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The Definitive Guide[™] To

Windows Server 2003 Terminal Services

Updated Edition



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Chapter 7: Managing Security and Virus Protection

Blaster, Love Bug, Nimda, Melissa—computer viruses and worms are a fact of life these days, so Windows infrastructure design must take them into account. Virus scanning software, firewalls, and patch management should be a part of even the smallest environments. If users will be accessing email or browsing the Internet from terminal servers, you will need to be vigilant in keeping your servers safe and virus free. Luckily, the restrictive permissions on a terminal server make it difficult for users to introduce viruses to the system; nonetheless, you should be prepared.

This chapter will explore available options for keeping servers secure and up to date, including Microsoft Automatic Updates and software, Windows Server Update Services, and Microsoft AntiSpyware (Beta), as well as cover best practices for implementing these options in your environment. In addition, I will highlight considerations for installing virus scanning software on terminal servers.

Viruses, Worms, and Trojan Horses...Oh My!


There are many types of malicious code (malware) from which you must protect your systems. Although all malware is often referred to as viruses, there are distinct differences between viruses, worms, and Trojan horses.

A *virus* is a small program that is written to alter—without the knowledge of the user—the way that a computer operates. To be called a virus, the program must be executable code—either in the form of a standalone program or as a macro contained in another file—and must be able to copy itself so that it can continue to execute once the initial program or macro is terminated. Examples of viruses include:

- Boot sector viruses, such as Michelangelo and Disk Killer, which install themselves in the boot sector of your hard disk so that they begin execution before the OS
- Macro viruses, such as Melissa and Nice Day, which are contained inside macros in Office documents. These viruses execute when the document is opened, and attempt to infect other Office documents or the normal template so that all new documents created on the computer are infected.

A *worm* is a program that takes advantage of poor security design or security flaws in the OS. Worms are able to spread from one computer to another without a host file, although some spread by copying an infected file from one computer to another. Blaster is an example of a worm that takes advantage of a security flaw in the Windows remote procedure call (RPC), allowing it to remotely execute code on other computers on the network to replicate itself.

A Trojan horse is a program that is contained inside of another, seemingly desirable, application. When you execute the host program (for example, a screen saver, an e-greeting card, or a shareware application), the Trojan horse is installed on your system. Trojan horses can act as spyware, sending private information to a third party, and are used in distributed Denial of Service (DoS) attacks. The main difference between a virus and a Trojan horse is that a Trojan horse does not self-replicate—it must be manually executed to infect your system.

 A DoS attack makes a large number of requests against a specific server or URL, keeping the server busy so that it cannot service legitimate requests. A distributed DoS attack uses a virus, worm, or Trojan horse to enslave multiple computers across the Internet and directs them all to attack the server simultaneously.

You must protect your terminal servers from all three types of malware. You can do so through a combination of file system permissions, Group Policy settings, virus protection software, and security patches distributed by Microsoft.

If you accept the default file system permissions and keep your users restricted to the Users group (not elevating them to Power Users), your system is protected from most viruses and Trojan horses that attempt to install themselves into system files or the system root or program files directories. In addition, you can use Group Policy to enforce additional restrictions—limiting which processes and applications a user can execute, preventing users from saving files to the C drive of the server, and so on—to further protect your systems.

 For more information about using Group Policy to secure your terminal server, see Chapter 4.

Even with the enhanced security that WS2K3 implements on the file system and the additional restrictions you can apply through Group Policy, it is a good practice to install and maintain virus protection software and a patch-management system—virus authors are always coming up with new ways to harm your system.

Internet Explorer Enhanced Security Configuration


Internet Explorer Enhanced Security Configuration is a new option included with WS2K3. When installed, it changes the default security settings in Internet Explorer to limit the exposure to potentially damaging code found in Web content and application scripts.

Internet Explorer Enhanced Security Configuration is installed by default for all user groups on WS2K3 unless you are adding the Terminal Services role—the configuration of Internet Explorer Enhanced Security Configuration on a terminal server depends on the method used to install the OS. Table 7.1 shows the configuration of Internet Explorer Enhanced Security Configuration under different installation methods.

Type of Installation	Enhanced Security Configuration is Applied			
	Administrators	Power Users	Limited Users	Restricted Users
Upgrading the OS	Yes	Yes	No	No
Unattended installation of the OS	Yes	Yes	No	No
Manual installation of Terminal Services	Yes	Yes	Prompt	Prompt

Table 7.1: Configuration of Internet Explorer Enhanced Security Configuration on a terminal server.

When installing the Terminal Services role manually, the Configure Your Server Wizard will prompt you to disable Internet Explorer Enhanced Security Configuration for the Limited Users and Restricted Users groups. Doing so improves the browsing experience for these users and relies on the native security of the file system and OS to prevent these users from running or installing malicious code.

 Regardless of whether Internet Explorer Enhanced Security Configuration is enabled, the Limited Users and Restricted Users groups are prevented from installing ActiveX controls on a terminal server. An administrator must manually install all approved controls on the server. Methods for doing so are described later in this section.

To manually enable or disable Internet Explorer Enhanced Security Configuration, use the Add/Remove Programs Control Panel applet, as Figure 7.1 shows.

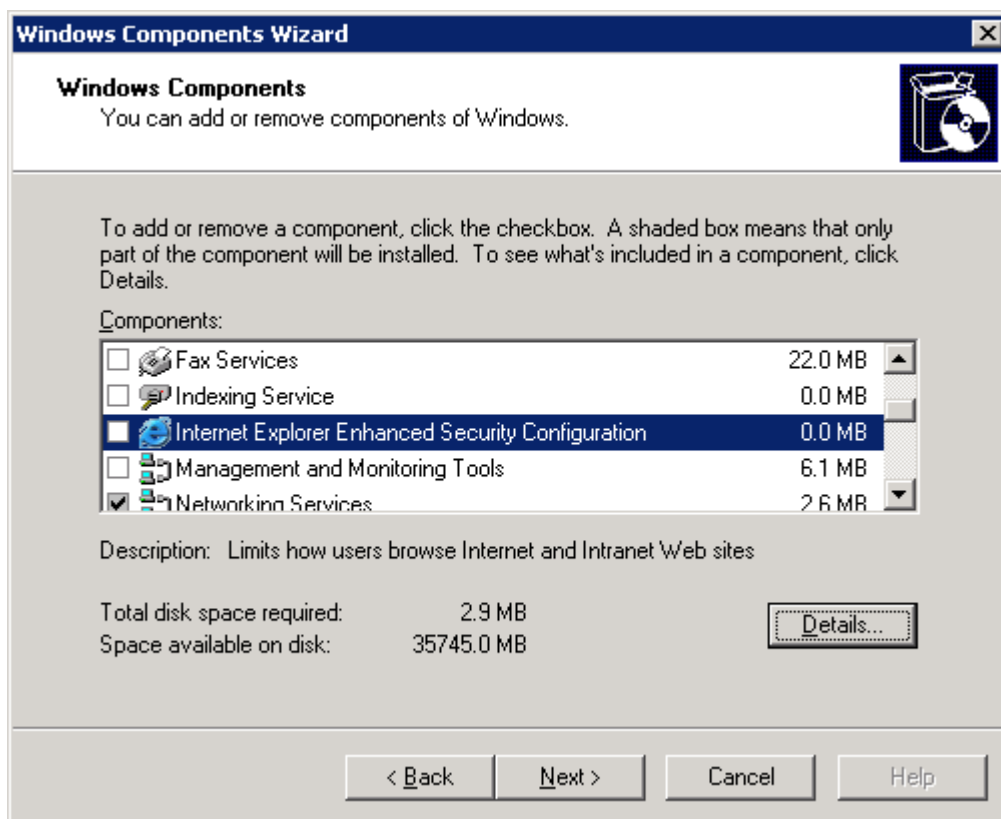


Figure 7.1: Enabling or disabling the Internet Explorer Enhanced Security Configuration through the Add/Remove Windows Components tool.

If you want to enable Internet Explorer Enhanced Security Configuration for all users, simply select the associated check box. To specify to which groups Internet Explorer Enhanced Security Configuration is applied, click Details. In the resulting window, which Figure 7.2 shows, you can apply the enhanced security to administrators and all other groups individually. On a terminal server, a best practice is to enable it for administrators and leave it disabled for other user groups.

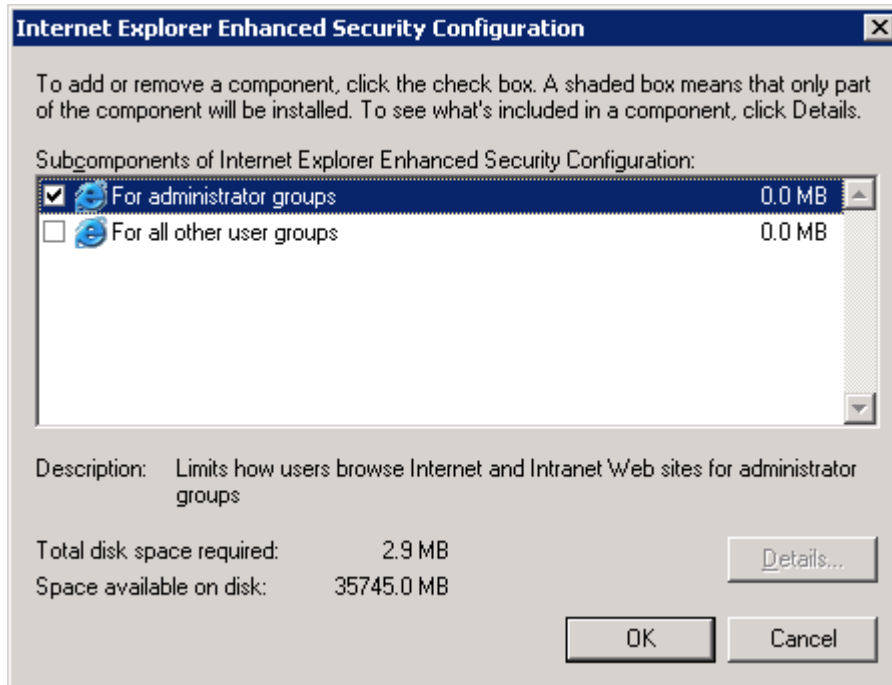


Figure 7.2: Applying Internet Explorer Enhanced Security Configuration to specific user groups.

Changes Made by Internet Explorer Enhanced Security Configuration

Internet Explorer Enhanced Security Configuration changes the default zone settings for IE and adjusts several IE advanced settings to further increase protection from malicious code. Table 7.2 shows the changes made to the security levels of each zone.

Zone	Default Level	Internet Explorer Enhanced Security Configuration Level
Internet Zone	Medium	High
Local Intranet Zone	Medium Low	Medium Low
Trusted Sites Zone	Low	Medium
Restricted Sites Zone	High	High

Table 7.2: Zone security level changes made by Internet Explorer Enhanced Security Configuration.

In addition to the security level changes, Internet Explorer Enhanced Security Configuration changes the default zone for all intranet Web sites. By default, all intranet sites (determined by your DNS suffix) are in the Local Intranet Zone. With Internet Explorer Enhanced Security Configuration enabled, intranet sites are placed in the Internet Zone and are treated with High security until you add them to the Local Intranet Zone manually. The only sites in the Local Intranet Zone under Internet Explorer Enhanced Security Configuration are local machine sites (<http://localhost>, <https://localhost>, [hcp://system](http://localhost/hcp://system)). Local machine sites must be in the Local Intranet Zone for many of the Help and Administrative Tools to work properly. Internet Explorer Enhanced Security Configuration also changes advanced options, as Table 7.3 shows.

Feature	Entry	New Setting	Result
Browsing	Display enhanced security configuration dialog box	On	Displays a dialog box to notify you when an Internet site tries to use scripting or ActiveX controls.
Browsing	Enable Browser Extensions	Off	Disables features you installed for use with IE that might have been created by companies other than Microsoft.
Browsing	Enable Install On Demand (Internet Explorer)	Off	Disables installing IE components on demand if needed by a Web page.
Browsing	Enable Install On Demand (Other)	Off	Disables installing Web components on demand if needed by a Web page.
Microsoft VM	JIT compiler for virtual machine enabled (requires restart)	Off	Disables the Microsoft VM compiler.
Multimedia	Don't display online content in the media bar	On	Disables playback of media content in the IE media bar.
Multimedia	Play sounds in Web pages	Off	Disables music and other sounds.
Multimedia	Play animations in Web pages	Off	Disables animations.
Multimedia	Play videos in Web pages	Off	Disables video clips.
Security	Check for server certificate revocation (requires restart)	On	Automatically checks a Web site's certificate to see whether it has been revoked before accepting it as valid.
Security	Check for signatures on downloaded programs	On	Automatically verifies and displays the identity of programs you download.
Security	Do not save encrypted pages to disk	On	Disables saving secured information in your Temporary Internet Files folder.
Security	Empty Temporary Internet Files folder when browser is closed	On	Automatically clears the Temporary Internet Files folder when you close the browser.

Table 7.3: Advanced changes made by Internet Explorer Enhanced Security Configuration.

The browsing experience will be very restrictive while Internet Explorer Enhanced Security Configuration is enabled. If you use Web-based tools or Web pages with active scripting for systems administration, you will need to add these sites to either the Local Intranet Zone or Trusted Sites Zone. To make zone changes easier, Microsoft adds an *Add this site to...* selection to the IE File menu when Internet Explorer Enhanced Security Configuration is enabled. Also, if you encounter a Web page that uses active scripting, a warning dialog box, which Figure 7.3 shows, gives you quick access to the Add to Trusted Sites interface.

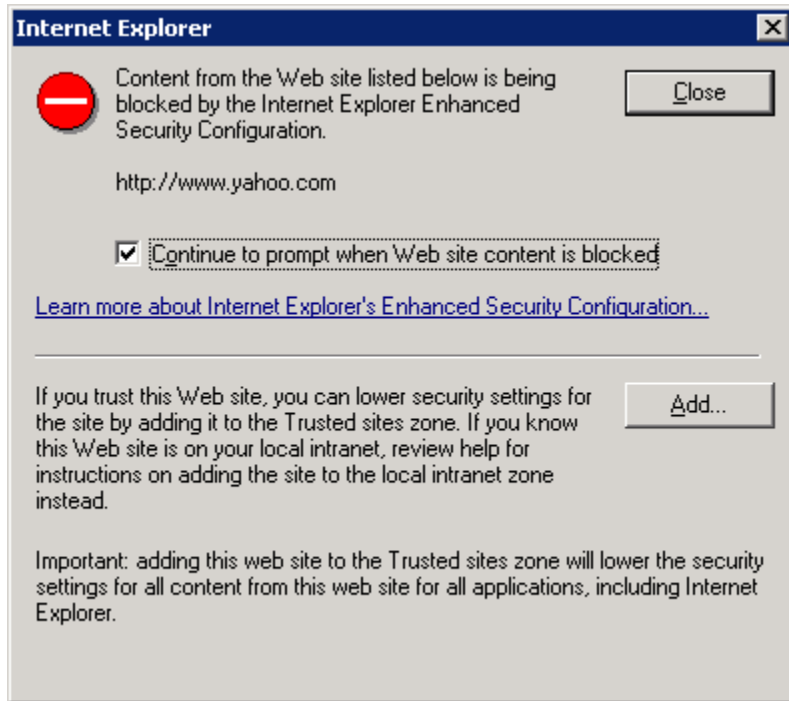


Figure 7.3: Internet Explorer Enhanced Security Configuration's enhanced security configuration dialog box.

Managing Approved ActiveX Controls

Whether Internet Explorer Enhanced Security Configuration is enabled or disabled, members of the Users group are prevented from installing any ActiveX controls or other active Web code on a terminal server—members of this group simply do not have write access to the locations on the file system where the controls are stored.

There are, of course, many cases in which your users will need to access Web pages that use active code in the course of their normal work. As an administrator, you will need to manage these approved controls. You can do so using several methods. To manually install a control for users:

1. Log on to the terminal server using an administrative account, and use IE to browse to the Web site containing the control.
2. The Internet Explorer Information Bar will appear informing you that the page requires a control to be installed (see Figure 7.4).

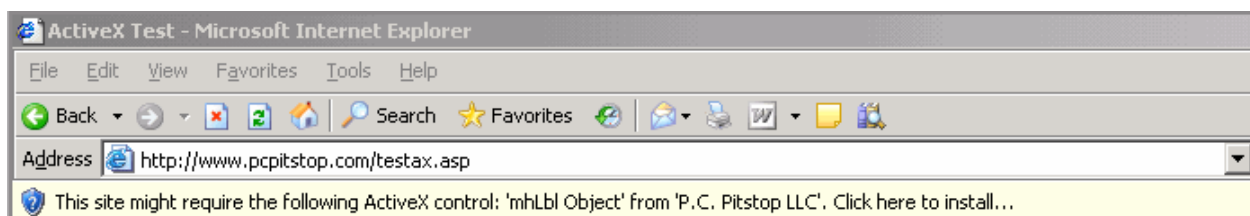


Figure 7.4: The Internet Explorer Information Bar.

3. Right-click the information bar, and select Install ActiveX Control (see Figure 7.5).

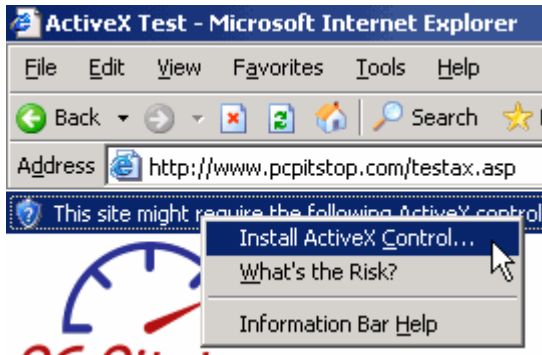


Figure 7.5: Selecting Install ActiveX Control.


4. IE will ask you to confirm that you want to install the software; click More options, then select the *Always install software from...* radio button (see Figure 7.6), and click Install.



Figure 7.6: Confirming that you want to install the software.

5. The control is now installed for all users on the terminal server.

For administering a large number of terminal servers, you will not want to manually install controls on each server. To automate the installation process, you can either include the controls in your base image (if you are using a server cloning process such as Sysprep) or you can capture the files contained in the control and repackage them into MSI files to use Group Policy to install them on your servers. Which method you choose will depend on your environment and software distribution methods as well as the frequency at which new or updated controls are required in your environment.

 Internet Explorer Enhanced Security Configuration applies only to IE. If you use a third-party Internet browser, you will need to implement a separate security model.

Implementing Windows Automatic Updates

The Internet Explorer Enhanced Security Configuration can help protect you from malicious code found on Web pages—worms and viruses can be designed to take advantage of security flaws that are discovered in Windows over time. Microsoft is proactive in providing patches and updates to plug discovered security holes, but you are responsible for installing these updates on your systems. In the days of NT 4.0, this meant subscribing to the Microsoft Security Bulletin and frequently checking the Microsoft Security Web page for new updates and information, then downloading any critical patches and distributing them to your servers and workstations.

With the release of Windows XP, Microsoft introduced the Windows Automatic Updates client. WS2K3 also includes this component. With Windows Automatic Updates, you can configure your servers and workstations to download and install any updates that are deemed critical by Microsoft. The Automatic Updates Client is very versatile and can be configured to fit most situations.

You can configure Automatic Updates manually or via Group Policy. For manual configuration, access the System Control Panel applet, and select the Automatic Updates tab (see Figure 7.7).

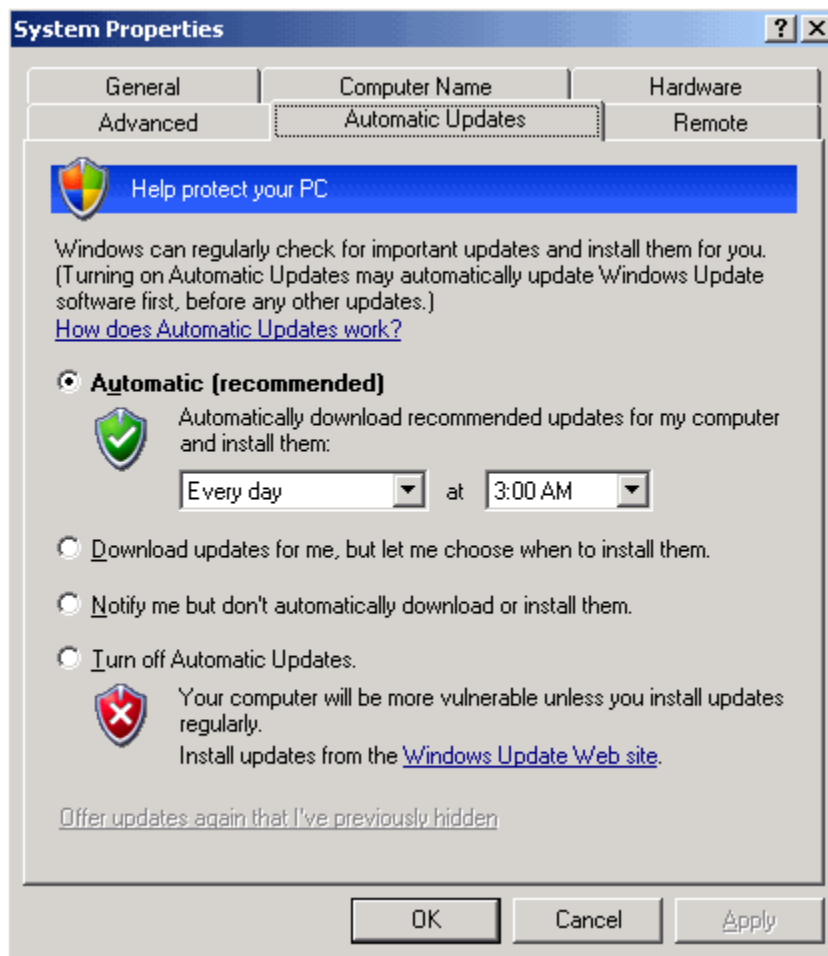


Figure 7.7: Configuring Automatic Updates.

Through this interface, you can the mode in which the client operates. The available modes are:

- Automatic—The client regularly checks for new critical updates. When one is available, the client cues up the update for installation at the next specified day and time.
- Download Updates for me, but let me choose when to install them—The client regularly checks for new critical updates. When one is available, the client automatically downloads the update, then places a notification icon in the system tray whenever an administrator is logged on to the server. The administrator clicks the icon to begin the installation.
- Notify me but don't automatically download or install them—The client regularly checks for new critical updates. When one is available from Microsoft, the client places a notification icon in the system tray whenever an administrator is logged on to the server. The administrator clicks this icon to begin the download and install the update.
- Turn off Automatic Updates—The Automatic Updates client is disabled.

You can also configure Automatic Updates via Group Policy. In the Group Policy Object Editor, drill down to Computer Configuration, Administrative Templates, Windows Components, Windows Update. Figure 7.8 shows the available settings.

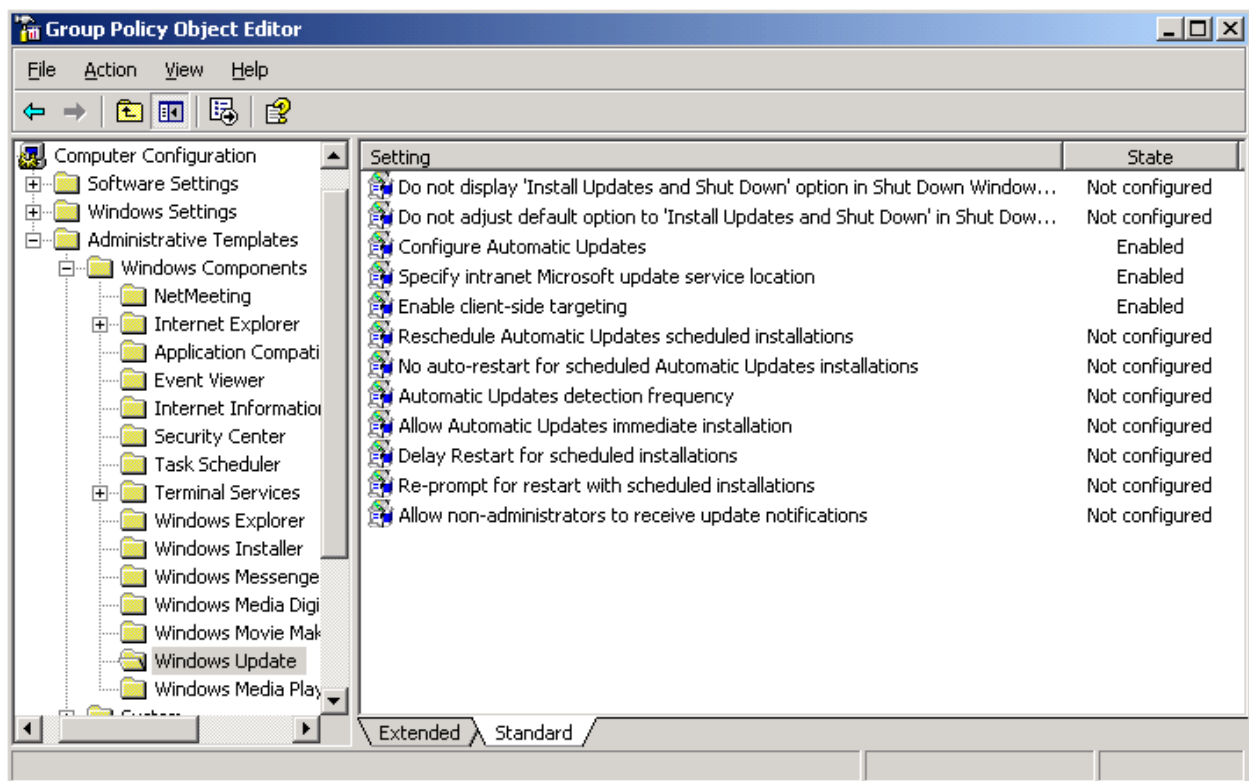



Figure 7.8: Configuring Automatic Updates through Group Policy.

Some of these settings, such as the ‘Install Updates and Shut Down,’ options are not applicable on WS2K3, so be sure to look at the supported OSs listed at the bottom of each policy setting. The following list highlights the main settings you should familiarize yourself with:


- The *Configure Automatic Updates* setting specifies the mode and schedule. It offers the same options as the System Control Panel applet. You can specify the mode and, if automatic installation is selected, the day(s) and time that the installation should take place.
- The *Specify intranet Microsoft update service location* setting redirects the Automatic Updates client to an internal Windows Server Update Services (WSUS) URL.

 We will explore WSUS in more detail in the next section.

- *Reschedule Automatic Updates scheduled installations* specifies how long after boot the service should wait before installing updates if the computer was shut down at the last scheduled installation time. This setting is very useful on workstations but should be disabled on terminal servers, as it can cause unexpected reboots.
- Finally, the *No auto-restart for scheduled Automatic Updates installations* setting suppresses the reboot (if the update being installed requires one). This setting is helpful if you are running automated reboot scripts on your terminal servers and do not want to reboot twice on nights that critical updates are installed.

When configuring Automatic Updates, there are some factors to consider. If your servers are used only during business hours, it is very easy to set up an automatic installation schedule. However, if your servers are in use 24 × 7, stagger the installation schedule so that not all servers are rebooting at the same time. You can use a scheduled task to disable logons in advance of the scheduled installation time so that the server has a chance to drain before updates are installed and the server is rebooted.

In a very large environment, you can create multiple GPOs filtered by security group, each specifying a different installation schedule. This way, you can group your servers by which day they install updates.

 When using multiple GPOs to schedule Automatic Updates, place the first GPOs in the policy processing order to apply to the Authenticated Users group, then higher GPOs to be filtered by security group. This way, if a server is not in a specific group, it will receive the default schedule and receive updates.

Using WSUS

In large or mission-critical environments, you might want the ability to select which updates are necessary in your environment and have the ability to test updates in a lab before installing them on your production servers. To meet these requirements, Microsoft provides WSUS.

WSUS can be installed on a Win2K SP4 Internet Information Server or a WS2K3 Application Server and takes the place of Microsoft's Automatic Updates site. You then use Group Policy to redirect the Automatic Updates client to your internal WSUS server. The client then downloads updates from the WSUS server for installation rather than polling Microsoft for updates directly.

To install WSUS, download the installer from the Microsoft Web site at <http://www.microsoft.com/windowsserversystem/updateservices/default.msp>. If you are installing WSUS on a Win2K server, there are some additional components you must install first, so be sure to read the installation guide before proceeding. On WS2K3, if the server does not already have the Application Server role installed, do that first, then run WSUSSetup.exe.

The first decision you will have to make during the installation is where to store the updates. If your Application Server has adequate disk space, storing the updates locally will speed the download process for your clients. The default storage location is C:\WSUS, as Figure 7.9 shows.

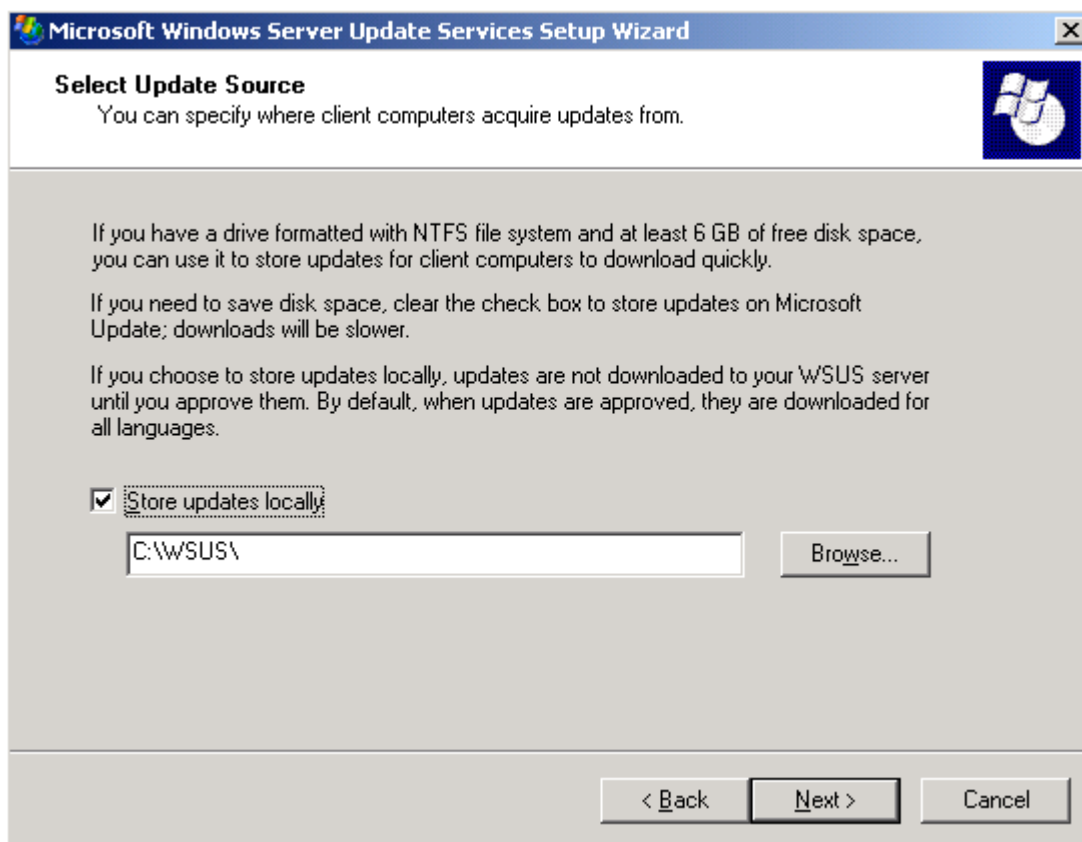


Figure 7.9: Setting the update storage location during the installation of WSUS.

Unlike its predecessor—Software Update Services, WSUS supports grouping client machines and approving updates on a per-group basis. The targeting information is stored in a SQL database, so the installer will ask you to either point to an existing SQL instance on the server or install the SQL Server Desktop Engine.

Both the WSUS service and the administration tool are served by Internet Information Server, so you must select whether to use the existing default Website and port on the Application Server or create a new site with a different port. Microsoft recommends that you use the default site.

Finally, you can select to run the WSUS server in a standalone mode or configure it to be a replica of an existing WSUS server. This choice allows you to have multiple WSUS servers for fault tolerance and load balancing. In replica mode, you approve updates on the master server, and all replicas inherit the approval and distribute the update as well. Figure 7.10 shows the options for replica mode.

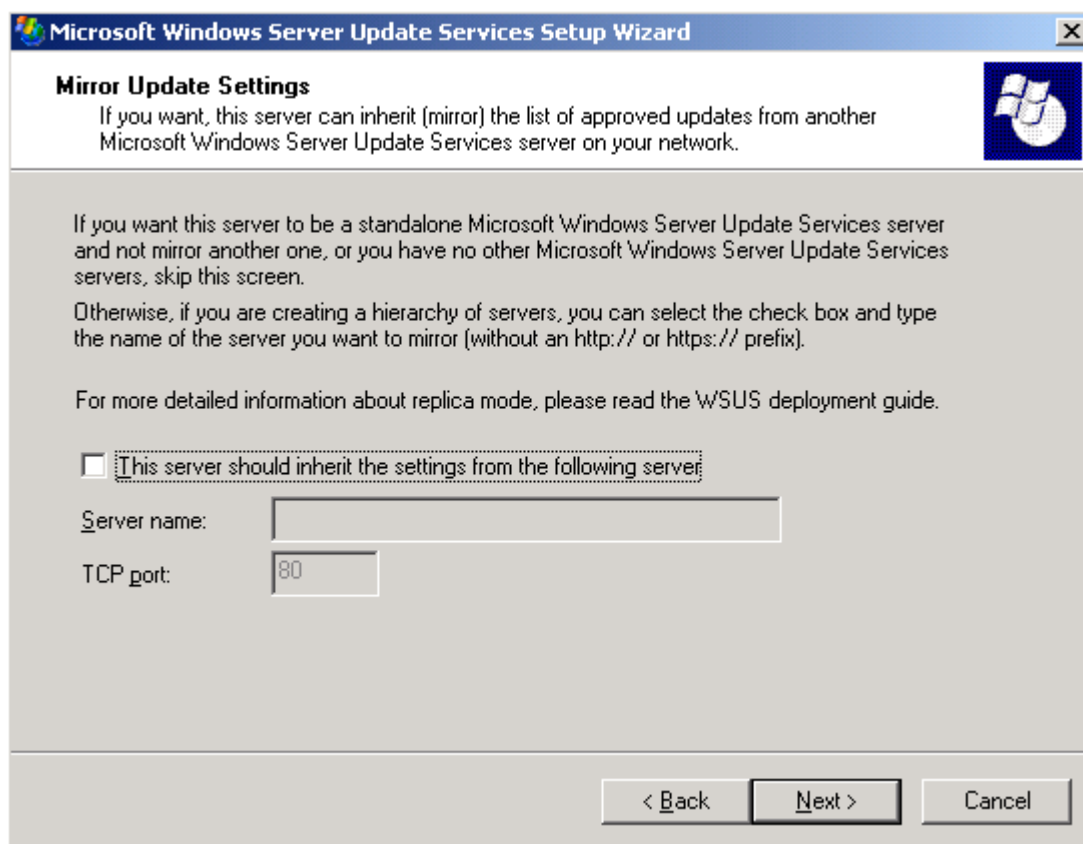


Figure 7.10: Configuring WSUS for standalone or replica mode.

Once WSUS is installed, you access the administrative console through a Web browser. The URL for the administrative console is <http://<servername>/WSUSADMIN>. Through the console, you can configure synchronization of updates, create groups of client computers, set WSUS options, and generate reports. Figure 7.11 shows the WSUS administrative console.

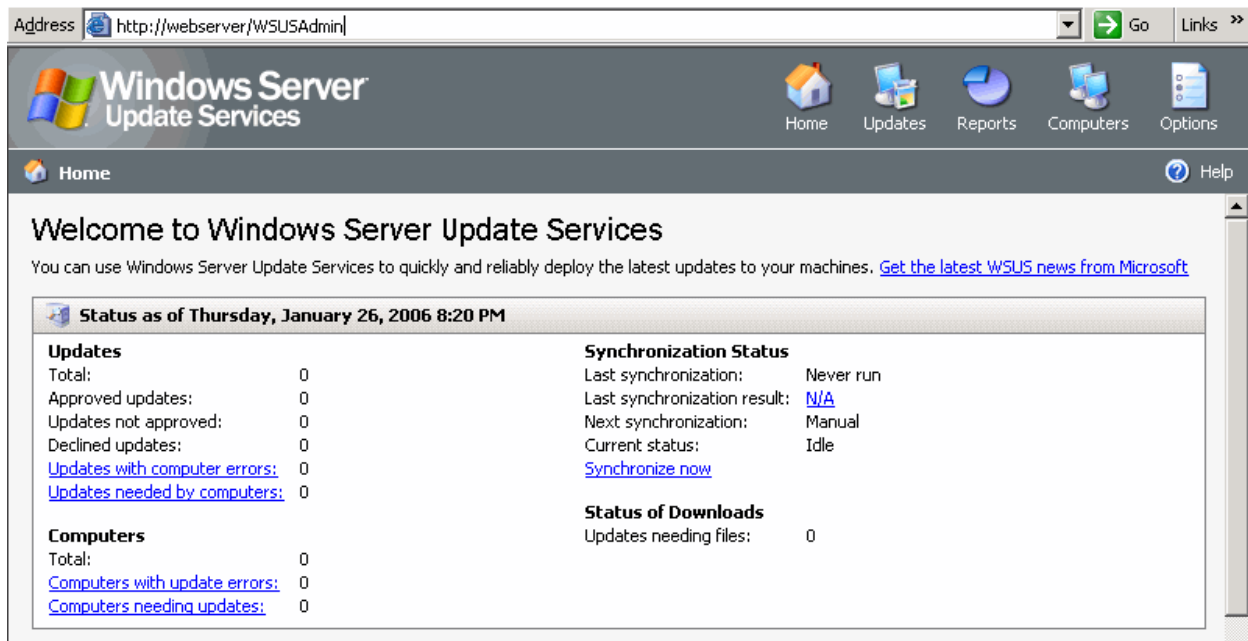


Figure 7.11: The WSUS administrative console.

Once you configure WSUS to your specifications, you then need to configure your client computers (including your terminal servers) to look to the WSUS server for approved updates. You do so via Group Policy. As you saw earlier in the chapter, the *Specify intranet Microsoft update service location* setting is used to configure the URL of the WSUS server on your clients. Once this setting is enabled, the Automatic Updates client on your terminal servers will periodically poll the WSUS server for newly approved updates, then install them according to the schedule you define in the *Configure Automatic Updates* setting.

As discussed earlier, you can use multiple GPOs to create different installation schedules on your servers, thus phasing out updates across multiple days. This method, however, can pose a challenge if you need to get an emergency update to all servers immediately. Another option available in WSUS to help you phase deployments is the ability to create groups of clients and approve updates on a per-group basis.

You can manage WSUS groups either through the WSUS administrative console or through Group Policy. Figure 7.12 shows the group management settings in WSUS. If you choose to manage WSUS groups through the console, all new terminal servers will be added to the WSUS database as an *Unassigned computer*. You will then have to manually add the computer to a group to use selective targeting. This option is effective if you manually approve updates and want to use groups to phase updates across multiple days. This method also reduces the number of GPOs in your environment, as you can configure the Automatic Update client on all servers to install every day, then approve updates for one group each day.

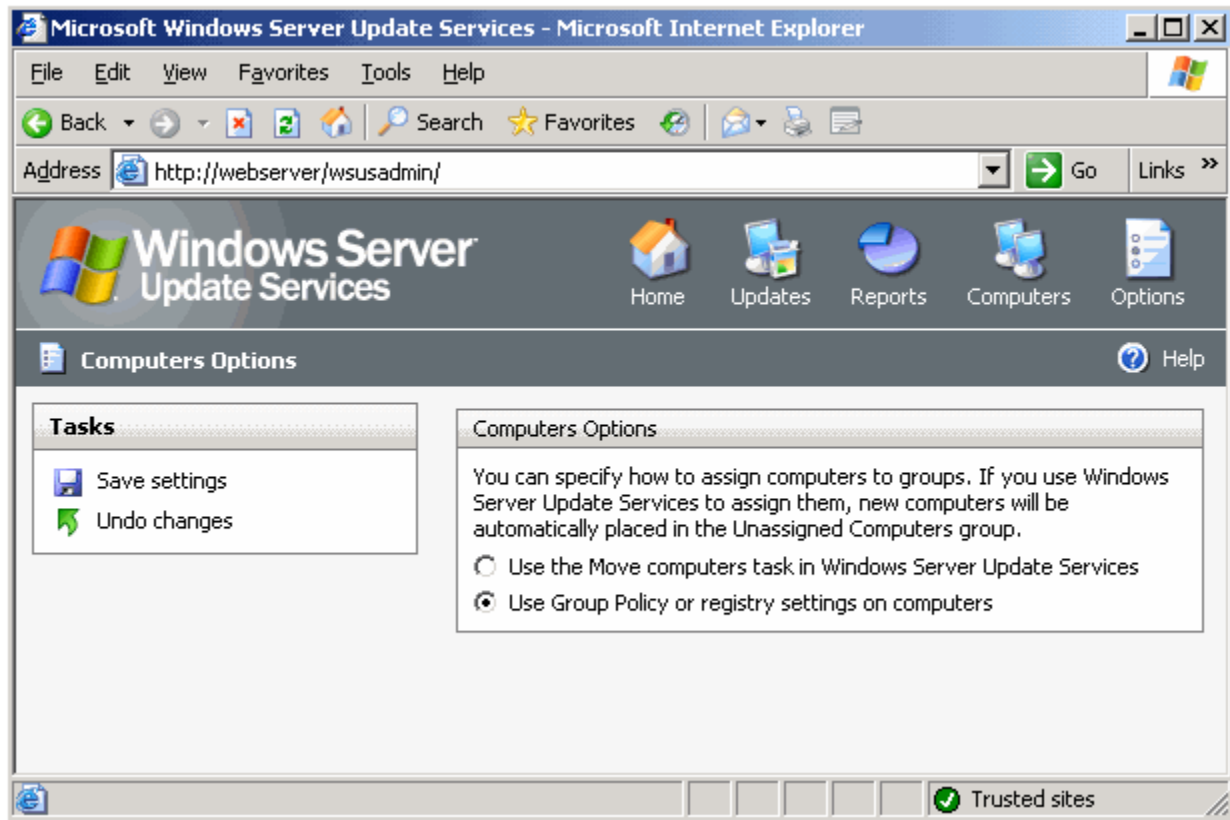


Figure 7.12: Configuring group management in WSUS.

To configure WSUS groups via Group Policy, use the *Enable client-side targeting* setting (see Figure 7.13) to specify a group name for all servers to which the GPO applies. Doing so enables new servers to be added to WSUS groups automatically. You can still approve updates on a per-group basis, but you will need to create a separate GPO for each WSUS group. The method you choose is determined by your environment and management style.

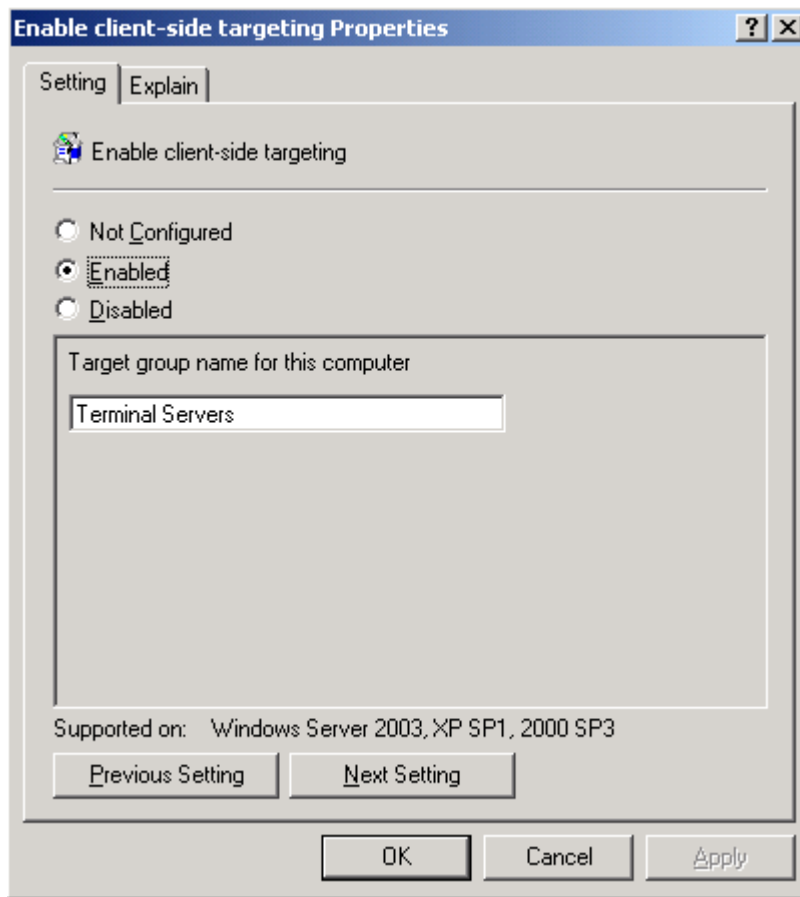


Figure 7.13: Configuring WSUS groups via Group Policy.

☞ You can also use WSUS groups to prevent certain updates from installing on specific groups of computers. You might, for example, want to approve updates for your workstations very quickly but take more time to test them in the lab before deploying them to your terminal servers.


WSUS is a very powerful tool and offers major improvements over its predecessor, SUS. Be sure to read Microsoft's documentation on WSUS to take advantage of all the options and features.

Deploying Service Packs and Hotfixes

In addition to using security patches, Microsoft keeps Windows at its best through service packs and hotfixes. These should be thoroughly tested before deploying them to your production servers.

Using Group Policy to Deploy Service Packs

Once you determine that a service pack is ready for production servers, you need a way to deploy it to your terminal servers. Beginning with Win2K, Microsoft began including an MSI file that you can use to assign service packs via Group Policy. Doing so saves you the time of manually installing the service pack on each server.

 The UPDATE.MSI file should only be used for deploying a service pack via Group Policy. Never install a service pack manually with the MSI file—use UPDATE.EXE instead.


You assign a service pack to a computer in the same way you would any other piece of machine-based software. Begin by extracting the service pack files to a network share that can be accessed by all your terminal server computer accounts. To perform the extraction, launch the service pack executable with a -X switch (for example, WS2K3SP1.EXE -X). You will then be prompted for the location to which the files should be extracted.

Next, use the Group Policy Management Console to edit the GPO that will assign the service pack to your computers. Drill down to Computer Configuration, Software Settings, Software installation. Right-click this node, and select New, Package. You will then be prompted to select an MSI package to deploy. Enter the UNC path to the UPDATE.MSI file in the folder to which you extracted the service pack, and click Open.

You will be offered the option to assign the package with default settings or open the advanced dialog box. You can select Assigned, then click OK—there are no advanced settings that need to be specified when deploying a service pack.

The next time a terminal server that is configured to receive the GPO reboots, the service pack will be installed. If you are performing regular maintenance scripts on your terminal servers, you can relax knowing that within a week all servers will have the service pack installed.

Microsoft always makes service packs inclusive of updates found in previous service packs. This way, you only need to install one service pack when building a new server. When you are ready to deploy a new service pack, you will need to remove the GPO assignment of the previous one so that both service packs are not installed on new systems.

 You do not need to uninstall a previous service pack before installing the new one, just remove the assignment.

To remove the assignment of the earlier service pack, use the Group Policy Management Console to edit the GPO used to assign the service pack. Right-click the package, and select All Tasks, Remove. You are then prompted with the dialog box that Figure 7.14 shows, giving you the option to either uninstall the software from all computers that are managed by the GPO or simply prevent new installations; select the latter option.

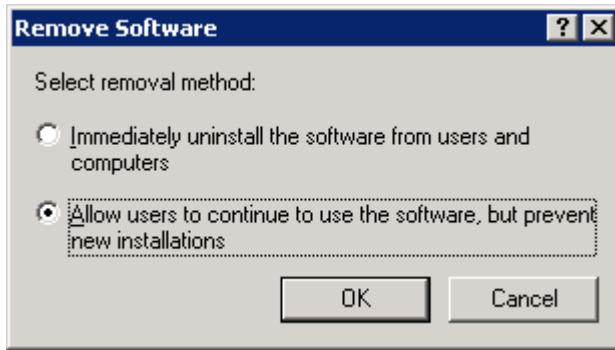



Figure 7.14: Removing software assigned via GPO.

Once you have removed the assignment for the old service pack, you can create the assignment of the new service pack. At the next reboot, all servers will receive the latest pack, either over the previous one or as the first service pack on a new server.

Using Group Policy to Deploy Hotfixes

Windows Automatic Updates and WSUS will only take care of critical and security updates. If you determine that one or more non-critical updates are needed in your environment, you need a way to deploy them to your servers.

For new servers, the best method is to integrate the hotfixes into your server build process. If you are using a server-cloning process or RIS images, this task can be accomplished by either installing them manually before running Sysprep or Riprep. If you are building servers with an unattended install process, you can add them via a CMDLINES.TXT file.

 For additional information about integrating hotfixes into an unattended installation of Windows, see the Hotfix Installation and Deployment Guide found at <http://www.microsoft.com/Windows2000/downloads/servicepacks/sp3/hfdeploy.htm>.

Microsoft does not, however, provide a clear method to deploy hotfixes to multiple existing servers. The deployment guide only covers manual installation from a network source. This process is fine in smaller environments, but for large terminal server farms, you will want to automate the installation. The following suggested methods for doing so will not work in all situations and is not a comprehensive list. Select the best option for your situation and environment.

Using a ZAP File

If you need to install one hotfix at a time, a ZAP file is a good option. ZAP files are used to install non-MSI-based software via Group Policy. ZAP files are simply text files containing the information needed to install the application. Listing 7.1 provides a sample ZAP file.

```
[Application]
; Only FriendlyName and SetupCommand are required,
; everything else is optional.

; FriendlyName is the name of the program that
; will appear in the software installation snap-in
; and the Add/Remove Programs tool.
; REQUIRED
FriendlyName = "Hotfix Q911001"

; SetupCommand is the command line used to
; Run the program's Setup. If it is a relative
; path, it is assumed to be relative to the
; location of the .zap file.
; Long file name paths need to be quoted. For example:
; SetupCommand = "long folder\setup.exe" /unattend
; or
; SetupCommand = "\\server\share\long _
; folder\setup.exe" /unattend
; REQUIRED

SetupCommand = "Q#####_WS2K3_SP1_x86_en.exe" /M

; Version of the program that will appear
; in the software installation snap-in and the
; Add/Remove Programs tool.
; OPTIONAL
DisplayVersion = 1.0

; Version of the program that will appear
; in the software installation snap-in and the
; Add/Remove Programs tool.
; OPTIONAL
Publisher = Microsoft
```

Listing 7.1: A sample ZAP file for installing a hotfix.

The main disadvantage of using ZAP files to install hotfixes is that each ZAP file can run only one setup command, so you can install only one hotfix at a time. Also, Group Policy-based software installations occur during system startup, so servers will not receive the fix until their next reboot. Also, if you deploy multiple hotfixes via Group Policy, you will need to work out a method to reduce the number of reboots.

☞ The command-line arguments for all Microsoft hotfix installer programs are:

- /F Forces any open applications to close when the hotfix reboots the computer
- /N Does not back up files for removing the hotfix
- /Z Does not restart the computer after the installation is completed
- /Q Uses quiet mode; no user interaction is required
- /M Uses unattended setup mode
- /L Lists installed hotfixes

Virus Protection Software Best Practices

Virus protection software is your last line of defense against malware. You can implement filters on your corporate email system, use an email client such as Microsoft Outlook 2002 that blocks all executable attachments, and implement strong firewall and proxy server rules on your Internet connection. Regardless, a virus will always find its way into the environment.

Virus protection software works by scanning both individual files and active processes in memory and comparing them with a database of known signatures. Most virus protection software protects you from all three types of malware; however, the protection is only as good as the database. You must keep the database of virus definitions updated, so be sure to select a software product that provides you with a method of updating the database.

The following list highlights best practices when implementing and configuring virus protection software:

- Select a product that allows you to update virus definitions without rebooting the server.
- If your terminal servers are mission critical, select a product that enables you to pull updates from an internal source, giving you the opportunity to test and validate the updates before deploying them on production servers.
- Many virus protection products install a status icon into the system tray. After checking with the vendor, disable the icon (usually by removing a value from the HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run registry key). Doing so will reduce the load placed on your server by eliminating the status program running in each user session.
- In addition to “real-time” scanning (scanning every file that users access and processes in memory), most products perform scheduled scans of every file on the system. Be sure to schedule these scans during off-hours.

The Security Configuration Wizard

With SP1 for WS2K3, Microsoft added a new tool called the Security Configuration Wizard. This tool can be used to lock down a server by disabling unneeded services, configuring the Windows Firewall to block unused network ports, restrict permissions on the registry and file system, and set a number of security and audit policy settings. In enterprise environments, most of these settings will be controlled centrally via Group Policy but the tool can be used to help generate the Group Policy settings. In workgroup environments, the wizard can be used to manually configure servers.

The Security Configuration Wizard is not installed by default, although the Help file for it is prominently added to the desktop when you apply SP1. To install the wizard, use the Add/Remove Windows Components section of the Add/Remove Programs Control Panel applet.

Once it is installed, the wizard appears in the Administrative Tools folder in the Start menu and can be run by members of the local Administrators group. The wizard compiles a list of installed roles on the server as well as polls for applications that are actively listening on specific network ports. It then asks you to manually review the list of services, ports, and settings that it recommends, allowing you to add settings if needed. Figure 7.15 shows one of the confirmation screens in the wizard.

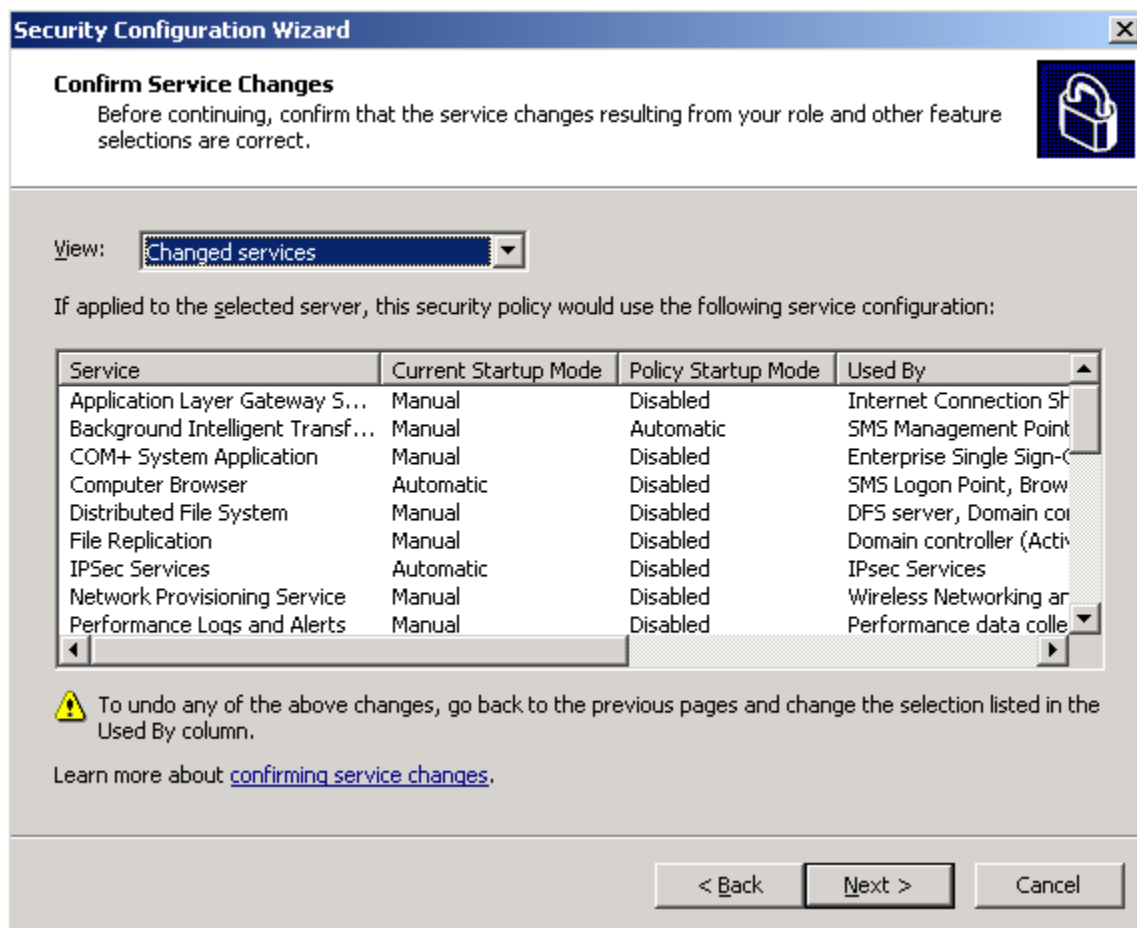


Figure 7.15: The Security Configuration Wizard.

After approving all the settings, you can then save the configuration database or apply the settings to the server immediately. The wizard is a powerful tool that simplifies the hardening of servers.

Putting It All Together

As you can see, there are several options available to help keep your terminal servers secure and virus-free. In this section, we'll explore two examples of how these options can be implemented.

Example One: Anytown Little Theatre

David is a terminal server administrator at a local company. During evenings and weekends, he volunteers doing systems administration and tech-support work at a local community theater, Anytown Little Theatre. To help keep costs down and the network as stable as possible, he used some grant money to set up a terminal server infrastructure for the theatre. Figure 7.16 illustrates the network.

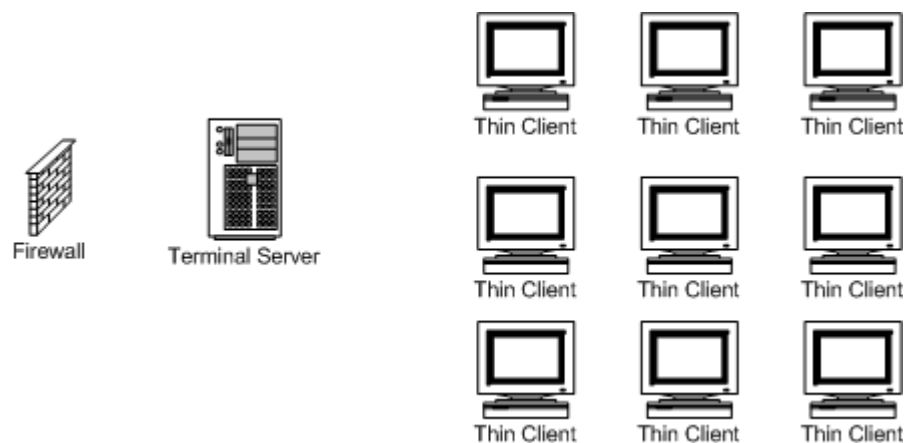


Figure 7.16: Anytown Little Theatre network.

The infrastructure consists of nine thin clients used by the theatre staff, a terminal server, and a personal router/firewall connected to a DSL line. Users connect to the terminal server and receive a full desktop environment with all the needed applications installed. They store their documents in their My Documents folders on the terminal server, and access a public share for common documents. The share is also on the terminal server. User profiles, the public share, and the System State are backed up nightly at 1AM to an external hard disk connected to the server.

David wants to keep the network as stable and secure as possible, so he implements the following security measures:

- The hardware firewall is configured to use Network Address Translation (NAT) and block inbound requests. This setup allows the staff to surf the Web, but prevents worms from attacking the server from the Internet.
- David used the Security Configuration Wizard to disable all unneeded services on the terminal server as well as configure the Windows Firewall to block inbound traffic from all ports except 3389 (RDP).
- All theatre staff members are set up as Limited Users on the terminal server. This setup prevents them from installing software or ActiveX controls but does not apply Internet Explore Enhanced Security Configuration to them, so they can browse the Internet without receiving unnecessary warnings and error messages.
- The Automatic Updates client on the server is configured to automatically download and install critical updates from Microsoft on a nightly basis at 4AM. Automatic reboots are allowed.
- Virus protection software is installed on the server and configured to download updated definition files from the vendor's Web site automatically every night at 3AM.
- There is only one server, so David installs service packs and hotfixes manually.

Example Two: BigBusiness, Inc.

BigBusiness, Inc. is a midsized company of about 2000 employees. Because of the variety of tasks users perform, each user has a Windows XP workstation with applications installed locally. There are two mission-critical applications that receive frequent updates and access large databases of customer data.

To optimize performance and make deploying application updates easier, BigBusiness' IT staff has implemented a terminal server Session Directory Farm to serve the two applications to end users. Users access the applications through a customized Remote Desktop Web Connection Web page that connects the users to the specific applications instead of a terminal server desktop. Figure 7.17 shows BigBusiness' network.

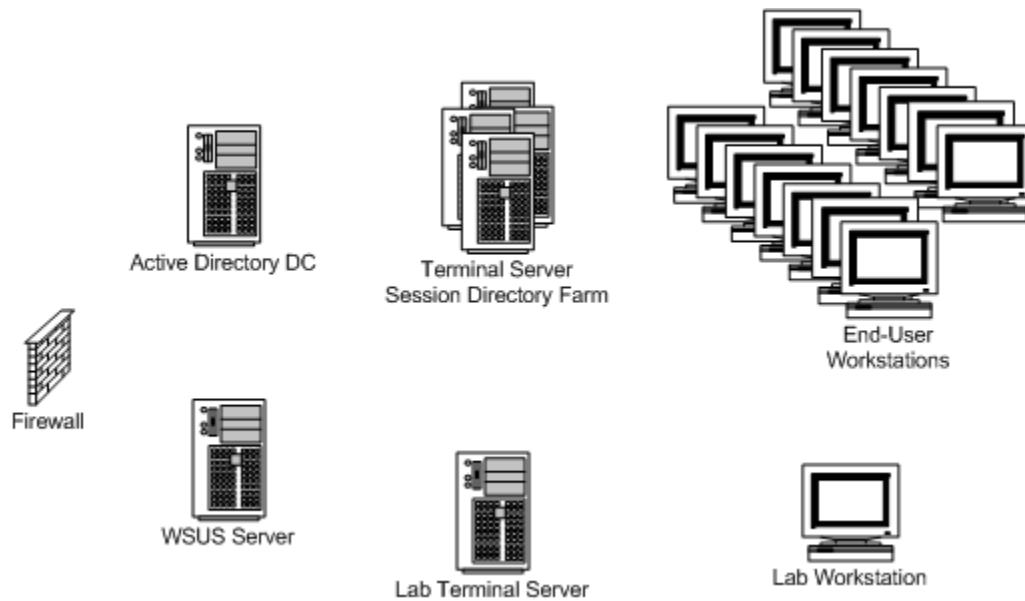


Figure 7.17: The network of BigBusiness, Inc.

To keep the terminal servers as stable and secure as possible, BigBusiness' IT staff has set up the following configuration:

- The network firewall blocks all inbound traffic to the corporate network.
- All users are configured as Limited Users on the terminal servers, and Internet Explorer Enhanced Security Configuration is enabled for all users. Because users do not access IE on the server, this configuration can be enabled without impacting the end-user experience.
- Virus protection software is installed on all the terminal servers and configured to pull updates from an internal FTP site. Virus definition files are tested in the lab before being uploaded to the FTP site.
- A WSUS server has been implemented to manage updates for the entire environment. All servers and workstations are configured to look to the WSUS server for updates. Multiple GPOs are used to set a staggered installation schedule for the terminal servers. WSUS groups are used to approve updates for workstations, production terminal servers, and lab servers. Updates are approved for the lab group first so that the updates can be validated and tested, then they are approved for the production groups in the WSUS administrative console.

- The production servers are grouped by maintenance schedules. Each afternoon a script runs on a specific group of servers, disabling new logons. That night, the Automatic Updates client on that group of servers is configured via Group Policy to download and install new updates from the WSUS server, then reboot. Within a week, all servers receive any new updates.
- In the event of a serious threat, the Group Policies can be changed to have the Automatic Updates client on all servers pull updates that night. This way, a new critical update can be deployed to all servers within one day.
- When a new service pack is available, it is thoroughly tested in the lab. Once it is deemed stable, it is assigned to the production servers via GPO. At the next maintenance night for each group of servers, the service pack is installed during the automatic reboot. Within a week, all servers have received the new service pack.

Summary

The enhanced security model of WS2K3 and the inclusion of the Automatic Updates client make it easier to keep your servers secure and updated with the latest security patches. You can use Group Policy and the Internet Explorer Enhanced Security Configuration to further protect your terminal server systems from malicious code.

“Do more with less” is the slogan that Microsoft used to launch WS2K3. With the new features and enhancements in Terminal Services, terminal server administrators can certainly take this slogan to heart. We now have native methods of grouping servers into load-balanced farms, managing their configuration and behavior through Group Policy, and distributing connection files to our users.

Through the course of this book, I have introduced you to the new features and taken you through the process of building a terminal server infrastructure, both small and large. You have seen how to enable the Terminal Services Role, set up a Session Directory, assign applications to your servers through Group Policy, and configure the Automatic Updates client to pull updates from either Microsoft or an SUS server. I hope you see how powerful Terminal Services can be, and how easy it is to maintain if set up and configured properly.

From the smallest business to the largest corporation, Terminal Services provides a powerful tool for centralizing your computing needs. It is versatile enough to provide entire desktop replacements or give users access to a single application. With a little research and planning, you are ready to begin building terminal server infrastructures that are stable, highly available, easy to scale, and easily managed.

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