms as they are introduced into the computing environment.
6. Establish strong end-of-life policies that ensure small numbers of old configurations don't inflate support costs. Begin the transition to the next generation of stable platform 90 days before the end of life for the current one. And rest assured that both older- and newer-generation Dell systems will offer a 90-day transition period when the time comes.

## Investigate the Offerings, Look for These Attributes

When you are managing a fleet of PCs, you know better than anyone that reducing variability in the desktop PC environment is critical to streamlining IT processes and controlling TCO.

With reduced variability, new systems can be added more quickly, IT processes can be more efficient, problems can be resolved faster, and training requirements can be reduced.

For the sake of simplification, be sure to:

- Qualify and deploy new PCs that feature Intel Pentium 4 Processors with HT Technology, Intel® 915G Express, chipsets and graphics, DDR2 SDRAM memory, PCI Express and integrated Gigabit Ethernet.
- Add to your purchase requirements that any new technology platforms must be part of the Dell and Intel stable image programs to ensure optimized TCO.
- Adopt a regular refresh program that's aligned with Dell SIAP and Intel SIPP product launches.

To learn more about stable image programs and new technology offered by Intel and Dell, please visit [www.dell.com/stableimage](http://www.dell.com/stableimage) and [www.intel.com/info/stableplatform](http://www.intel.com/info/stableplatform)

You'll learn about the Dell OptiPlex GX280 and SX280, the Intel Pentium 4 Processor with HT Technology, and the Intel 915G Express chipset. You only have your complex hardware environment to lose.

<sup>1</sup> Wipro NerveWire Study, "New Insights on PC Management: Benefits of Controlled PC Hardware Diversity," Q1Y04. The figures depicted in the graphic are based on a 50,000-unit installed base. These are direct hardware support costs associated with a complex desktop PC environment.

<sup>2</sup> Based on the SysMark<sup>®</sup> Office Productivity and Ziff Davis Content Creation 2004 benchmark test. Performed by Dell Labs in April 2004 on the OptiPlex GX280 with the Intel<sup>®</sup> Pentium<sup>®</sup> 4 processor 3.20 GHz, 512 MB, 120 GB SATA HDD, WXP as compared with the OptiPlex GX110 configured with the Intel<sup>®</sup> Pentium<sup>®</sup> III 700 MHz, 128 MB, 40 GB ATA66 HDD, WXP. Actual performance will vary based on configuration, usage and manufacturing variability.

<sup>3</sup> Hyper-Threading Technology requires a computer system with an Intel Pentium 4 processor supporting HT Technology and an HT Technology enabled chipset, BIOS and operating system. Look for systems with the Intel Pentium 4 Processor with HT Technology logo which your system vendor has verified utilize Hyper-Threading Technology. Performance will vary depending on the specific hardware and software you use. See [www.intel.com/info/hyperthreading](http://www.intel.com/info/hyperthreading) for information including details on which processors support HT Technology.

<sup>4</sup> Compared to PCI, PCI = 133 MBs, PCI Express Bus = 500 MBs

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<sup>\*</sup> Other names and brands may be claimed as the property of others.

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