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PC Restoration and Disaster Recovery

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Chapter 3: Software Life Cycle Management

A desktop represents an ecosphere of hardware, software, data, and configuration that work together to provide a workspace for the users—a workspace defined in this guide as a desktop. The hardware provides the basic physical foundation on which that workspace is built. The OS and applications provide the individual spaces, services, and amenities to be found in the workspace.

This chapter reviews how changes to that workspace affect an organization's ability to preserve and restore the workspace as required. It examines the ways in which a desktop recovery solution can help in the process of maintaining the workspace, improving performance, and helping user data and productivity remain secure.

Software tends to be more volatile than hardware. As the desktop changes, the system needs to respond to protect that system and maintain the security of the environment. A well-designed system can help enhance performance at the desktop level and ensure corporate compliance. By examining all elements of the life cycle, from planning through execution, management can devise a system that eases changes and helps keep user data secure and downtime to a minimum. The chapter addresses a group of topics to bring light to this approach:

- **Planning the Software Life Cycle**—This section addresses the changes in the OS and applications distributed to the users. By understanding the underlying causes that drive change, management can plan and project the infrastructure that will be required to provide adequate protection for the user desktops. The desktop restoration system can be integrated into the life cycle to make changes transition smoothly.
- **Changing Applications**—This section discusses the affect of changes to applications and the rollout of upgrades and patches to the desktop. It helps define the risks involved and how the desktop recovery system can help mitigate those risks and accelerate the process.
- **OS Upgrades**—This section examines the process of upgrading the basic software on which the entire desktop rests. It looks at ways the restoration solution can help make this a safer, faster, more reliable process.
- **Managing the Software Life Cycle**—This section treats the oversight of the policies, processes, personnel, and products that help this system move forward. It explores how integrating desktop restoration deep within the software maintenance plan can provide improvements in safety, productivity, and efficiency.

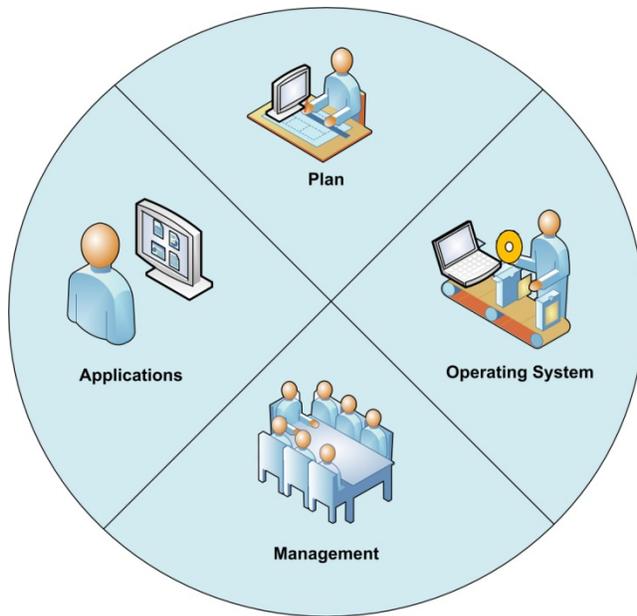


Figure 3.1: Integrating the software life cycle with desktop restoration can reduce risk and costs.

Planning the Software Life Cycle

The software everyone uses is constantly in flux. New versions arrive with new features that can improve productivity and reduce frustration. Improvements are developed for the current version of the application and require service packs and patches. People change jobs and need different applications. Corporations enter different licensing arrangements and require users to change applications. The software on the desktop is an ever-changing sea that users long to remain calm.

Because software changes can affect so many users (often simultaneously, if the change is made en masse), many companies have carefully planned deployment systems. Companies that take a more cavalier approach to installing new applications or upgrading software frequently find themselves in crisis mode, trying to repair a poor upgrade, losing data, and leaving users without the ability to work while the crisis is overcome.

As in all endeavors, a little prudent planning can go a long way toward making changes as smooth, efficient, and painless as possible. With regard to software changes, understanding the reasons for change can help predict the changes that will occur and indicate where the greatest risks lurk. By planning the change in conjunction with the desktop restoration solution, the risk of lost productivity, lost data, and disenchanted users can be more easily controlled. The integration of the desktop restoration solution can protect the investments in files and time and help ease user apprehension. By monitoring the processes and incorporating lessons learned, the solution can be leveraged to provide the maximum benefit for the lowest expended effort.

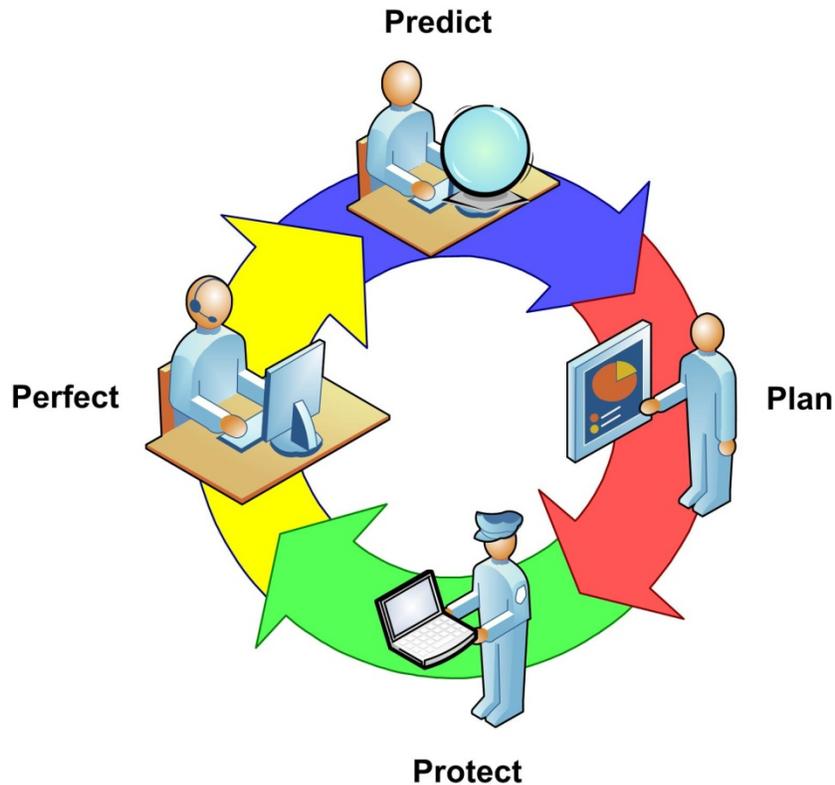


Figure 3.2: Planning can leverage the full potential of the desktop restoration solution.

Predicting Software Change

The software on a person's desktop may change for many reasons. Some are not predictable, others can be planned. The ability to foresee and quantify these changes will help IT budget and plan. The more accurate the model for change, the better the resources can be allocated to maximize their benefit to the organization. This type of model can also be used to forecast and mitigate risk. The risk of changing from version 8.0 to 8.1 of Adobe Reader is not likely to be as great as moving from Windows 2000 to Windows Vista. By categorizing the severity of the risk and the potential cost to the organization, good decisions can be made regarding how much time, money, and effort will be expended to protect the resources that are at risk. The steps in such a process can be thought out as

- Identifying Reasons for Change
- Quantifying Risks in Change
- Developing Mitigations to Risk

Identifying Reasons for Change

The software installed on a desktop can change for a wide variety of reasons. Some are more predictable than others.

Role Changes

As people move from one role to another in the organization, their need for various applications changes. If there is a base set of applications installed on the desktop, the easiest way to make the change is to add the new applications and remove the deprecated software (and free the license it represents). A major change in job role, however, may only mean a minor change in the composition of the desktop. If the new applications can be added, and unnecessary applications removed, the employee can remain more productive during the transition.

People sometimes move from one physical location to another. The physical transfer of a piece of hardware from one location to another is a task that ranges from simply packing the unit with the person's other personal effects to nigh on impossible. If a person's desktop can be moved from one location to another without moving the hardware, the change can be much simpler (see Chapter 2 for details concerning moving desktops between hardware platforms). As discussed in previous chapters, a desktop restoration system that provides automated scripted installations and preserves the individual personalization for the user makes these types of moves safe and simple.

Some changes to software are more subtle, such as enabling or disabling features within a given application. These changes may only exist within a configuration file or registry setting. Thus, preserving those changes becomes most important.



In this chapter, a “scripted” restoration system uses a flexible system that automates the process of installing OS components and files rather than simply copying an existing hard drive image. These types of systems typically work closely with the IT staff to build the “scripts” without programming or writing scripts manually. A scripted restoration system can restore existing portions of the desktop as well as install new software and drivers and reconfigure the OS components automatically.

Corporate Standards

Corporations may also make changes. For example, a company may choose to replace their enterprise email system. This change can trigger a reconfiguration of the desktop mail client or may involve a replacement of the client. It could also trigger changes in connection information, all of which must be tested and then preserved against future loss. Once again, a scripted installation system can greatly facilitate these types of changes.

Some corporate changes are more subtle but have no less impact. A new Web application may be installed. The common belief is that Web applications leave no footprint on the client, and little planning is performed when such applications are employed. However, after the new application is installed, employees must find the new Web site and place it in their favorites. They log in and cache their credentials (quickly forgetting their user name and password). They download an Active X Control (often referred to as an OCX) or add-in that facilitates the use of the site. This installation is often unrecorded and undocumented. They begin a session that writes a set of cookies on their machines. Their machine then crashes and they lose their personal custom configuration. Although all of it can be rebuilt, the user is idled (and often frustrated) while they struggle to find someone who can help them find the URL, recover their user name and password, download the parts and re-build the session they began but lost when the cookies were lost. If the customized elements of this “footprintless” Web application were preserved in a backup, the original restoration would return the user to full productivity. Desktop backups that automate the tracking of these cookies, OCXs, and favorites can protect the user and minimize downtime if a catastrophic loss of the system occurs.

Corporate standards also need to be enforced. The organization must keep track of the licensed software installed on all their desktops. Unauthorized software installations may violate licensing agreements, interfere with the performance or operation of the desktop, or cause other support issues. A system that can bring a desktop into compliance while leaving users able to do their jobs is invaluable.

Software Vendors

Vendors often trigger software changes. From simple security patches to service packs to full version upgrades, they are constantly changing their software, trying to make it better. Some changes are eagerly anticipated by users; others are dreaded and avoided. The upgrade can modify data files, making them incompatible with older versions of the software (and reducing the ability of the users to collaborate). An upgrade may re-install the application, erasing the custom configuration data. It may not work as expected and need to be removed. Some software may drive moving the user from their existing computer to a more powerful unit. All this impacts the backup and restoration of the desktop and needs to be planned for.

Fear of loss of productivity often prevents users from upgrading. Sometimes the upgrades are already purchased but not applied because of the potential loss of the desktop during and after an upgrade. A system that ensures smooth transitions and that the desktop can effectively be restored makes these upgrades much less stressful.

Business Partners

Business partners and market conditions can also lead to change. If a new customer requires the exchange of information (invoices, specifications, inventories, and so on) in a specific format, it may be necessary to deploy a new application or upgrade to a new version of an existing application. If online payments need to be processed, software to support those payments may be required on the desktop to continue to do business.

As partners change, there may be artifacts of old software installations left on the desktop. These files, or even running systems, consume resources and denigrate the performance of the desktop. A desktop restoration solution that could help keep the desktop running at its peak level can help maintain productivity throughout the organization.

Regulatory Compliance

Regulatory compliance can also force change. Legislation such as the Health Insurance Portability and Accountability Act (HIPAA), the Public Company Reform and Investor Protection Act of 2002 (the Sarbanes-Oxley Act), and others may drive the need to change software. This can force upgrades and even the replacement of applications. Some of these regulations may directly affect the manner in which corporate data is secured. A desktop restoration system must adapt to these changes. Many systems help track the changes made to the desktop and can assist in validating that the desktop meets with corporate-mandated standards.

Mergers and Acquisitions

Mergers and acquisitions add new software suites to company rosters. Sometimes these applications are integrated into the corporate ecology; sometimes they must be replaced wholesale. It also requires ensuring that the desktop restoration can properly protect the data and applications found in the newly added desktop systems.

These changes are often at the root of the most radical desktop changes. A merger can cause wholesale replacement of applications and upgrades (or even downgrades) of the OS to meet the common corporate standard. This can cause a great deal of change to a large number of desktops in a short period of time, so the risk to productivity is quite high. Leveraging the desktop restoration solution to minimize the risk and speed the conversion is quite prudent.

Planning for Desktop Changes

An examination of the historical reasons for software changes for an organization can show patterns of why software changes in that organization. Using that as a basis for planning future change can provide the management team the proper areas to watch so that they can proactively prepare, budget, and train for the inevitable evolution of the desktop.

Once reasons for change have been identified, the likelihood of them occurring as well as their impact and risk should be quantified. This provides a framework for determining the investments that should be made to assure the transitions and upgrades go smoothly with a minimum of disruption to the business.

Impact of changes is relatively subjective in foresight, but very real and potentially costly in hindsight. Anyone who has upgraded an accounting package that corrupted the files during the upgrade and found themselves in a position that they cannot move forward with the upgrade nor back to the old system understands the potential risk. Examine the following areas for change and consider their relative risk and the mitigation for each.

Service Pack and Security Patches

Typically, service pack and security patches provide little impact on the client. Most service packs are well tested before they are issued to the customer. Both the issuing software vendor and most organizations test before they deploy. They often make minor modifications to the application. As a result, users feel confident applying them.

Some users rush to install service packs before they are certified, which can create their own set of issues. It can result in incompatible versions of data files that cannot be shared among users. If there is an unidentified incompatibility, it can break the application or other portions of the desktop. There can be a need to restore the desktop to the previous version when this occurs.

There is a danger in assuming that all service packs are good. Some companies have been known, inadvertently, to rush a service patch out the door without sufficient testing and validation. Although the process is certainly more reliable than it has been in the past, there are still instances of service patches doing more harm than good.

The safest practice is to perform a comprehensive backup prior to installation. If something should go wrong, a restoration can provide fast return of services. An investment of a quick backup can save a great deal of downtime if the application must be uninstalled and re-installed on the client.

Some service packs have more impact than others. Some companies effectively re-install their applications when a service patch is installed. Although most will preserve the user's configuration, some return it to the factory default settings. If the vendor does not preserve the user customizations, there is little the desktop restoration can do to re-assert them. All service packs and patches should be tested in advance and their behavior noted before they are employed. Users should be notified of what to expect during the process.

Version Upgrades

Eventually, most software will be upgraded. After all, software companies continue to improve their products and provide users with reasons to invest more in the product to receive the increased value. The improvements often take full advantage of enhancements in the OS or underlying hardware. They meet the changing needs of users and organizations.

With every change there is risk. Although most software versions upgrade smoothly, there are always those that do not. Testing before performing the upgrade mitigates that risk, but many companies have rolled out upgrades only to discover incompatibilities or unexpected side effects after deployment.

Many version upgrades require extensive changes to the desktop (as least in regard to the application) and rollback can at times be challenging. They may make changes to registry keys. They may alter the manner in which personalization information is stored. They may move or delete cached credentials. Most application upgrades do not include a rollback. If the installation needs to be undone, the application must be removed entirely and re-installed as the previous version. A fresh installation means a loss of the previous personalization settings.

The desktop restoration system provides a boon when an upgrade must be rolled back. A scripted system can automatically re-install the old application and then selectively re-apply the personalized information. The system can be automated to perform the re-installation quickly and reduce downtime. The mitigation of risk and protection of productivity provided by these solutions makes version upgrades much less worrisome.

Protecting the Investments

The cost of applications is often measured in licensing fees. It is simple to quantify those costs, but they do not paint the entire picture. Although most analysts agree that total cost of ownership (TCO) is a better metric, it is very difficult to quantify.

The real measure of an application is the means by which it enhances the productivity of the individual users within an organization and helps optimize the manner in which they work together. Ultimately, this drives the underlying reason for software changes.

The real investment is not actually in the software itself but rather in the work the user does with the software. Whether it is Microsoft Office files, data stored in application servers, or graphics generated in Adobe Photoshop, the work users do with their applications represents the artifact of their productivity. A strong desktop restoration solution seeks to preserve that work.

Protecting User Productivity

The desktop restoration solution can preserve that investment in several dimensions:

- Much of the work done by individuals is manifest as files. The files can be preserved through backups. By preserving the files, the work of the users that produce them is preserved and protected.
- To use software, a great deal of effort is expended to configure the applications. It may be in setting credentials. It may be in establishing connections to application servers. It may be in finding paths to data files. All these personalizations take time. And because they are not done repeatedly, they can be difficult to remember when they need to be re-created. The desktop restoration solution can preserve this information. A scripted system can also apply the personalization on demand to different hardware, making it portable. This protects one of the most valuable assets of an organization—the productivity of its workers.
- Desktops become like homes. People place things in the corners and only get it out when they need it. As the desktop changes, it can be easy to discard items of great value because one does not remember that they were there. A desktop restoration solution can preserve those changes and restore them on demand. When old software is removed, it can be restored to use those files and perform that work on demand.

Protecting Desktop Performance

Another way desktop restoration can help protect assets is to provide a cleanup of the desktop. As most users discover after using the same desktop for a number of months or years, performance begins to suffer. The degradation comes as the system sustains change after change. The disks become full of unused files. Registries become bloated with unused keys. Applications are uninstalled but only partially removed. Over time, the operation of the computer becomes slower and slower.

One of the easiest means of correcting this degradation is to perform a re-installation. Of course, a re-installation puts at risk all the personalizations that make the desktop more productive. A scripted re-installation system can re-install the system fresh. It installs only the current version of each OS element, application, and service pack. The solution can then reapply the personalizations it preserved in the backup. Once completed, the desktop operates cleanly. The automation protects many personalizations that are easy for a technician to miss if they perform the backup and restoration manually.

Protecting Desktop Integrity

Although counter-intuitive on the surface, sometimes software breaks. Software developers address repeatable errors, but sometimes an application just does not work in a given installation on a specific desktop. When that occurs, the first step in correcting it is to re-install the application.

When individual applications need to be re-installed, a scripted desktop restoration solution greatly simplifies the process. A technician who is troubleshooting a problematic application can begin with system backup. The system can be restored its present condition, so he or she is free to make the necessary changes. Applications can freely be uninstalled and re-installed. The desktop restoration solution provides the means for restoring the personalizations without the technician breaching security to obtain passwords and credentials. A scripted restoration system can be used to surgically remove and restore applications in a smooth and secure operation.

The key is to return the desktop to working order as quickly as possible. The desktop restoration system should provide protection so that the technician cannot make things worse than they are when the process begins. It should provide tools to allow the technician to rapidly change applications, un-installing and re-installing without fear of loss of personalization information. It should help distribute the individual components of the desktop readily on demand. By making the technician more productive, it preserves the productivity of the user who awaits the return of his or her computer to service.

The corporation also needs to protect themselves. Enthusiastic users may install unlicensed software on their computers. They may download add-ins to their browser, install software from home, add shareware—install any number of bits of software to their desktop. This creates a number of problems. The organization can be held liable for any license violations. The downloaded and installed software may violate the security of the desktop. It can create performance problems for the user. It can also create support issues. Having the ability to bring a desktop back into compliance without losing personalization information can help reduce these risks and keep users working at top efficiency.

Perfecting the Process

The process of maintaining applications on the desktop can be a source of great frustration and risk for the organization. An upgrade to a Web browser that stops the sales force from using their CRM system or a flaw in an antivirus system that prevents a department from logging onto the network until the flaw is patched are examples of how significantly software maintenance can impact the organization.

The process of software maintenance can be planned to reduce risk and preserve the productivity of the users who depend of the software. So much is at risk in this cycle, so the process deserves time to plan and ensure a smooth transition.

Part of the testing of a software upgrade or service pack should include the testing of a rollback. By assuring the desktop restoration solution can quickly reverse the changes and that the staff is prepared to enact a rollback, any unforeseen difficulties can be addressed judiciously.

The staff should also learn to leverage the desktop restoration solution to reinstall software applications. Different solutions will require different procedures to restore an application and its configuration information. It is also useful to know the specific procedures for uninstalling specific applications. Some things are removed more cleanly than others. By tracking the lessons learned from re-installation, the entire technical team can benefit.

Software maintenance should be a reliable process with minimal risks. By integrating a desktop restoration solution that allows scripted installs of individual applications, the solution can mitigate risks, improve productivity, and protect the work invested by the users who ply these applications day by day. The proper product can simplify the installation of applications and free technicians from the burden of needing to know how to install and configure dozens of different applications (and eliminates the need of maintaining complex installation instructions). It also provides a centralized location for obtaining software installations.

Changing Applications

Desktops evolve to meet the needs of their users. Driven by the aforementioned reasons, the changes are inevitable. By leveraging the desktop restoration solutions, these changes can be made more securely and repeatedly. As the risk is reduced, there is a return in productivity because workers spend less time unable to utilize their desktops. Whether adding new applications, removing obsolete applications, or replacing one application with another, the key to success is making the transition safe and fast.

The desktop restoration solution often provides the means of distributing applications in an automated manner. A scripted restoration solution can be used to help publish applications to the designated desktops quickly and efficiently. It also protects the desktop from unplanned disruption if the introduction of a new application prevents the user from being productive.

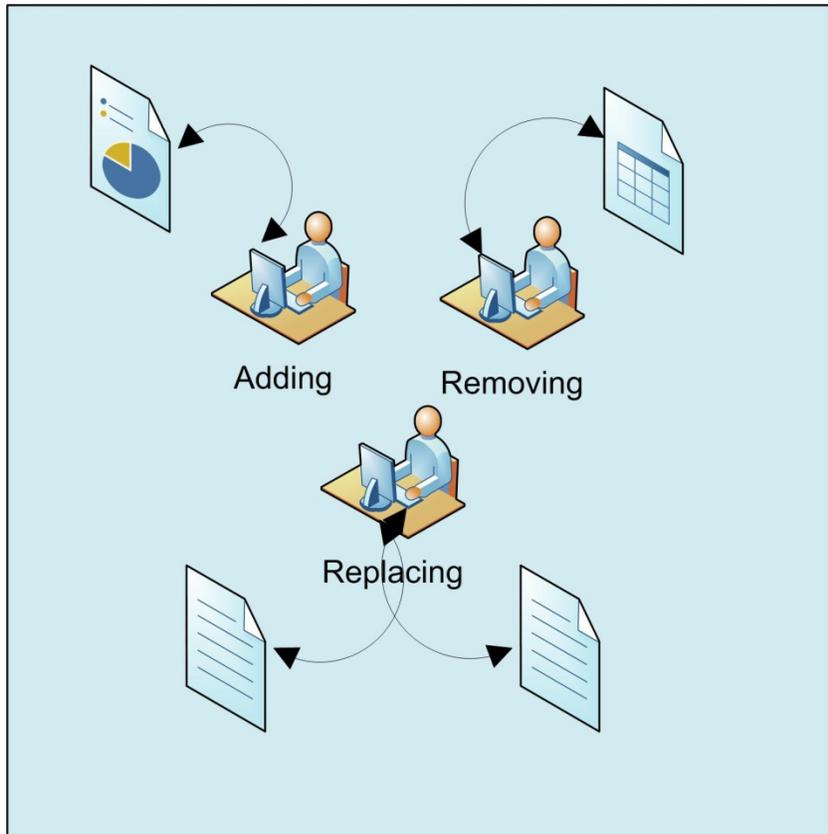


Figure 3.3: The desktop restoration solution can help make changing applications safer and faster.

Adding Applications

Applications are added because the needs of the organization change or the role of the user changes. The application may add functionality or security or improve productivity for the user. They may help maintain regulatory compliance, improve collaboration, or bridge the gap between departments, divisions, or business partners.

As the needs of the organization change, or the responsibilities of the individual user changes, the need for new applications becomes manifest. When adding applications, there are two primary scenarios to address: adding an application to a single desktop or rolling out an application to a multitude of applications.

Single Desktop Installations

When a single user needs an application they did not use before, it can be installed on their desktop manually or through an automated rollout. Desktop restoration solutions that provide scripted point installations of individual applications may provide this capability. The application is new, so there are no personalized settings to preserve. There may be configurations to set. These configurations may need to be set manually or may be scripted and preserved for use later. The desktop restoration solution can play two other key roles in deploying the application to a single desktop.

First, sometime adding an application to a desktop can add unexpected instabilities to the desktop environment. The affect can be as simple as an inability to install the application to making other incumbent applications unstable to the dreaded Blue Screen of Death. By making a backup of the application, any untoward effects can be reversed by re-installing the desktop software. This provides a security net for the existing desktop and may help the technician if he or she needs to experiment with the application.

A scripted desktop restoration has the added benefit of “normalizing” the desktop. As programs are added and removed, they often leave artifacts behind, from registry changes to older versions of dynamic link libraries (DLLs). Performing a scripted re-installation of the desktop installs all the software cleanly, removing those stray artifacts. The clean install may not suffer the same adverse affect of installing the application.

The other issue to consider when installing a new application is to ensure that, once placed in use, its data is saved and unique configuration is captured and can be restored. Once the application is installed, configured, and tested, the desktop should be backed up. The retention policy will determine for how long the previous version of the desktop should be preserved. A desktop restoration solution that stores the requisite information for each application individually will store this additional information in a most efficient manner.

Multiple Desktop Installations

The real difference between single desktop installations and multiple desktop installations is a matter of scale. When rolling out an application to multiple desktops, it becomes prudent to test the application rollout on the prototypical desktop to detect any problems that may be encountered commonly on all desktops.

The primary role that a desktop restoration solution plays in a mass rollout is to provide a means of rolling back the installation in the event of an unforeseen difficulty. Little causes more disruption than stopping all the desktops in a department because of trouble invoked when a new application installation goes awry.

A scripted desktop restoration solution may also provide the means of distributing the new application installation. A comprehensive system that installs and restores installations can leverage a single configuration to place the application on the desktops and restore as required in the future. Many of these systems will also provide the means of updating the desktop software inventory system. This helps ensure corporate policy compliance and control licensing.

It is not uncommon for an application to install smoothly on dozens, even hundreds of corporate desktops, and yet fail on a handful of desktops. As mentioned in single desktop installation, each desktop becomes, over time, a unique ecosphere of DLLs and registry settings. The desktop restoration solution may help these individual desktops by returning them to their pre-installation condition. Scripted restoration solutions can help by reinstalling the desktop from the ground up, thus resetting that ecosphere to the expected norm, without losing the individualized settings for that desktop.

Removing Software

For the same reasons that applications are added to desktops, they are also removed. A person who transfers from accounting to marketing no longer needs a copy of the accounting software. The company completes the merger of a new subsidiary and needs to remove their incumbent software once the new corporate software is installed. A relationship with a trading partner is discontinued, removing the need for a specific application used for collaboration. For a wide variety of reasons, software needs to be removed from time to time.

When software is removed, there are two primary considerations. Unless the software is removed cleanly, it may interfere with the performance or stability of the desktop. Also, it is not uncommon to need to re-install the application to retrieve data from the obsolete application.

Removing Applications

Most modern applications include the means to uninstall themselves. Most of the time, the application removes itself just as it should. But there are times when the removal fails. There are a variety of reasons for a software removal to go awry, for example:

- They attempt to remove DLLs that are locked by other applications
- A DLL is moved or deleted and the un-installation program cannot compensate for the missing file
- Registry corruption provides the wrong information

Even when a software removal goes well, it may leave artifacts—everything from registry keys to DLLs to data files; the un-installation may not be clean. It may add inefficiencies to the operation of the desktop.

A scripted desktop restoration solution can provide a solution to these potential difficulties. If the desktop can be reinstalled cleanly and quickly without any loss of personalization information, it can be scripted to re-install without the application that has become obsolete. A clean installation provides benefits such as improved performance and compliance with corporate standards.

Retrieving Obsolete Applications

When an application is obsolete, most organizations believe they no longer need the data the application managed. Frequently, however, organizations learn that they need to open that data once again and use it. Sometimes the decision is made to re-install the application and use it again. In some instances, an application is seasonal and can be removed when required (particularly if the same person is not likely to be the one to use it).

The desktop restoration solution can mitigate the risk of re-installing and using applications that have been retired. First, the system can preserve the old data. By preserving the data and making it easy to locate, IT can quickly locate and return the data to the designated desktop.

A scripted desktop restoration system can re-install the application as required. Past personalization can be saved and returned to the desktop. This will help the user return to productive use without spending hours configuring the application.

Replacing Software

When a piece of software is replaced by another piece of software from another vendor (or open source software), it introduces some interesting challenges. Although a new rendition of the software may offer many advantages (lower licensing fees, new functionality, enhanced productivity), there remains the need to protect the work performed with the old software. The desktop restoration solution can be used to ensure that the working product is protected while the new application takes hold and can help archive the data for future use.

Data Format Conversion

Mail programs support individual mailboxes and contact lists. A spreadsheet program may support reading the data file of another program. Eventually, these changes lead to converting files or data from the format in which they were originally converted to a new format. Often, the application handles the conversion itself. For instance, Open Office software can read files created by Microsoft Word. This works unless the files contain exotic formatting or are saved in a newer format than the program can read (for example, Microsoft Word 2007 .docx files).

Microsoft Outlook files can be exported to common formats, such as .csv files, that can be read by other programs. Conversely, Outlook can read the more common file formats to import messages or contact lists.

When moving data from one program to another, there are two principle means by way a desktop restoration solution can help. The solution can preserve the original files. In many cases, the conversion is made directly on the file itself. Such conversions should always be made on a copy, but things happen and sometimes the only copy of the files is used. The desktop restoration solution can protect a copy of the file. It also will routinely back up files in less common locations, such as Outlook post office files. If a conversion goes bad, the file can be easily restored and the conversion attempted a second time.

Sometimes the source program is required to convert the file to a neutral format. A scripted restoration solution can restore the original application and allow the data to be converted. Then the application can be removed. The role of the desktop restoration system is to mitigate risk. By protecting files and providing ready access to the old programs, it provides assurance against unforeseen problems and errors in data conversion.

Application Interoperability

Application rollouts do not necessarily happen all in a day. It takes time for users to learn to utilize the new applications. They need to remain productive during the conversion process. The desktop restoration solution can play a role in helping the organization remain productive during the conversion process.

If the conversion is going slowly and work needs to be performed, the desktop restoration solution can be used to restore the old application on selected desktops. A scripted restoration solution can be used to restore the application without otherwise disrupting the desktop. The solution stores the personalizations of the user, so it can be pressed back into productive use with little notice or configuration.

OS Upgrades

The OS provides the foundation on which the desktop is built. As OSs have advanced over the decades, more basic computing services are moved into the OS. As applications change, the OS continues to host them. The registry provides the location of application files and data files. The network subsystem supports network and Internet connectivity. The system secures the data and access to applications.

There is a great deal of risk involved in migrating from one OS to another. The upgrade process for moving from one version of an OS to another has become smoother from one generation to another, but it still can prove problematic. Nothing reveals the individual nature of each desktop as does OS upgrades. Three systems will upgrade without incident and then a desktop will encounter an unexpected problem.

The desktop restoration solution can mitigate the risk of moving between OSs. It can secure the functioning desktop so that a failure to upgrade does not disable the user. It can provide a clean installation that offers the maximum performance from the new desktop. It can preserve two configurations of the applications as they move from one OS host to another.

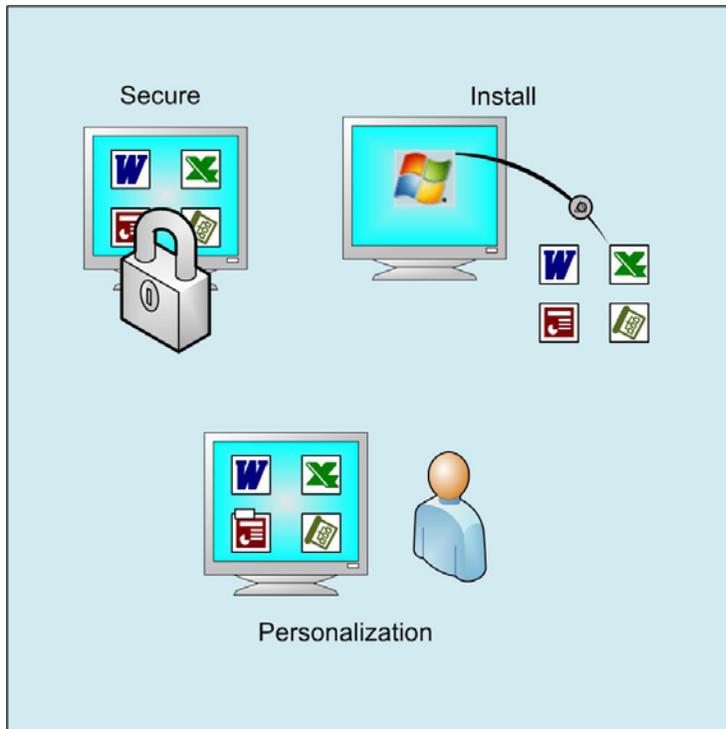


Figure 3.4: The role of the desktop restoration solution in OS upgrades.

Securing the Existing OS

The obvious role in the upgrade of the OS is to ensure that, should something go amiss, the desktop can be restored to its original state. There is a variety of means to achieve this, but providing a backup of the desktop with a proven means to restore it is the simplest and most cost effective.

Some organizations perform in-place upgrades of the OS. The applications remain intact and the OS is responsible for maintaining the application configuration and personalization settings. This approach works well, but if something goes wrong during the upgrade, it can result in an unstable or non-functioning desktop. OS upgrades invariably come with a warning that the desktop should be archived before the upgrade is performed in case something should go wrong.

Some organizations purchase new hardware and transfer the data from the old hardware and old desktop to the new hardware on a new desktop. If the transfer goes badly, the old desktop remains available. This approach offers some logistical challenges. The user may be forced to juggle two distinct computers. If the transfer is accomplished over the course of days, it becomes difficult to keep the desktops synchronized. It forces some duplication of hardware throughout the organization. Unless a tool such as the easy transfer wizard is used, the application will not preserve their configurations or personalization information. Much of what is valued in the old desktop will be lost.

A desktop restoration solution that can restore the old OS or any of the selected component applications and their configuration provides the greatest flexibility and security for upgrade. It can restore the applications and their individual configuration information into an OS.

Replacing the OS

There is more than one reason to replace an OS:

- Hard drives fail and the desktop must be restored on a new drive or an entirely new system
- OSs become unstable and the easiest means (perhaps the only means) of returning to functionality is a reinstallation
- The result for an upgrade is to install the new OS fresh and then re-install the applications

A scripted desktop restoration solution can provide the proper platform to re-build the desktop with a new OS. The desktop restoration solution can be used to perform a fresh installation of the operating system. This provides a clean slate on which the applications can be installed. The newly constructed registry will not carry any of the burdens from legacy installations or any confusing keys that serve as artifacts from an upgrade. Typically, clean installations provide better OS performance.

Next, a scripted desktop restoration system can re-install the applications. Once again, these are fresh installations of the current version of the application. This can help clean up any previous upgrade artifacts and provide clear register keys for the installation.

By installing the applications fresh, the desktop can be brought into compliance with the corporate standard, eliminating any unauthorized or unintentional software installations. Without these extraneous applications consuming system resources or disk space, the system will perform at its peak level. Also, the desktop can be re-certified and become compliant, hosting only corporate-approved and licensed software.

Preserving the Personality of the Desktop

The real key to maintaining productivity through an upgrade or OS replacement is to maintain the personalizations placed in the desktop to make it specifically useful to the user. The primary reason people fear re-installation of the OS is the loss of this personalization and configuration information. It often leaves users trapped in their OSs, suffering from poor performance and unwillingness to take advantage of the productivity enhancements a new OS can provide.

A desktop restoration solution that cannot selectively reinstall applications, Open Database Connectivity (ODBC) drivers, Internet favorites, connections to corporate servers, and other personalized information can provide partial protection. It does, however, sacrifice many of the benefits that a scripted solution has to offer. The ability to restore not only data and applications but also custom configuration information, credentials, personal user preferences, and a wide variety of individual configuration data regardless of whether it is located in the registry, configuration files, or some other mechanism, makes a scripted desktop restoration system the best tool for moving a desktop to a new OS.

Data, the key work product of the computer user, must be preserved and placed where users can find it. Access to server-hosted applications must be preserved. Unless users can be given a stable, familiar desktop environment in which to work, the loss of productivity will have a serious impact on the organization's bottom line. A well-designed desktop restoration solution can place that data and those connections where they belong quickly and efficiently, minimizing disruption and downtime for the users.

Managing the Software Life Cycle

All desktops change over time. Applications are added, upgraded, replaced, and removed. OSs are patched, upgraded, and replaced. During all these changes, a user still depends on the desktop to do their daily work. The task at hand is to provide a comprehensive solution that protects the ability of the users to perform their tasks. It should support changes to the desktop, making them secure and reversible. They should help the performance of the desktop without endangering the personalizations that make the desktop environment productive. A sound solution should include policies, processes, personnel, and products that help mitigate risk, protect productivity, and make the process of change safe and predictable.

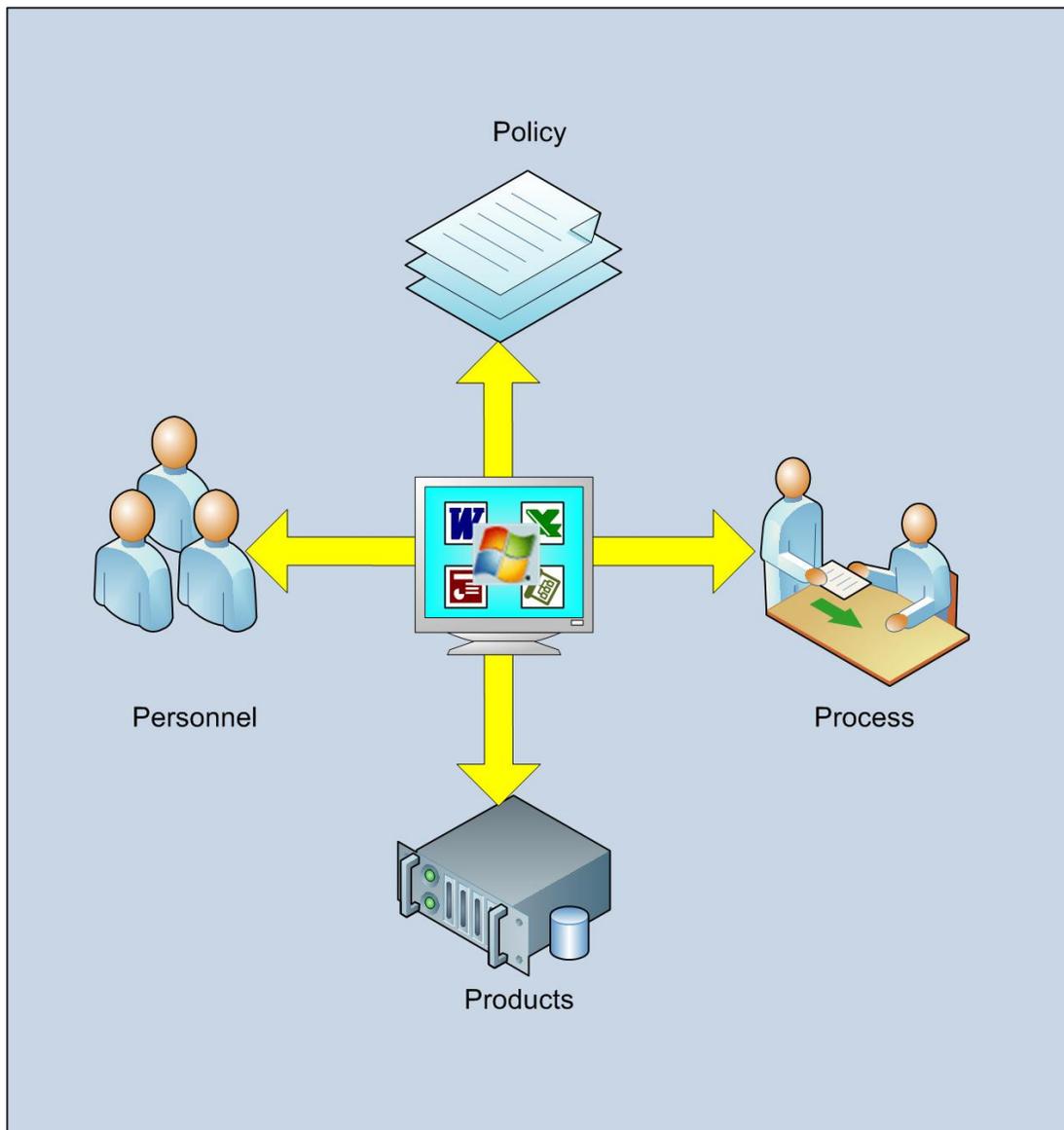


Figure 3.5: The desktop restoration solution requires policies, processes, personnel, and products to be successful.

Policy

There are key policy issues that deal directly with the support that the desktop restoration solution provides to desktop application evolution. The foremost is the retention policy. The length of time an old configuration is retained must be a balance between the resources used to store the desktop and the risk of deleting the data and settings. The decision becomes more complex when a large rollout occurs and many desktops have old versions of OSs, applications, and data files.

Scripted restoration systems simplify the decision. The individual components of the desktop—the applications, data, and OS are distinct entities—so the amount of data retained is smaller. Only one item at a time is likely to change, so there is less data to choose to reserve with each individual change.

The policy should also address the archiving of obsolete data files. As applications are removed from general use, their data can still be required. A scripted desktop restoration solution can restore the application and its data on demand, relieving the desktop of the burden of hosting them. One consideration is compatibility. As the OS changes and other applications are added to the desktop, they may become incompatible with the older application. All these elements must be elements in the decision of the retention policy.

Most organizations license software and must track how many licenses are installed and in use throughout their organization. It is a matter of policy to determine who should have what software and where it is employed. A scripted desktop restoration solution will only re-install the authorized software for each desktop. This helps enforce compliance with the policy and control the distribution of the software licenses. It also ensures that users do not employ unauthorized software.

Process

To leverage the value of the desktop restoration solution when changing applications on the desktop, appropriate procedures must be enacted. Technicians may not be familiar with using the desktop restoration solution to help in the alteration of the desktop. Clearly defined processes will ensure the maximum potential of the solution while minimizing the risk of lost information and productivity. Each desktop change should be preceded with a clean backup. Doing so protects the assets of the desktop and provides a means of swift rollback in the event of an unplanned difficulty.

When using a scripted desktop restoration solution, consider using re-installation as the means of deploying new software. There are several distinct advantages to a clean installation:

- Clean installations do not move forward artifacts from previous installations that can affect desktop performance
- A clean installation validates the software installed on the desktop and helps assure compliance with corporate policy
- Clean installations may have fewer difficulties than upgrades, software removals, or other means of changing desktop software applications

Troubleshooting applications can also be enhanced by using the desktop restoration solution. A scripted solution can restore a single application. It stores the personalization information for the application and can often correct problems through the restoration.

It is also important to perform a backup after the change to the desktop. This protects the time invested making the changes. The retention policy will dictate how to balance preservation of the desktop before and after the changes have been made.

Personnel

The processes are only as good as the people who implement them. Many technicians have their own ways of doing things and may not be used to using a desktop restoration solution to help them. It may take time to help them adjust to using the tools.

Once the technicians see the value of using a tool, they typically embrace it enthusiastically. The art of developing solid processes is to work with the technicians and determine how the tools really help. Modify the processes and policies based on their input so that, ultimately, the desktop receives the best protection and can be restored as quickly as possible.

Some technicians will work better with the processes than others. Try to leverage their expertise by using them as mentors to help the rest of the technical staff embrace the best practices for a given organization.

Product

Throughout this chapter, there has been discussion of using the desktop restoration solution to help mitigate the risk of lost productivity when modifying user desktops. Any product that can back up a desktop provides a level of protection that changes made to that desktop can be rolled back.

A desktop restoration solution that can provide scripted installation of applications and personalization information provides a great deal more protection. When troubleshooting applications, a scripted solution that provides point restorations can allow the application to be re-installed without loss of configuration or personalization. When an application is removed, the application and its data can be preserved and restored as required. When OSs are replaced, the scripted system can re-apply applications and their personalization data to a new OS. The entire desktop can be restored to its highest levels of performance and corporate compliance by performing a clean restoration.

Summary

The software on the desktop changes. From serving the changing needs of users, organizations, and other entities, the desktop must adapt to remain useful and secure. Those changes can put at risk the work performed by the users. The risk to produced work and the continuing productivity of the user can be protected by prudent use of the desktop restoration solution. A scripted solution that provides flexibility makes the solution more able to serve these needs.

The previous two chapters have helped define the process of predictable changes in hardware and software and show how to leverage the desktop restoration solution to make these changes easier and mitigate the risks of lost work and productivity. The final chapter considers the role of the solution when things do not go as planned, and helps organizations plan for disasters of an individual or wide-scale scope.

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