

## Gaining Control of the Desktop

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## 1.0 Introduction

Increasingly, businesses are running key processes, such as supply chain management, sales order entry and customer service, over a distributed, PC-based IT infrastructure. The motivation for doing this is to improve the output and efficiency of users and applications associated with these processes, while also improving process quality. However, one of the vulnerabilities of this methodology is that if any of the IT infrastructure components are not working well, neither will the key business processes.

The vast majority of organizations recognize the fact that day-to-day business operations increasingly depend on the effective functioning of the IT infrastructure. As a result, IT organizations have made significant investments to improve the availability and performance of many centralized infrastructure components. For example, most IT organizations have deployed server load balancers in their data centers to enhance application and server availability and performance. It is also common to deploy fully redundant connections into data centers to increase the reliability of the network that connects the data centers to the internet, suppliers and branch offices. In the branch offices, many IT organizations have deployed caching and compression to enhance performance.

However, while IT organizations have invested heavily in increasing core infrastructure availability and performance, the same investment has not been made in protecting desktop availability – despite its growing importance to business processes. As a result, the desktop support model that most IT organizations now use is expensive and provides little control. This inability to control the desktop degrades performance and availability, and negates the business value of improvements made in decentralizing the IT infrastructure.

Key goals for this document include:

- Describe the factors that complicate desktop support.
- Describe the current desktop support model and identify its weaknesses.
- Describe the type of functionality that constitutes the next generation of automated desktop support systems.

Next-generation desktop support systems reduce support costs and allow IT organizations to gain control of the desktop. As a result, IT organizations can increase desktop performance and availability and provide the end-to-end stability that is necessary to maintain key business processes.

## 2.0 Research Methodology

As part of the research conducted to create this paper, Ashton, Metzler & Associates examined two common business environments by interviewing two leading IT organizations. One of the interviewees is the chief technical services officer for a government organization that provides healthcare services. The IT group in which he works supports 2,000 workstations. Throughout this document, this interviewee will be referred to as The Technical Services Officer and his organization will be referred to as The Healthcare Provider.

The second interviewee is an IT manager whose company is in manufacturing, has annual revenues of five hundred million dollars, and has roughly 1,600 desktops worldwide. At the end of 2005, that company deployed laptops to roughly 400 field service representatives. According to the IT manager, the company had to give the field service representatives an extremely reliable device for the project to succeed. Throughout this document, this interviewee will be referred to as The IT Manager and his company will be referred to as The Manufacturing Company.

## 3.0 The Challenge of Desktop Support

The economics of the PC industry has made it practical to provide each new employee with a computer – typically, a clean computer. The phrase *clean computer* describes a computer that has the operating environment (i.e., operating system, applications, setting and policies) that the employee has optimized to do their job. “Clean computers” are also free of extraneous software, viruses and worms and meet compliance with company software licensing policy. The best possible end-user experience occurs when the computer is “clean” and unencumbered by unnecessary executable code that can slow performance or cause a security breach.

But once the employee begins to use the computer, it begins to accumulate unnecessary applications and files. These unnecessary applications and files will be referred to in this document as *detrimental additions*.

Detrimental additions come from numerous sources. In some cases the user is not directly involved in adding the detrimental additions that accumulate on the PC. Well-known examples of this phenomenon include worms, viruses and spyware that attach themselves to the desktop once a user unwittingly opens an email from a malicious source. However, there are some less well-known examples of this phenomenon, such as registry creep and bad DLL files, that can also have a significant long-term impact on desktop performance.

The registry is a database that Windows uses to store system and user configuration data. A registry contains a mix of text and binary data that grows with use. This increase in the size of the registry, often referred to as registry creep, results in an increase in the time it takes to load or access an application or a file.

The registry has additional complications. An API (Application Programming Interface) is the interface that a computer system, library or application provides in order to allow requests for service to be made of it by other computer programs, and/or to allow data to be exchanged between them. Because there is no standard API for editing the registry, applications use ad-hoc code for this purpose. This makes the registry subject to corruption that can lock up the entire system.

A DLL (Dynamic Link Library) file is used with Microsoft Windows, Windows software programs, and Windows drivers. DLL files contain one or more executable subroutines that can be called by one or more programs. DLL files enable software developers to use Microsoft's or another company's routines to perform common tasks and help prevent unnecessary duplication of commonly used code.

If there is a missing or corrupt DLL file, the system will stop functioning and produce an error message. This can be caused by a number of factors, including:

- A program was uninstalled that removed a DLL file that was required by another program or the operating system.
- A program was installed that overwrote the DLL file with either an older version or a version that is incompatible with other programs.
- A bad program installation corrupted one or more files.
- Another user or program maliciously or mistakenly deleted the DLL file or an associated file.
- A hardware issue, such as a bad hard disk drive, causes the data on the drive to become corrupt.

Often, users are not directly involved in the accumulation of detrimental additions on the desktop. But this is not always the case. Users frequently download applications or files, typically for personal use and virtually always over the internet. The IT Manager pointed out why this behavior is so common. He stated that “The P in PC stands for personal.” He went on to explain that most of his company’s employees believe it is their right to use a company PC for a certain amount of non-business related activities.

The problem of detrimental additions is exacerbated if an employee has a laptop that is used at home. Usually, the laptop is used not only by the employee but also by family members. This behavior is hard to stop for a couple of reasons. First, it is often a business requirement for many employees to have laptops that travel with them – home and elsewhere. It is difficult for the employee to control who uses that PC. It is also difficult to stop because, as stated above, employees typically believe that it is their right to use the company PC for a certain amount of non-business related activities.

The Technical Services Officer and The IT Manager work in somewhat different environments. The Technical Services Officer does not have to worry about any of the two thousand workstations his organization supports being brought home and used by an employee's family members. In addition, his organization has a policy of enforcing what can be added by users to their desktops so that detrimental additions do not accumulate on those workstations. The Technical Services Officer commented that prior to implementing this policy, they had a very serious issue with the accumulation of detrimental additions on those workstations – especially spyware.

#### **4.0 The Current Support Model**

The IT Manager said his goal is to make sure that the end user's workflow is not interrupted and that the cost and support time associated with desktop management is minimized. He said that the best way to achieve that goal is by first reducing the total number of problems, and then by having the help desk resolve the vast majority of problems that do occur.

However, it is not possible to achieve these goals with the desktop support model currently used by most IT organizations. Traditionally, support teams wait for problems to occur and then react with labor-intensive resolution procedures. For example, the current support model involves multiple levels of support. Skilled technical resources must be deployed at each support level to diagnose and resolve problems using a broad collection of management tools. Due to its complexity, the current support model is also error prone and makes a variety of assumptions about the environment. One of these assumptions is that the operating system is functional and stable. Often, this is not the case.

The IT Manager outlined some of the issues that he faces relative to managing user desktops. For example, he noted that at least 85% of user desktop problems are software related. He said that it is common for users to do something, such as installing new software, without reporting it. The user only reports the problem: that one or more key applications have stopped working. This lack of communication increases the time it takes to resolve problems.

According to The IT Manager, his organization used to manually rebuild two or three systems a week due to software glitches. In addition to lost user productivity, each system rebuild consumes roughly eight hours of support time, including troubleshooting, rebuild preparation, and actually rebuilding the system. Assuming that the technician who rebuilds the system has a fully loaded salary of \$50,000, each system rebuild costs approximately \$200. And that does not include the cost of the help desk calls prior to the system rebuild. Over the course of a year, the cost to rebuild systems is roughly \$26,000.

The Technical Services Officer said their previous support method required them to go to every workstation and perform reinstallation for software-related issues. He noted that the reinstallation process takes multiple hours, and that does not include the time to prepare or to travel to the workstation.

As was described, the IT organizations at both The Healthcare Provider and The Manufacturing Company consider it their role to support desktop users. In contrast, some companies have deployed a self-service model for desktop support in which the user typically has access to frequently asked questions, search tools and knowledge repositories, as well as technical tips and product documentation. A self-service model for desktop support has the potential to reduce the desktop support costs, but in virtually all cases will result in further performance degradation and reduced desktop availability, which simply delays – but does not eliminate – the help desk call.

## **5.0 The Next-Generation Support Model**

The phrase *next generation* is terribly overused. In particular, when many companies introduce a new feature into a product or service, they refer to that product or service as being next generation. In most cases, these are not next-generation products and services. To qualify as being next generation, the change has to be truly fundamental.

Automation is the primary characteristic of the next generation of desktop support. For example, the next-generation desktop support systems must automatically prevent or resolve a high percentage of the issues that lead to either degraded performance or an outage. In addition, the majority of the issues that cannot be resolved automatically should be resolved by level one support. The next-generation desktop support solution must also automatically delete the detrimental additions that have accumulated on the desktop to ensure a healthy operating environment. The next generation of desktop support systems provides a significant benefit to companies whether they are currently using a self-service support model, a more traditional approach, or a hybrid of the two.

As was previously noted, the operating environment refers to the operating system, applications and user-created settings. The operating environment also refers to the policies that apply to that desktop. For example, The Technical Services Officer noted that they lock down virtually all of the desktops in The Healthcare Provider. Conversely, they do not lockdown the desktops of IT personnel, but they do monitor those devices.

Reloading the original and entire operating environment over the network can ensure a healthy desktop. However, this approach requires a lot of time and resources, assumes that the user has network connectivity and a functioning operating system and does not scale well with the business. Instead, proactively maintaining a stable, compliant environment that provides the expected applications is a fundamentally better approach that helps optimize IT resources.

Sophisticated reporting is also a critical component of a next-generation desktop management system. For example, if a bad DLL file is replaced every time the system is rebooted, that most likely is the result of a systemic issue. That issue could be user- or computer-related. Regardless, the issue needs to be identified and addressed.

The Technical Services Officer commented that they have moved to a next-generation support model. As part of the new model, the hard drives of new workstations are pre-imaged before they are shipped. The Healthcare Provider receives the new PCs and simply turns them on to begin use.

For production systems, The Healthcare Provider keeps a compressed image of the operating environment both on the local drive and on a centralized server. According to the Technical Services Officer, this provides numerous benefits, such as the ability to more easily apply software patches. Another benefit is the ability to more easily manage his software licenses. As he pointed out, if he only has ten copies of a particular software license, he needs to ensure that the software is not running on more than ten machines. The Technical Services Officer can also support multiple operating profiles based on the needs of different groups of employees. To exemplify this, he pointed out that one of the user groups needs access to applications such as Visio. As a result, the operating environment for this group includes Visio, which is not included for any other group.

According to The IT Manager, the number of calls made to the helpdesk varies by user, but traditionally averages over one call per month per user. As previously mentioned, The Manufacturing Company recently deployed laptops to roughly four-hundred field service representatives. These field service representatives were first-time PC users and their only connection with the IT support group was via cellular phone. To estimate the anticipated desktop support costs associated with just these four-hundred field service representatives, assume that the average support call costs \$30. This results in a monthly support cost of \$12,000 and a yearly support cost of \$144,000.

Because of his concern with the cost and time associated with supporting the four-hundred field service representatives, The IT Manager adopted a next-generation support model – but only for the field representatives. The support model he adopted is similar to the model adopted by The Healthcare Provider. The IT Manager stated that to date, his new model has worked flawlessly. In particular, the support model has automatically detected and resolved all of the desktop issues for which it was designed.

## **6.0 Summary**

To support key business processes, many IT organizations have focused on improving the availability and performance of the centralized IT infrastructure. However, relatively few IT organizations have focused on gaining desktop control – in spite of the growing number of factors that negatively impact desktops.

As a result of this lack of control, desktop support has become extremely expensive and cannot scale with the business. In addition, this lack of desktop control degrades performance and decreases availability. This negates the value of investments companies have made to improve the performance and availability of the centralized IT infrastructure, because it damages the ability to provide end-to-end performance and availability that is required to support key business processes.

To reduce cost and ensure that the desktop provides the same level of availability and performance as the rest of the IT infrastructure, IT organizations need to gain desktop control. To do this, IT organizations must implement a next-generation desktop support solution that can:

- Automatically prevent or resolve the majority of issues that lead to either degraded performance or an outage.
- Delete the detrimental additions that accumulate on desktops.
- Support different operating profiles for individuals and groups.
- Enable the IT organization to exert varying levels of control over the desktops based on organizational constraints.
- Provide detailed reporting regarding the availability of PCs and the number of incidents avoided due to proactive support.
- Update only the changed components of the operating environment.
- Integrate with legacy management tools.
- Continue to function even if the operating system is corrupted.
- Enforce software license management, compliance and control.

As noted in this white paper, the characteristics listed above represent a fundamental change over the current mode of desktop support. As such, any desktop support system that exhibits these characteristics deserves to be referred to as a next-generation desktop support system.

## 7.0 **Persystem Software**

Persystem Software automates support to ensure desktop availability. As a result, IT departments can enforce compliance at the desktop, eliminate firefighting support tactics and focus on projects that deliver higher value to the business. Persystem customers include small, medium and large organizations across industries and in the public sector.

For more information:

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