
End-User Computing Best Practices



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Conclusions

- PCs are not personal.
- PCs are integrated into the fabric of everyday work environments.
- Device diversity adds new levels of management complexity.
- Best practices (i.e., standardization, lockdown, asset management and policies enforcement) do lower TCO.
- Use project management best practices when doing migrations.

Key Trends

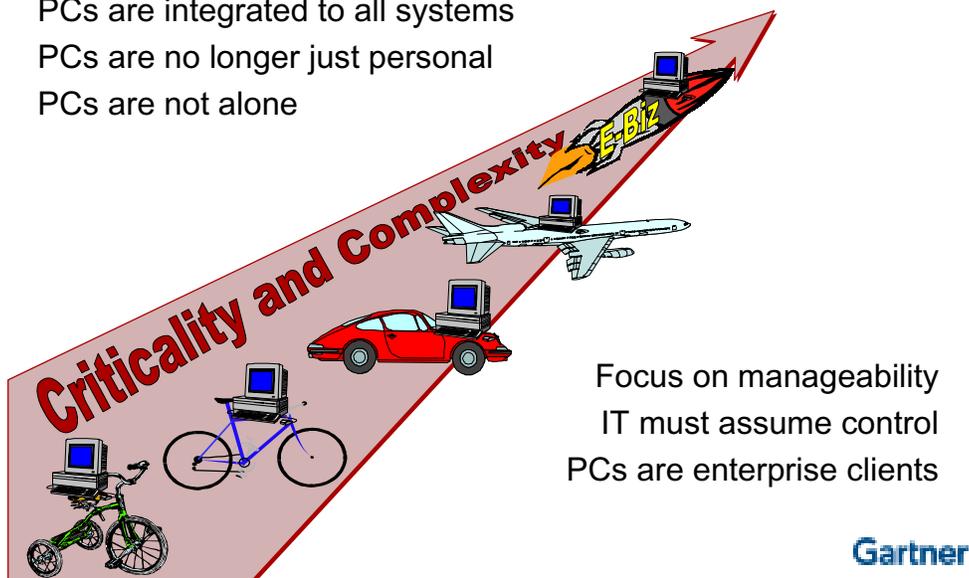
- Device proliferation goes well beyond PCs, where most enterprises will be ill-equipped to handle non-PC devices.
- Advances in broadband and “anytime, anyplace” access methods will require IS organizations to reevaluate processes around support, service and availability.
- Low acquisition costs for PDA/handheld devices will increase pressure on the IS organization to support nonstandard devices.
- Implementing various client-centric best practices is key to lowering TCO.
- Device specifications, speeds and feeds will have little significance; instead, manageability takes center stage as a decision driver.
- Life-cycle management is still the best approach to client-side computing.
- End-user training and communications make or break IS-organization credibility.

End-User Computing Best Practices

Strategic Planning Assumption: By 2003, enterprises that ignore managing PCs as enterprise clients will assume, on average, two to three times the traditional technical support costs of fully managed PCs (0.8 probability).

PC-Client Evolution

PCs are integrated to all systems
PCs are no longer just personal
PCs are not alone



Source: Gartner Research

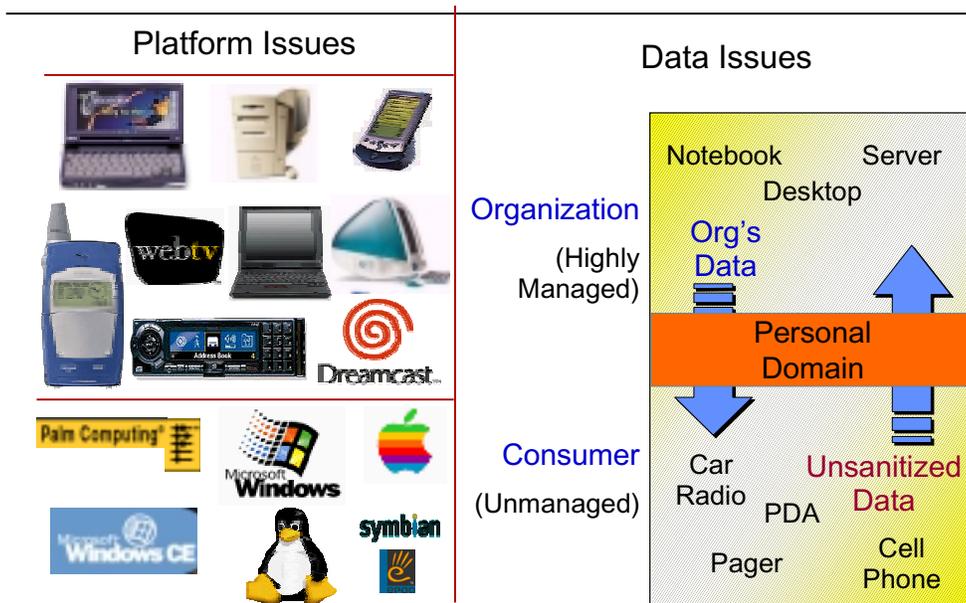
With nearly 20 years of lineage, the PC has undergone several transformations, continuing to evolve to meet the ever-changing requirements of users and enterprises alike. Despite the technical improvements, actual end-user operations and management have changed surprisingly little during the PC's history. For the most part, PCs are used much in the same way as when DOS and Lotus123 ruled the roost in the early 1980s. End users still "do their own thing," much to the chagrin and objections of IT management.

PC technology has fully infiltrated enterprises and organizations. PCs are no longer personal, and are critical to the operation of the organization. Moreover, the PC is not alone and needs to be a true enterprise client. An enterprise client is defined as a traditional PC that has been engineered and tested to be fully integrated with the rest of the organization's computing resources, with particular consideration being played to client-side manageability, stability and functionality. Despite the proliferation, issues surrounding PC management, appropriate use, and lack of policies foster haphazard approaches in best-of-class client management.

End-User Computing Best Practices

Strategic Planning Assumptions: By 2004, 60 percent of office productivity workers will carry or own at least three mobile devices (0.8 probability). By 2004, 80 percent of corporate and government IT shops will be forced to support three “appliance” operating system platforms (0.8 probability).

Managing Personal Domains



Source: Gartner Research

The PC no longer has the undivided attention of IT managers. Consumer “toys” have invaded the enterprise – and the invasion has only begun. These quick-turnover, inexpensive items have properties at the opposite end of what the IS organization strives for: manageability and reliability. Not too long ago, an IS organization’s best defense against unwitting and sometimes unscrupulous users was the cost of computing, as users did not purchase their own computing resources. But now, users can purchase a PDA for less than \$150, often well below individual purchasing thresholds.

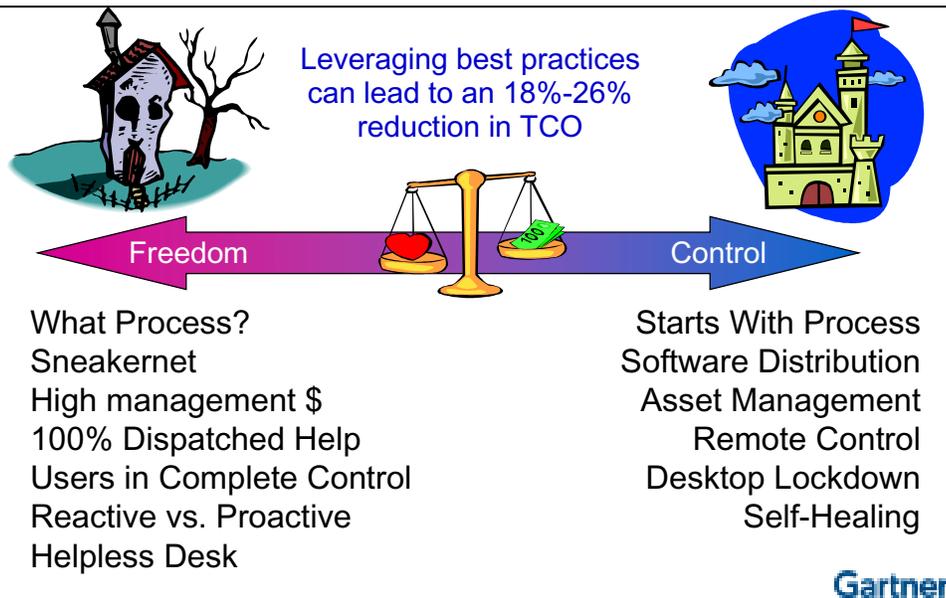
With a rapid proliferation in mobile device types driven by a need for more personal “computing work styles,” the ingrained method of prescribing a specific hardware portfolio for each user segment is becoming problematic. As an alternative, IS organizations can consider a program that provides for budget amount by segment, from which users can select their own choices from an approved IT product list.

Action Item: IT must begin to acknowledge the support and management of consumer devices that clearly show either wide adoption or business benefit.

End-User Computing Best Practices

Imperative: There are no easy solutions when reducing client-side computing costs. Focusing on best practices that are cross-organizational in nature, as well as retooling inefficient processes, yields the greatest return for the enterprise.

PC TCO Is Real



Source: Gartner Research

Reducing client-side total cost of ownership (TCO) can be achieved in multiple ways, but the biggest returns can be established by focusing on process, people and technology. Specifically, this can be done by focusing on desktop lockdown, asset management and inventory tools, remote-control software, self-healing tools (either embedded or external to the OS/application), and software distribution.

To derive benefit, enterprises must form cross-organizational teams that can address issues that go beyond typical IS barriers and well into the business units. Enterprises must also be ready to proactively communicate pending changes to the end users, as each and every person will be affected as a result.

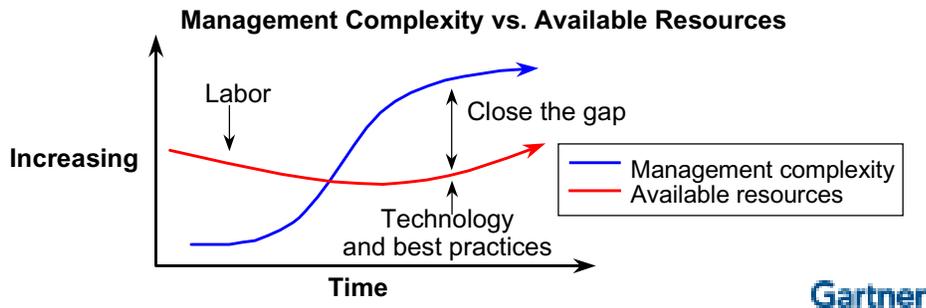
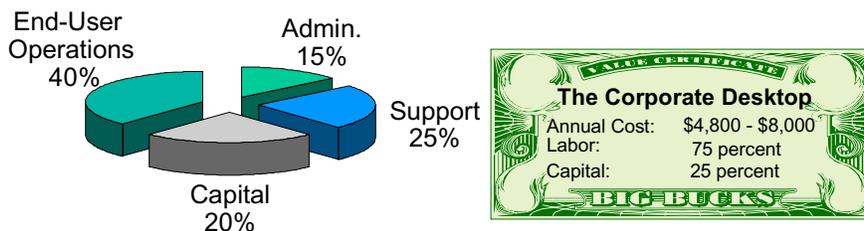
Reducing TCO involves client participation. TCO champions must first educate the IS organization, as well as business units, to the real value of reduced TCO. Enterprises are encouraged to view TCO as a continuous set of improvement processes that are implemented with trained staff using appropriate tools.

Action Item: Enterprises must realize that costs go far beyond acquisition, and instead leverage best practices to make meaningful impact on end-user computing costs.

End-User Computing Best Practices

Strategic Planning Assumption: Through 2003, enterprises that fail to look beyond price/performance in vendor/platform selection will miss opportunities to reduce TCO by as much as 26 percent (0.7 probability).

TCO: The Great Equalizer?



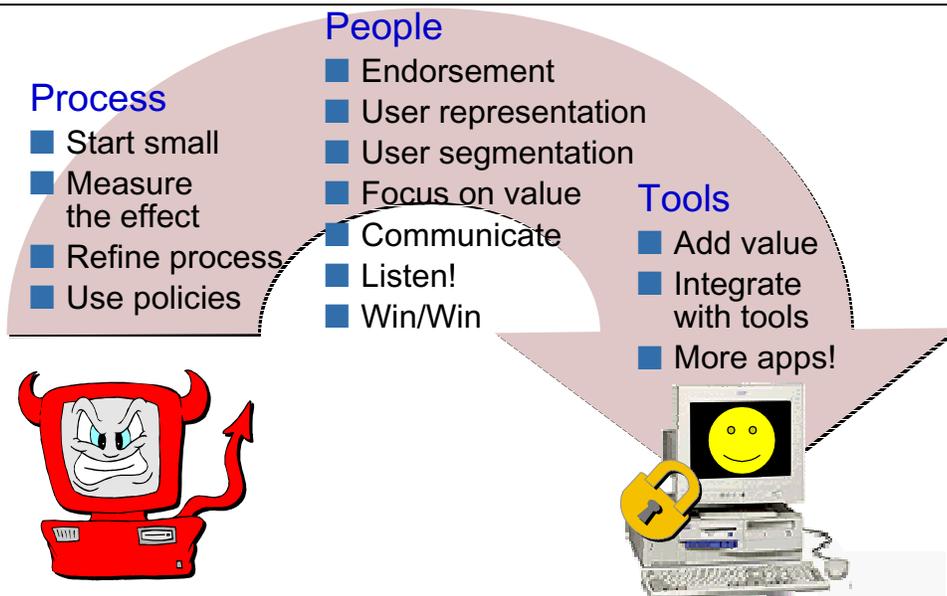
Source: Gartner Research

Many enterprises have substituted “serendipity” for effective management practices in their end-user computing deployments. This has resulted in massive costs in time, effort and money that undermine, and even subsume, the real benefits of personal computing systems. IS managers responsible for supporting end users draw heavily on personnel resources, and are quickly realizing that the underlying costs are difficult to quantify, but are real. Each year, new technologies and capabilities make the need to understand and control such complex environments even more urgent. Therefore, many resources will be directed at this problem, and many vendors will make TCO and systems manageability a cornerstone of their strategies.

Action Item: Enterprises should evaluate centralization and look for opportunities to automate high-cost functions and reduce labor expenses wherever possible. A heavy focus on capital costs may only undermine TCO reduction efforts.

Strategic Planning Assumption: Through 2004, 80 percent of enterprises that fail to change their processes and communicate accordingly, and instead use a tools-only focus, will not successfully implement desktop lockdown (0.8 probability).

Desktop Lockdown Can Be Done!



Source: Gartner Research

For most enterprises, desktop lockdown is the most difficult management practice to implement. For a variety of reasons, IT managers struggle with organizational issues that have an impact on the cultural and political landscape within the enterprise.

Succeeding is not impossible, however, as several factors contribute to the success of desktop lockdown. First and foremost, senior management sponsorship is required, as the concept of desktop lockdown is couched under the guises of organizational efficiency, lower costs and more end-user productivity. End-user involvement is paramount to success. Establish a method by which a rational user segmentation can occur, where highly technical and knowledge workers can be segmented from staff and clerical users. Lastly, create a value proposition for end users in which they see immediate benefit from a locked-down PC. Examples of higher value are better and more-frequent communications, more applications, customized IT services, better SLAs and less-expensive support costs.

Action Item: Enterprises must implement a desktop lockdown management strategy if they are striving to minimize TCO.

Strategic Planning Assumption: By 2005, 80 percent of enterprises will require 50 percent less effort to establish and maintain PC-based standards due to evolving “plug and play” technologies (0.7 probability).

Standardization Is Key — But at the Cost of Diversity

High Diversity = High Costs

Management Tools

Lockdown

Hardware Diversity

Application Diversity

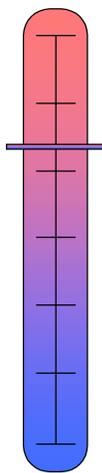
Image Diversity

OS Diversity

Support

Culture

Process



- Form a cross-functional project team with strong leadership
- Link goals to business objectives
- Evaluate the process and technology requirements
- Identify the impact on existing processes
- Limit the scope
- Identify service and support requirements
- Communicate

Low Diversity = More Control

Gartner

Source: Gartner Research

Corporate standards play an important role in managing PCs. For standards to be implemented successfully, at least three things need to occur:

1. Standards must be defined clearly and precisely.
2. Standards must extend beyond the technology. They must be applied to how the technology is configured, and how it is managed and supported (i.e., standards must be applied to support tools and processes as well as the technology).
3. Standards must be applied strongly where they make sense, but altered in situations where they do not. Standards should be viewed as a means, not an end. The goal is organizational effectiveness, not 100-percent conformance to a standard. Many enterprises' standards programs have stumbled because of this misconception.

Action Item: Enterprises are encouraged to view standards creation and maintenance as the best choices available today to meet strategic and IT goals. As business and technology change, so do the standards.

Strategic Planning Assumption: Through 2002, at least 50 percent of large enterprises that fail to exploit "free" PC OEM basic services will overspend by as much as 10 percent on PC purchases (0.7 probability).

PC Vendor Selection — Beyond the Box

"Free" Services

Warranty Uplifts
System Image Burn-In
Asset Tagging
Custom Configuration

Procurement

Electronic Procurement
Personalized Home Pages
Reporting
"Special" Pricing



Manageability

Manageability Tools
Transition Management
Advanced Change Notification
Life-Cycle Services

Support Services

Geographic Coverage
Accountability
"Best" Effort
Online Support

Gartner

Source: Gartner Research

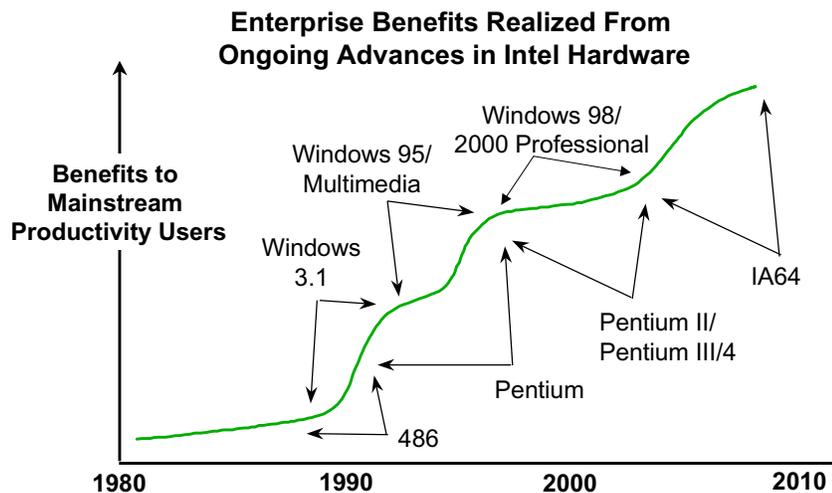
In response to competing vendor initiatives and market pressures, PC manufacturers are beginning to bundle services that have traditionally been fee-based options. PC manufacturers are offering warranty uplifts, system-image installation and hardware customization free of charge to their largest and most-strategic customers. While these free services are not widely advertised as such, we encourage enterprises to pursue the availability of these no-cost services with their PC manufacturer.

Hardware OEMs are also announcing formal efforts to aid enterprises in improving the management of technology change and software images. These programs emphasize the growing importance of service and support as a means of vendor differentiation, and the Web as a service delivery vehicle. Vendors recognize that, in a commodity market, customer loyalty depends on a timely, close, service-driven relationship. Although these programs offer lofty promises, the pace of Intel- and Microsoft-driven technological change will not diminish.

Action Item: Enterprises should include vendor service and support options as a standard part of the PC evaluation process.

Strategic Planning Assumption: The CPU performance benefits derived from Moore's Law will remain marginal through 2004 for mainstream users (0.8 probability).

Diminishing Benefits of Moore's Law



Gartner

Source: Gartner Research

In 1965, Gordon Moore (a cofounder of Intel) predicted that the transistor density of semiconductor chips would double roughly every 18 months. This prediction has proven accurate and has created the net effect of PCs that are almost twice as powerful as the previous generation of systems. As PCs became more powerful, their appeal broadened the market for potential adopters with each successive generation of systems. We believe Moore's Law has not been repealed, but we expect it will have a diminished impact on users.

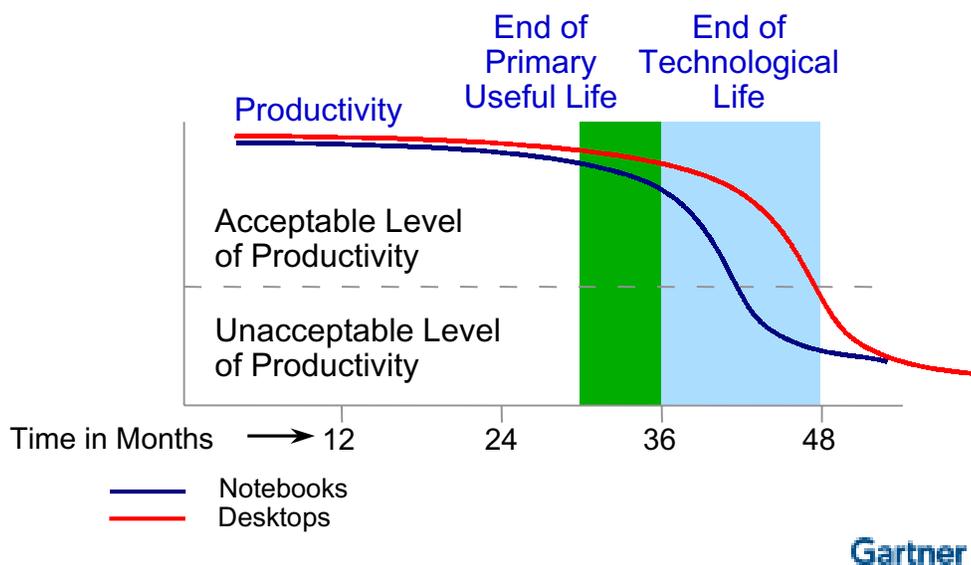
With Pentium III technology, entry-level or trailing-edge systems will, for the first time, be suitable for mainstream use. The introduction of IA64, however, will once again broaden appeal for leading-edge technology and reset the curve, but we do not expect this will occur until at least 2004. For the first time in 10 years, enterprises can safely ride price curves down. This is not permanent, but it does represent an opportunity to reduce end-user computing costs without major risk for the next two to three years.

Action Item: Enterprises should consider entry-level Pentium III systems with 256 Mbytes of RAM for all users except those running high-end, processor-intensive applications.

End-User Computing Best Practices

Strategic Planning Assumption: Through 2004, the primary useful life of a standard notebook offering is 30 to 36 months (0.7 probability).

Primary-Useful vs. Technological Life



Source: GartnerGroup

Time (In Months)	Event	Residual Value as Percentage of Purchase Price
0	Notebook purchase	70%
4	First round of discounting	55%
9	End-of-life discounting (replacement models introduced)	45%
14	Product discontinued	30%
30	Salvage price	10%

Imperative: Most enterprises will be best served by standardizing on two vendors across desktop, notebook and low-end server platforms.

Hardware Vendor Standardization

	Notebook	PC Server 1-Way and 2-Way	Desktop
			
Primary	Vendor A	Vendor B	Vendor A
Backup	Vendor B	Vendor A	Vendor B

- Use Third-Party Management Tools
- Commoditization Yields Higher Levels of Standardization
- Select Notebook, Server, Then Desktop
- Alternate Primary/Secondary Roles
- Reduces Risk
- Allows Enterprises to Optimize Processes

Gartner

Source: Gartner Research

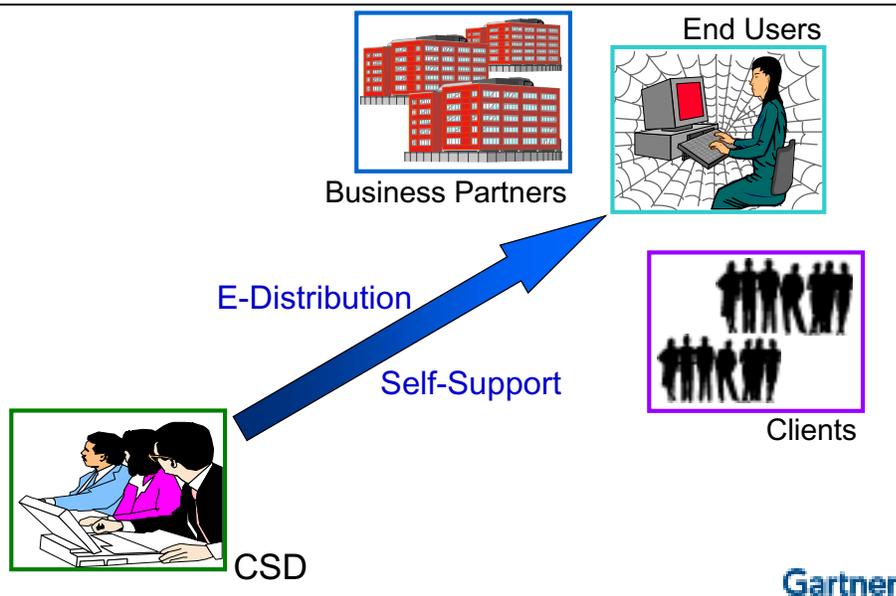
A convergence of reseller channel woes, internal process complexities and interdependencies, and hardware and service commoditization has produced an environment ripe for the adoption of a single vendor standard for PCs, laptops, and one- and two-way servers. This is especially true for enterprises that have engaged a direct OEM vendor, as they will be hard-pressed to justify a secondary vendor based on internal process costs.

While product availability increases as product differentiation decreases, a prevailing trend within large enterprises is to standardize on a single OEM for all platforms. We think this move is unwise. Instead, Gartner recommends a modified two-vendor strategy that fits well with the evolution of the channel. Begin by standardizing on two OEMs. For each platform (laptops, desktops, entry-level servers) standardize on one of two vendors. For either of the remaining two platforms, choose the OEM not chosen as primary for the first platform. Choosing vendors in this manner allows enterprises to safely reduce the number of vendors to a manageable level without incurring the risk of a single hardware supplier.

Action Item: Most enterprises should choose two vendors that not only fulfill product requirements but can also adapt to their processes and other unique requirements.

Imperative: IS organizations must leverage a portfolio of technologies to achieve success for a IT service and support management strategy.

The Uphill Climb of E-Support

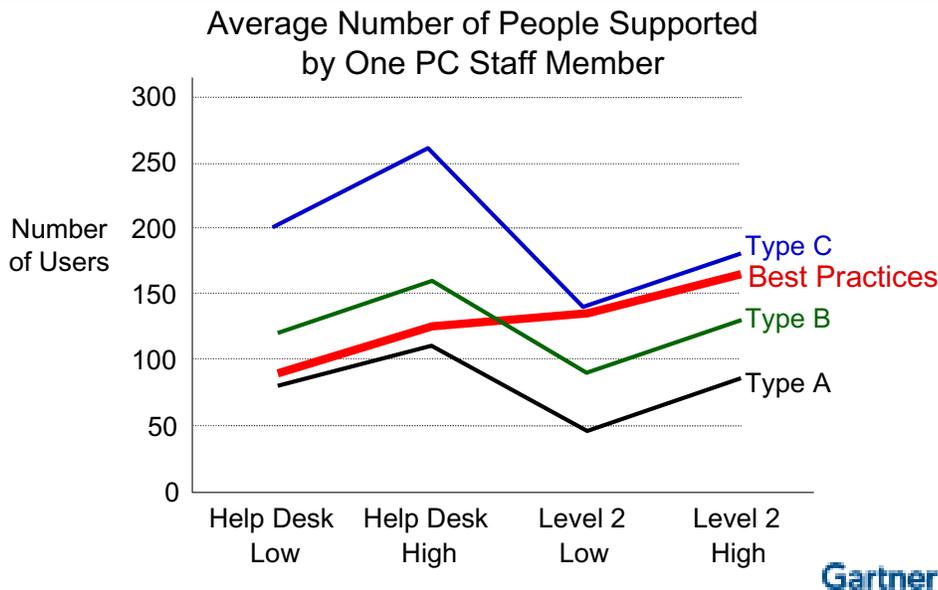


Source: Gartner Research

E-support, properly implemented, can be a solution to several of today's hottest help desk and customer contact center challenges. The demand for e-support, however, will be even larger as e-business drives the need for "anytime, anywhere" support solutions. As the IS organization continues to try to provide improved quality of service with limited resources and budget for its enterprise and end-user constituency, business requirements pull the already tenuous support resources to a new set of users that are beyond the firewall. Justifying new technologies to automate understaffed operational areas often proves unsuccessful. While automation (with the right staffing and processes) can reduce costs and improve quality of service (QOS), justifying and implementing these technologies is an uphill climb that requires additional – yet scarce – people resources. The IS organization is being further stressed by new e-business demands. Fundamentally, as the number of users increases, so too will call volumes into IT support. Therefore, the IS organization must leverage existing technologies used inside the firewall to reach out to new business relationships (supply chain) and new buyer relationships (business to consumer), and new ways empower end users with self-support technologies.

Strategic Planning Assumption: By 2004, 75 percent of enterprises will possess the necessary technical components (hardware, tools and infrastructure) to optimize PC staffing levels but will fail to capitalize on them due to lack of appropriate processes (0.7 probability).

PC Staffing — Help at the Right Location



Source: Gartner Research

“How many PC support people do I need?” is a common question puzzling many IT managers today. Often, IT executives are called upon by business executives to justify current staffing numbers and proposed new hires. From a hardware perspective, management technologies (e.g., WfM and PXE) will allow for better remote and systems management. Software changes will also act as enablers for the help desk in some enterprises. Windows 2000 and today’s toolsets are able to provide full remote systems management by help desk and other support personnel.

Despite the advances, many issues around PC staffing are not technical. Knowledgeable users, legacy technologies, processes and internal political battles will conspire to ensure that IS organizations cannot provide optimal support. Implementing the right toolsets is not a trivial task, however, and often requires support personnel to “unlearn” bad support habits.

Action Item: It is imperative that IS organizations be willing to work through the politics necessary to regain PC control, and use management tools that will allow the help desk to actually help, which in turn allows Level 2 and Level 3 support to be more proactive in their problem management.

End-User Computing Best Practices

Strategic Planning Assumption: Through 2003, 80 percent of enterprises will have per-image creation costs (consisting of 20 applications at 500 megabytes) that range between \$4,500 and \$7,600 (0.7 probability).

Image Management Best Practices

- Build an image-creation process
- Application testing and integration
- Offer superset of software
- Integrate management tools
- Create index system for master images
- Augment with software distribution and personality migration tools
- Normalize the release schedules
- Managed diversity is a good thing
- Document the images
- Retire old images with old hardware



Source: Gartner Research

The cost of image creation and management is often given as a reason for making many key IT system deployment decisions. Whether one is limiting the number of supported hardware products or constraining the number of OSs, the cost of image creation and maintenance is a key factor in the decision. Vendors, too, have focused many offerings on image management, often maintaining product life spans far beyond what would normally be considered in order to provide older machines that run on a customer's standard image. Vendors are also concentrating on the development of image-management tools. The question is whether image preservation without an understanding of true costs is a sound strategy.

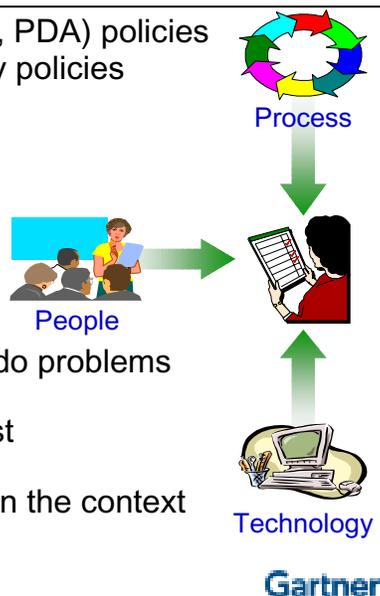
Successful disk image management is dependent on five essential best practices: 1) a methodology for image creation; 2) holistic system integration for hardware and software; 3) planned-for expansion, upgrades and future requirements in system images; 4) standardized PC technologies; and 5) scheduled releases.

Action Item: IS organizations should discourage the common practice of using image cost alone as the basis for decision making. Instead, sound cost/benefit analysis should be substituted.

Imperative: Ensure that everybody is on the same page by creating a formalized policy that reflects the interest of all parts of the enterprise (e.g., the IS organization, the legal department and human resources).

Policies – Well Worth the Effort

- Build technology-specific (PC, laptop, PDA) policies
- Should not supersede other company policies
- Address Internet, e-mail, data
- Should be concise, well-defined
- Endorsed by management
- Fully enforceable
- Reviewed on a periodic basis
- Exit clauses involve business units — link business and IT objectives
- Conduct baseline analysis — where do problems exist?
- Identify potential opportunities for cost savings/avoidance
- Prioritize and evaluate opportunities in the context of contribution
- Communicate



Source: Gartner Research

Creating a PC policy addressing the Internet, e-mail and general usage will have the greatest organizational impact in curbing PC abuse. A policy defines the primary objectives of the enterprise and the means for attainment. The policy statement must:

- Have a clearly stated purpose
- Be applicable
- Be concise – no more than two pages or 10 bullet items
- Be enforceable – only policies that can be audited and enforced should be established
- Be supported by executive management, the board of directors or other governing bodies

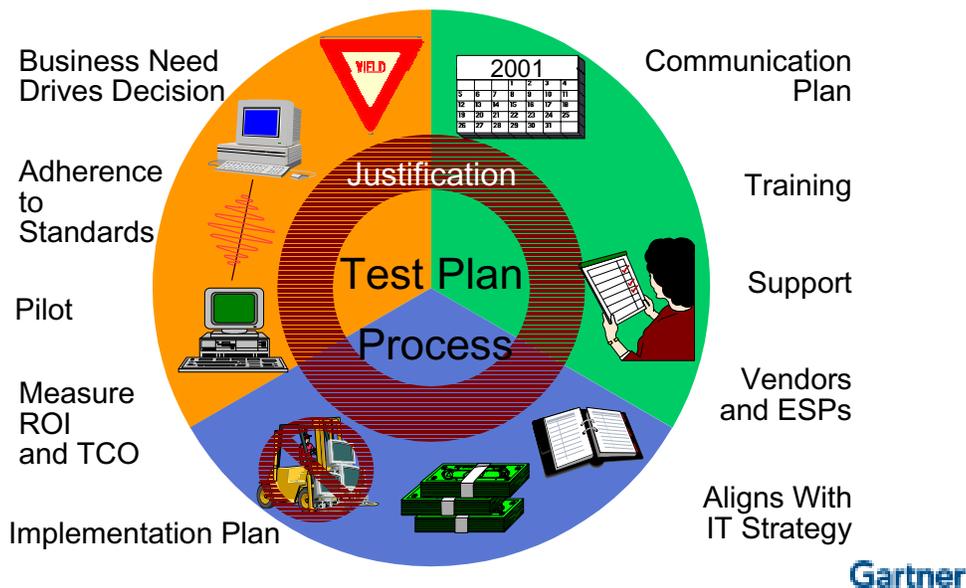
The combination of Internet access, e-mail and core and business applications opens up frequent opportunities for non-work-related PC usage. While some non-work-related use is understandable and accepted, documented guidelines should be established to prevent abuses.

Action Item: Enterprises should use policies as a method to shift philosophies and perceptions about the role and impact of PC technology on the enterprise.

End-User Computing Best Practices

Strategic Planning Assumption: In 2002, 80 percent of enterprises that did not have a manageable Windows desktop environment in 1999 will still not have a manageable Windows 2000 environment, and will have failed to recoup their migration costs primarily due to political and cultural issues (0.7 probability).

Migration Best Practices



Source: Gartner Research

Migrations to new PC technologies are often laden with high costs, lost productivity, staff burnout and dissatisfied end users. While initially driven by the “newness” of the technology, enterprises often collapse midway through migration efforts due to poor communications, missed project milestones, cost overruns, unrealistic SLAs, lack of planning and scope creep.

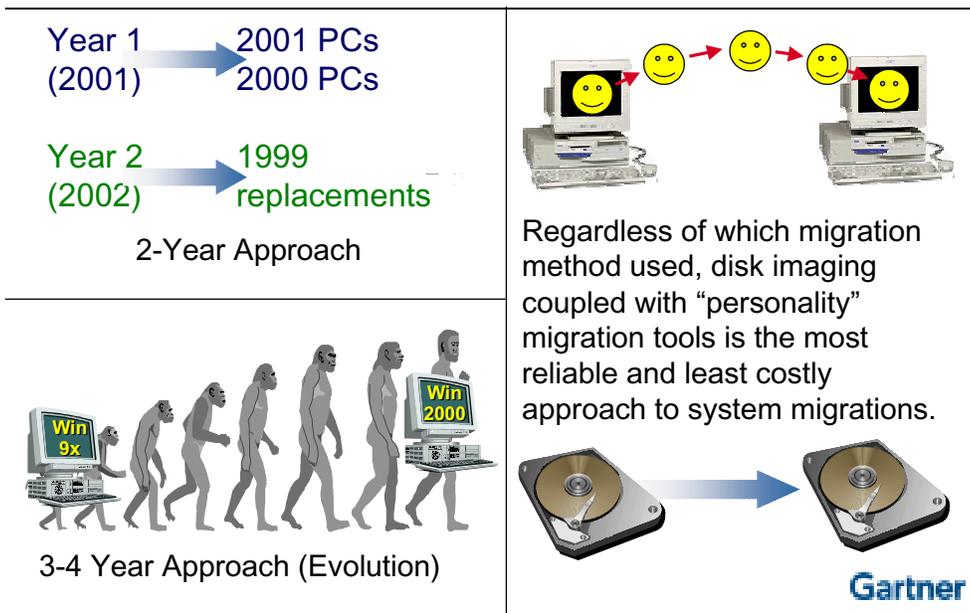
PC migrations go smoothest when project-management planning and discipline and PC implementation best practices are used. As examples, the design of the desktop, the supporting network, systems management tools and the structure of the support organization all need to be completed before implementation begins. For large enterprises, devising an implementation plan with scheduled downtime and segmented phases (e.g., by business unit) often makes the project more manageable. Once implementation begins, providing end users with just-in-time training reduces calls to the help desk.

Action Item: Enterprises must use sound project-management techniques of planning, scope definition, design, test, implementation and training to derive maximum ROI for their migration.

End-User Computing Best Practices

Tactical Guideline: Enterprises should consider laptop PCs that were purchased in 2H99 or later — and desktop PCs that were purchased in 1H99 or later — to be the best candidates for upgrades to Windows 2000 Professional.

PC Migration Approach



Regardless of which migration method used, disk imaging coupled with “personality” migration tools is the most reliable and least costly approach to system migrations.

Source: Gartner Research

To many enterprises, the vision of a homogenous installed base holds the promise of easier management, better customer service and lower TCO. However, a “forklift” migration to standard PC platforms (i.e., Windows 2000) that will replace all their desktops, laptops and servers is costly, usually resulting in fleeting homogeneity. Further, a forklift upgrade this year means that the enterprise’s entire infrastructure will be replaced this year and, in fact, every three years, creating radical differences in yearly workloads and budgets. A more appealing approach is to adopt more-gradual migrations that are completed in either two years or three to four years. The two-year approach replaces three-year old hardware and upgrades one-year old hardware in the first year of the project, and replaces the remaining hardware in the second year (all replacements are done during normal hardware refresh). The three- to four-year approach is more gradual, and “trickles in” new technology when deemed appropriate as old PCs are retired. Systems still in use are left with their current OS (i.e., Win 9x) until their replacement comes up, usually within the next three to four years. Both are viable approaches and will be used by enterprises, depending on culture, budgets and technology-adoption cycles. Regardless of which approach is chosen, using best-practice imaging techniques with “personality” migration utilities is the quickest and cheapest path to getting users operational once again.

Action Item: Enterprises should only migrate existing installed hardware to Windows 2000 if they can quantify the benefit of doing so.

Recommendations

- Readjust user perception so that the PC is no longer personal.
- Non-PC proliferation will add significant complexity, which requires new methods of management and support.
- TCO is real, and there are several best practices that help optimize it.
- Policies, governance and communication are keys to success.
- PC environments are more fluid than static, and developing processes for technology change and migration are key.

From a business vantage point, PCs are not only required for most enterprises today, but are often critical links to the overall productivity and success of the enterprise. PCs have grown in stature to become one of the most critical components within the business process and workflow; enterprises are fully dependent on PCs to get the job done. However, PC management continues to elude IT management, as users still have near-complete control, inflicting pain on themselves and operations and costing untold dollars in lost productivity. To maximize ROI for PC technology, establishing client-side management needs to be the goal for the end user and IS organization alike, and for many enterprises, new tools and technologies will be the key.

The good news is that technology is getting better. Operating systems are more secure, PCs are easier to configure and manage, applications tend to be better-behaved, and management tools are becoming more sophisticated. However, the rate of change continues to increase, as does the introduction of non-PC devices in users' hands. Getting the most value out of a PC is dependent on having a "known" system. To be successful in client management, enterprises must first change perceptions and cultures as they relate to viewing PCs as personal and disconnected, and change the view to that of a managed client.

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page of the presentation

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