Lesson: Software Update Services

To maintain a secure computing environment, it is critical to keep systems up to date with security patches. Since 1998, Microsoft has provided Windows Update as a Web-based source of information and downloads. With Windows XP and Windows 2000 service pack 3, Microsoft added Automatic Updates, whereby a system automatically connects to Windows Update and downloads any new, applicable patches or "hot-fixes." Although the Windows Update servers and Automatic Updates client achieve the goal of keeping systems current, many administrators are uncomfortable with either computers or users deciding which patches should be installed, because a patch might interfere with the normal functioning of a business-critical application.

The latest improvements to these technologies deliver Software Update Services (SUS). SUS is a client-server application that enables a server on your intranet to act as a point of administration for updates. You can approve updates for SUS clients, which then download and install the approved updates automatically without requiring local administrator account interaction.

In this lesson you will learn to install and administer SUS on a Windows Server 2003 computer. The following lesson will guide you through issues related to client configuration.

After this lesson, you will be able to

- Install SUS on a Windows Server 2003 computer
- Configure SUS
- Install or deploy Automatic Updates for SUS clients
- Administer SUS and Automatic Updates
- Monitor, troubleshoot, back up, and restore SUS

Estimated lesson time: 35 minutes

Understanding SUS

Since 1998, Microsoft Windows operating systems have supported Windows Update, a globally distributed source of updates. Windows Update servers interact with client-side software to identify critical updates, security rollups, and enhancements that are appropriate to the client platform, and then to download approved patches.

Administrators wanted a more centralized solution that would assure more direct control over updates that are installed on their clients. Software Update Services is a response to that need. SUS includes several major components:

- Software Update Services, running on an Internet Information Services (IIS) server The server-side component is responsible for synchronizing information about available updates and, typically, downloading updates from the Microsoft Internet-based Windows Update servers or from other intranet servers running SUS.
- The SUS administration Web site All SUS administration is Web-based. After installing and configuring SUS, administration typically consists of ensuring that the SUS server is synchronizing successfully, and approving updates for distribution to network clients.
- Automatic Updates The Automatic Updates client is responsible for downloading updates from either Windows Update or an SUS server, and installing those updates based on a schedule or an administrator's initiation.
- Group Policy settings Automatic Updates clients can be configured to synchronize from an SUS server rather than the Windows Update servers by modifying the clients' registries or, more efficiently, by configuring Windows Update policies in a Group Policy Object (GPO).

Installing SUS on a Windows Server 2003 Computer

SUS has both client and server components. The server component runs on a Windows 2000 Server (Service Pack 2 or later) or a Windows Server 2003 computer. Internet Information Services (IIS) must be installed before setting up SUS and, as you learned in Chapter 6, "Files and Folders," IIS is not installed by default on Windows Server 2003. For information about how to install IIS, see Chapter 6.

SUS is not included with the Windows Server 2003 media, but it is a free download from the Microsoft SUS Web site at *http://go.microsoft.com/fwlink/?LinkID=6930*.

> **Note** The SUS download is not available in every localized language. However, this download determines the installation and administrative interface for the server component only. Patches for *all* locales can be made available through SUS.

After downloading the latest version of SUS, double-click the file and the installation routine will start. After you agree to the license agreement, choose Custom setup and the Setup Wizard will prompt you for the following information:

- Choose File Locations Each Windows Update patch consists of two components: the patch file itself and metadata that specifies the platforms and languages to which the patch applies. SUS always downloads metadata, which you will use to approve updates and which clients on your intranet will retrieve from SUS. You can choose whether to download the files themselves and, if so, where to save the updates.

Tip If you elect to maintain the update files on Microsoft Windows Update servers, Automatic Updates clients will connect to your SUS server to obtain the list of approved updates and will then connect to Microsoft Windows Update servers to download the files. You can thereby maintain control of client updating and take advantage of the globally dispersed hosting provided by Microsoft.

If you choose the Save The Updates To This Local Folder option, the Setup Wizard defaults to the drive with the most free space, and will create a folder called SUS on that drive. You can save the files to any NT file system (NTFS) partition; Microsoft recommends a minimum of 6 gigabytes (GB) of free space.

Note The SUS partition and the system partition must be formatted as NTFS.

- Language Settings Although the SUS administrative interface is provided in English and a few additional languages, patches are released for all supported locales. This option specifies the localized versions of Windows servers or clients that you support in your environment.
- Handling New Versions Of Previously Approved Updates Occasionally, an update itself is updated. You can direct SUS to approve automatically updates that are new versions of patches that you have already approved, or you can continue to approve each update manually.
- Ready To Install Before installation begins, the Setup Wizard will remind you of the URL clients should point to, *http://SUS_servername*. Note this path because you will use it to configure network clients.
- Installing Microsoft Software Update Services The Setup Wizard installs SUS.
- Completing the Microsoft Software Update Services Setup Wizard The final page of the Setup Wizard indicates the URL for the SUS administration site, *http://SUS_servername/SUSAdmin*. Note this path as well, because you will administer SUS from that Web location. When you click Finish, your Web browser will start and you will be taken automatically to the SUS administration page.

Software Update Services installs the following three components on the server:

- The Software Update Synchronization Service, which downloads content to the SUS server
- An IIS Web site that services update requests from Automatic Updates clients
- An SUS administration Web page, from which you can synchronize the SUS server and approve updates

IIS Lockdown

When run on a Windows 2000 server, the SUS Setup Wizard launches the IIS Lockdown Wizard to secure IIS 5.0. Windows Server 2003 is locked down by default, so IIS Lockdown is not necessary.

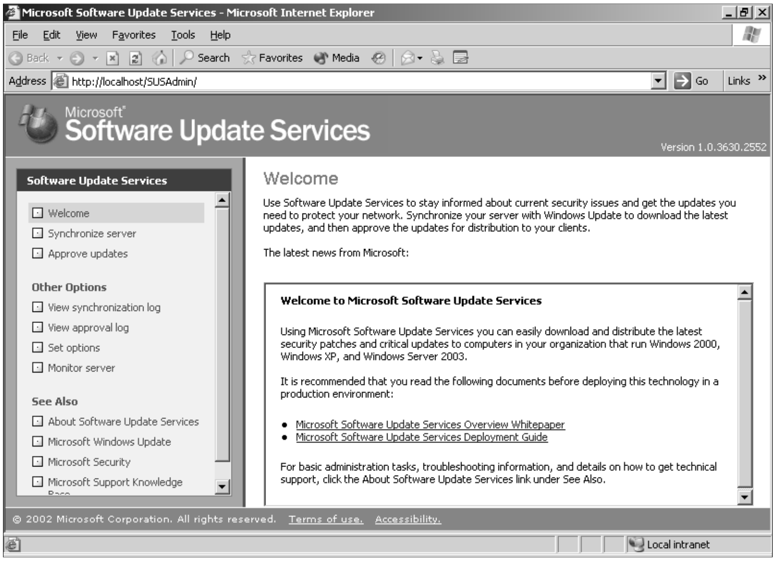
If you have Web applications running on an IIS server, those applications may not function properly after SUS has been installed. You can re-enable Internet Server Application Programming Interface (ISAPI) filters and open other components that are secured by IIS Lockdown. However, due to the sensitive nature of operating system updates, you should consider running SUS on a dedicated server without other IIS applications.

Configuring and Administering SUS

You will perform three administrative tasks related to SUS: configuring SUS settings, synchronizing content and approving content. These tasks are performed using the SUS Administration Web site, shown in Figure 9-1, which can be accessed by navigating to *http://SUS_servername/SUSAdmin* with Internet Explorer 5.5 or later, or by opening Microsoft Software Update Services from the Administrative Tools programs group. The administration of SUS is entirely Web-based.

Note You may need to add Server01 to the Local Intranet trusted site list to access the site. Open Internet Explorer and choose Internet Options from the Tools menu. Click the Security tab. Select Trusted Sites and click Sites. Add Server01 and Server01.contoso.com to the trusted site list.

Note You must be a local administrator on the SUS server to administer and configure Software Update Services. This is another consideration as you review dedicating the SUS server. With a dedicated SUS server, you can delegate administration of SUS without inadvertently delegating authority over other server roles or applications.


Microsoft Software Update Services - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost/SUSAdmin/
Go Links
Microsoft Software Update Services
Version 1.0.3630.2552
Software Update Services
Welcome
Synchronize server
Approve updates
Other Options
View synchronization log
View approval log
Set options
Monitor server
See Also
About Software Update Services
Microsoft Windows Update
Microsoft Security
Microsoft Support Knowledge Base
© 2002 Microsoft Corporation. All rights reserved. Terms of use. Accessibility.
Local intranet

Welcome

Use Software Update Services to stay informed about current security issues and get the updates you need to protect your network. Synchronize your server with Windows Update to download the latest updates, and then approve the updates for distribution to your clients.

The latest news from Microsoft:

Welcome to Microsoft Software Update Services

Using Microsoft Software Update Services you can easily download and distribute the latest security patches and critical updates to computers in your organization that run Windows 2000, Windows XP, and Windows Server 2003.

It is recommended that you read the following documents before deploying this technology in a production environment:

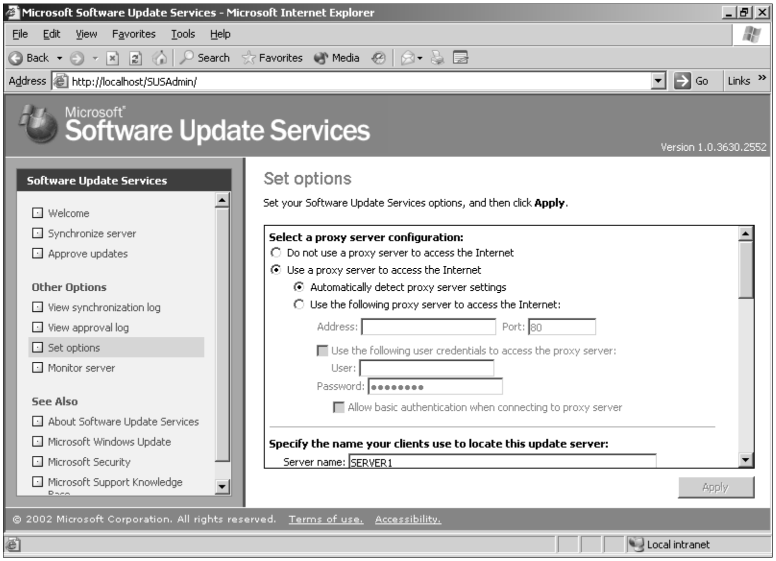
- Microsoft Software Update Services Overview Whitepaper
- Microsoft Software Update Services Deployment Guide

For basic administration tasks, troubleshooting information, and details on how to get technical support, click the About Software Update Services link under See Also.

Figure 9-1 The SUS Administration Web site

Configuring Software Update Services

Although some of the configuration of SUS can be specified during a custom installation, all SUS settings are accessible from the SUS Administration Web page. From the Software Update Services administration page, click Set Options in the left navigation bar. The Set Options page is shown in Figure 9-2.


Microsoft Software Update Services - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost/SUSAdmin/
Go Links
Microsoft Software Update Services
Version 1.0.3630.2552
Software Update Services
Welcome
Synchronize server
Approve updates
Other Options
View synchronization log
View approval log
Set options
Monitor server
See Also
About Software Update Services
Microsoft Windows Update
Microsoft Security
Microsoft Support Knowledge Base
Apply
© 2002 Microsoft Corporation. All rights reserved. Terms of use. Accessibility.
Local intranet

Set options

Set your Software Update Services options, and then click **Apply**.

Select a proxy server configuration:

○ Do not use a proxy server to access the Internet
● Use a proxy server to access the Internet
  ● Automatically detect proxy server settings
  ○ Use the following proxy server to access the Internet:
    Address: Port: 80
    ☐ Use the following user credentials to access the proxy server:
    User:
    Password: ••••••••
    ☐ Allow basic authentication when connecting to proxy server

Specify the name your clients use to locate this update server:

Server name: SERVER1

Figure 9-2 The SUS Set Options page

The configuration settings are as follows:

- Proxy server configuration If the server running SUS connects to Windows Update using a proxy server, you must configure proxy settings.

> **Tip** Although the SUS server can be configured to access Windows Update through a proxy server that requires authentication, the Automatic Updates client cannot access Windows Update if the proxy server requires authentication. If your proxy server requires authentication, you can configure SUS to authenticate, and you must store all update content—files as well as metadata—locally.

- DNS name of the SUS server In the Server Name box, type the fully qualified domain name (FQDN) of the SUS server, for example, **sus1.contoso.com**.
- Content source The first SUS servDer you install will synchronize its content from Microsoft Windows Update. Additional SUS servers can synchronize from Windows Update, from a "parent" SUS server, or from a manually created content distribution point. See the sidebar, "SUS Topology" for more information.
- New versions of approved updates The Set Options page allows you to modify how SUS handles new versions of previously approved updates. This option is discussed earlier in the lesson.
- File storage You can modify the storage of metadata and update files. This option is also discussed earlier in the lesson.

> **Tip** If you change the storage location from a Windows Update server to a local server folder, you should immediately perform a synchronization to download the necessary packages to the selected location.

- Languages This setting determines the locale specific updates that are synchronized. Select only languages for locales that you support in your environment.

> **Tip** If you remove a locale, the packages that have been downloaded are not deleted; however, clients will no longer receive those packages. If you *add* a locale, perform a manual synchronization to download appropriate packages for the new locale.

SUS Topology

Software Update Services is all about enabling you to control the approval and distribution of updates from Microsoft Windows Update. In a small organization, SUS can be as simple as one server, synchronizing from Windows Update and providing a list of approved updates to clients.

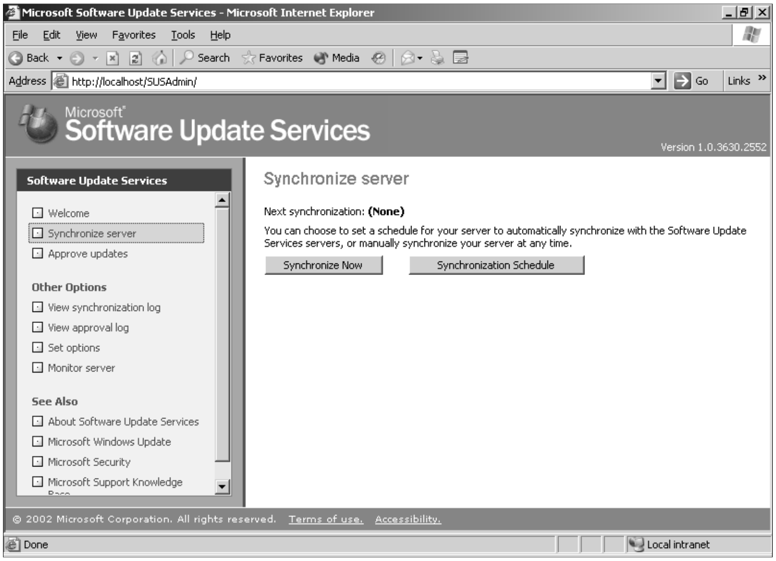
In a larger organization, SUS topologies can be developed to make SUS more scalable and efficient. Although the 70-290 certification exam expects you only to administer existing topologies, it is helpful to understand some of the design possibilities:

- Multiple server topology Each SUS server synchronizes content from Windows Update, and manages its own list of approved updates. This would be a variation of a single-server model, and each SUS server administrator would have control over that server's list of approved updates. Such a configuration would also allow an organization to maintain a variety of patch and update configurations (one per SUS server). Clients can be directed to obtain updates from an SUS server with the appropriate list of approved updates.
- Strict parent/child topology A "parent" SUS server synchronizes content from Windows Update and stores updates in a local folder. The SUS administrator then approves updates. Other SUS servers in the enterprise synchronize from the parent, and are configured, on the Set Options page, to Synchronize List Of Approved Items Updated From This Location (Replace Mode). This setting causes the child SUS servers to synchronize both the update files and the list of approved updates. Network clients can then be configured to retrieve updates from the SUS server in or closest to their site. In this configuration (Synchronize List Of Approved Items), administrators of child SUS servers *cannot* approve or disapprove updates; that task is managed on the parent SUS server only.
- Loose parent/child topology A "parent" SUS server synchronizes content from Windows Update and stores updates in a local folder. Other SUS servers in the enterprise synchronize from the parent. Unlike the strict configuration, these additional SUS servers do not synchronize the list of approved updates, so administrators of those servers can approve or disapprove updates independently. Although this topology increases administrative overhead, it is helpful when an organization wants to minimize Internet exposure (only the parent SUS server needs to connect to the Internet), and requires (as in the multiple-server model) distributed power of update approval or a variety of client patch and update configurations.

- Test/production topology This model allows an organization to create a testing or staging of updates. The parent SUS server downloads updates from Windows Update and an administrator approves updates to be tested. One or more clients retrieve updates from the parent SUS server and act as test platforms. Once updates have been approved, tested, and verified, the contents of the parent SUS server are copied to a manually created content distribution point on a second IIS server. Production SUS servers synchronize both the updates and the list of approved updates from the manual content distribution point. The steps for configuring such a manual distribution point are detailed in the Software Update Service Deployment White Paper, available from the Microsoft SUS Web site.

Synchronizing SUS

On the SUS Administration Web page, click Synchronize Server. On the Synchronize Server page, as shown in Figure 9-3, you can start a manual synchronization or configure automatic, scheduled synchronization. Click Synchronize Now and, when synchronization is complete, you will be informed of its success or failure, and, if the synchronization was successful, you will be taken to the Approve Updates page.



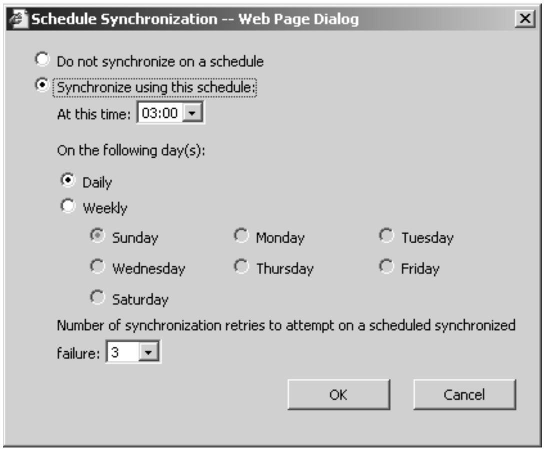
Synchronize server

Next synchronization: **(None)**

You can choose to set a schedule for your server to automatically synchronize with the Software Update Services servers, or manually synchronize your server at any time.

Figure 9-3 The Synchronize Server page

To schedule synchronization, click Synchronization Schedule. You can configure the time of day for synchronization, as shown in Figure 9-4, and whether synchronization occurs daily or weekly on a specified day. When a scheduled synchronization fails, SUS will try again for the Number Of Synchronization Retries To Attempt setting. Retries occur at 30-minute intervals.



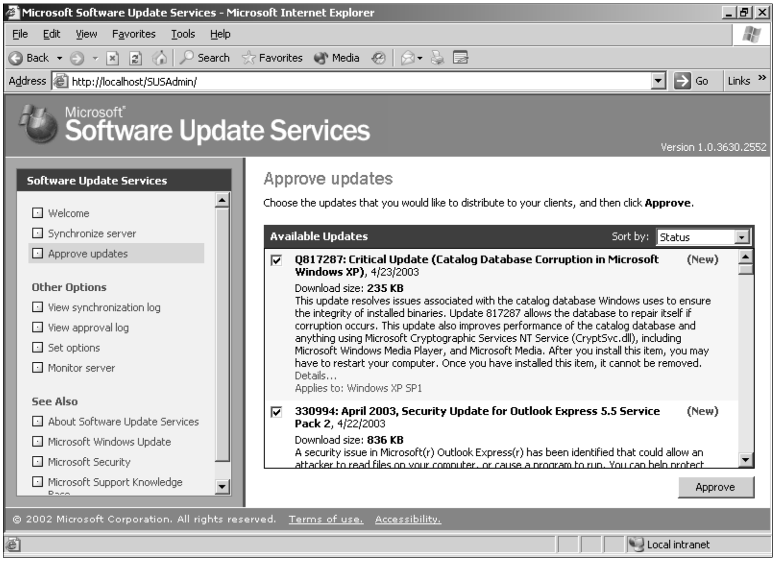
Schedule Synchronization -- Web Page Dialog

○ Do not synchronize on a schedule
● Synchronize using this schedule:
At this time: 03:00
On the following day(s):
● Daily
○ Weekly
● Sunday ○ Monday ○ Tuesday
○ Wednesday ○ Thursday ○ Friday
○ Saturday
Number of synchronization retries to attempt on a scheduled synchronized failure: 3

Figure 9-4 The Schedule Synchronization Web Page Dialog page

Approving Updates

To approve updates for distribution to client computers, click Approve Updates in the left navigation bar. The Approve Updates page, as shown in Figure 9-5, appears. Select the updates that you wish to approve, then click Approve. If you are unsure about the applicability of a particular update, click the Details link in the update summary. The Details page that opens will include a link to the actual *.cab file that is used to install the package, and a link to the Read More page about the update, which will open the Microsoft Knowledge Base article related to the update.



Microsoft Software Update Services - Microsoft Internet Explorer

Address http://localhost/SUSAdmin/

Microsoft Software Update Services
Version 1.0.3630.2552

Approve updates

Choose the updates that you would like to distribute to your clients, and then click **Approve**.

Available Updates Sort by: Status

☑ **Q817287: Critical Update (Catalog Database Corruption in Microsoft Windows XP)**, 4/23/2003 (New)
Download size: **235 KB**
This update resolves issues associated with the catalog database Windows uses to ensure the integrity of installed binaries. Update 817287 allows the database to repair itself if corruption occurs. This update also improves performance of the catalog database and anything using Microsoft Cryptographic Services NT Service (CryptSvc.dll), including Microsoft Windows Media Player, and Microsoft Media. After you install this item, you may have to restart your computer. Once you have installed this item, it cannot be removed.
Details...
Applies to: Windows XP SP1

☑ **330994: April 2003, Security Update for Outlook Express 5.5 Service Pack 2**, 4/22/2003 (New)
Download size: **836 KB**
A security issue in Microsoft(r) Outlook Express(r) has been identified that could allow an attacker to read files on your computer, or cause a program to run. You can help protect

Approve
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Local intranet

Figure 9-5 The Approve Updates page

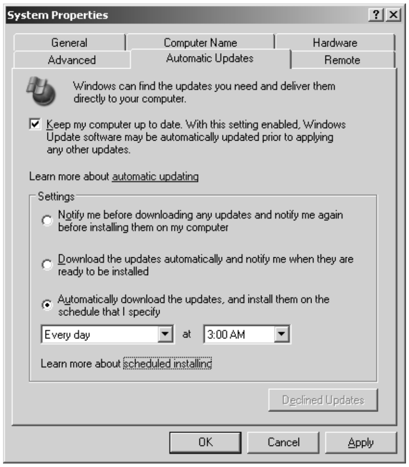
Tip The first synchronization will download dozens of updates. It may be tedious to scroll and click each check box for approval. Instead, after clicking the first check box, press TAB twice to navigate to the next check box, and press the spacebar to select (or clear) the item.

The Automatic Updates Client

The client component of SUS is Windows Automatic Updates, which is supported on Windows 2000, Windows XP, and Windows Server 2003. The Automatic Updates client is included with Windows Server 2003, Windows 2000 Service Pack 3, and Windows XP Service Pack 1.

For clients running earlier releases of the supported platforms, you can download Automatic Updates as a stand-alone client from the Microsoft SUS Web site, at *http://go.microsoft.com/fwlink/?LinkID=6930*. The client, provided as an .msi file, can be installed on a stand-alone computer or by means of Group Policy (assign the package in the Computer Configuration\Software Settings policy), SMS, or even a logon script. If a localized version of the client is not available, install the English version on any locale.

The Automatic Updates client of Windows Server 2003 is configured to connect automatically to the Microsoft Windows Update server and download updates, then prompt the user to install them. This behavior can be modified by accessing the Automatic Updates tab in the System Properties dialog box, accessible by clicking System in Control Panel, in Windows XP and Windows Server2003. In Windows 2000 click Automatic Updates in Control Panel. The Automatic Updates tab is shown in Figure 9-6. Automatic Updates can also be configured using GPOs or registry values.



Windows can find the updates you need and deliver them directly to your computer.

☑ Keep my computer up to date. With this setting enabled, Windows Update software may be automatically updated prior to applying any other updates.

○ Notify me before downloading any updates and notify me again before installing them on my computer

○ Download the updates automatically and notify me when they are ready to be installed

● Automatically download the updates, and install them on the schedule that I specify

Every day at 3:00 AM

Figure 9-6 The Automatic Updates tab of the System Properties dialog box

Download Behavior

Automatic Updates supports two download behaviors:

- Automatic Updates are downloaded without notification to the user.
- Notification If Automatic Updates is configured to notify the user before downloading updates, it registers the notification of an available update in the system event log and to a logged-on administrator of the computer. If an administrator is not logged on, Automatic Updates waits for a user with administrator credentials before offering notification by means of a balloon in the notification area of the system tray.

Once update downloading has begun, Automatic Updates uses the Background Intelligent Transfer Service (BITS) to perform the file transfer using idle network bandwidth. BITS ensures that network performance is not hindered due to file transfer. All patches are checked by the SUS server to determine if they have been correctly signed by Microsoft. Similarly, the Automatic Updates client confirms the Microsoft signature and also examines the cyclical redundancy check (CRC) on each package before installing it.

Installation Behavior

Automatic Updates provides two options for installation:

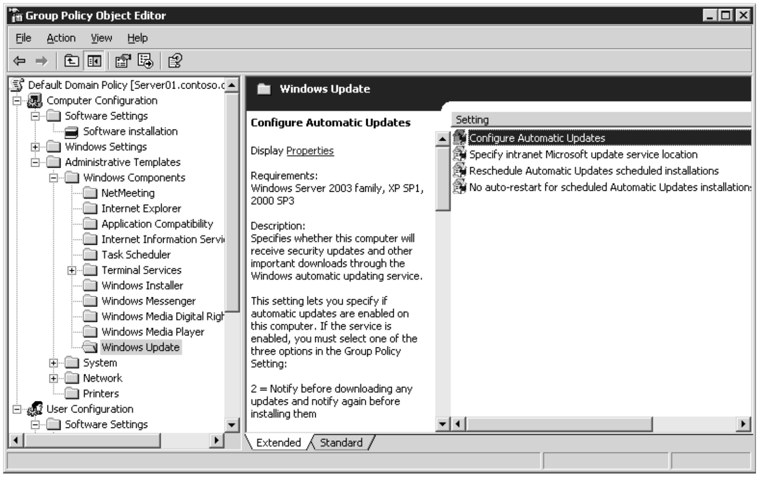
- Notification Automatic Updates registers an event in the system log indicating that updates are ready for installation. Notification will wait until a local administrator is logged on before taking further action. When an administrative user is logged on, a balloon notification appears in the system tray. The administrator clicks the balloon or the notification icon, and then may select from available updates before clicking Install. If an update requires restarting the computer, Automatic Updates cannot detect additional updates that might be applicable until after the restart.
- Automatic (Scheduled) When updates have been downloaded successfully, an event is logged to the system event log. If an administrator is logged on, a notification icon appears, and the administrator can manually launch installation at any time until the scheduled installation time.

Tip If a computer is not turned on at the scheduled Automatic Updates installation time, installation will wait to the next scheduled time. If the computer is never on at the scheduled time, installation will not occur. Ensure that systems remain turned on to be certain that Automatic Updates install successfully.At the scheduled installation time, an administrator who is logged on will be notified with a countdown message prior to installation, and will have the option to cancel installation, in which case the installation is delayed until the next scheduled time. If a non-administrator is logged on, a warning dialog appears, but the user cannot delay installation. If no user is logged on, installation occurs automatically. If an update requires restart, a five-minute countdown notification appears informing users of the impending restart. Only an administrative user can cancel the restart.

Configuring Automatic Updates Through Group Policy

The Automatic Updates client will, by default, connect to the Microsoft Windows Update server. Once you have installed SUS in your organization, you can direct Automatic Updates to connect to specific intranet servers by configuring the registry of clients manually or by using Windows Update group policies.

To configure Automatic Updates using GPOs, open a GPO and navigate to the Computer Configuration\Administrative Templates\Windows Components\Windows Update node. The Windows Update policies are shown in Figure 9-7.



Configure Automatic Updates

Display Properties

Requirements:
Windows Server 2003 family, XP SP1, 2000 SP3

Description:
Specifies whether this computer will receive security updates and other important downloads through the Windows automatic updating service.

This setting lets you specify if automatic updates are enabled on this computer. If the service is enabled, you must select one of the three options in the Group Policy Setting:

2 = Notify before downloading any updates and notify again before installing them

Setting
- Configure Automatic Updates
- Specify intranet Microsoft update service location
- Reschedule Automatic Updates scheduled installations
- No auto-restart for scheduled Automatic Updates installation

Figure 9-7 Windows Update policies

> **Note** If you edit policy on a Windows 2000 Active Directory server, the policies may not appear. Automatic Updates policies are described by the %Windir%\Inf\Wuau.inf administrative template, which is installed by default when Automatic Updates is installed. If Automatic Updates has not been installed on the domain controller to which you are connected (typically, the PDC Emulator), you must right-click the Administrative Templates node and choose Add/Remove Templates, click Add, then locate the Wuau.inf template, perhaps by copying it from a system that does have Automatic Updates installed.

The following policies are available, each playing an important role in configuring effective update distribution in your enterprise:

- Configure Automatic Updates The Configure Automatic Updates Behavior determines the behavior of the Automatic Updates client. There are three options: Notify For Download And Notify For Install, Auto Download And Notify For Install, and Auto Download And Schedule The Install. These options are combinations of the installation and download behaviors discussed earlier in the lesson.

- Reschedule Automatic Updates Scheduled Installations If installations are scheduled, and the client computer is turned off at the scheduled time, the default behavior is to wait for the next scheduled time. The Reschedule Automatic Updates Scheduled Installations policy, if set to a value between 1 and 60, causes Automatic Updates to reschedule installation for the specified number of minutes after system startup.
- No Auto-Restart For Scheduled Automatic Updates Installations This policy causes Automatic Updates to forego a restart required by an installed update when a user is logged on to the system. Instead, the user is notified that a restart is required for installation to complete, and can restart the computer at his or her discretion. Remember that Automatic Updates cannot detect new updates until restart has occurred.
- Specify Intranet Microsoft Update Service Location This policy allows you to redirect Automatic Updates to a server running SUS. By default, the client will log its interactions on the SUS server to which it connects. However, this policy allows you to point clients to another server running IIS for statistics logging. This dual policy provides the opportunity for clients to obtain updates from a local SUS server, but for all clients to log SUS statistics in a single location for easier retrieval and analysis of the log data, which is stored as part of the IIS log. IIS logs typically reside in %Windir%\System32\Logfiles\W3svc1.

Automatic Updates clients poll their SUS server every 22 hours, minus a random offset.

Any delay in patching should be treated as unacceptable when security vulnerabilities are being actively exploited. In such situations, install the patch manually so that systems do not have to wait to poll, download, and install patches.

After approved updates have been downloaded from the SUS server, they will be installed as configured—manually or automatically—at the scheduled time. If an approved update is later unapproved, that update is not uninstalled; but it will not be installed by additional clients. An installed update *can* be uninstalled manually, using the Add Or Remove Programs application in Control Panel.

SUS Troubleshooting

Although SUS works well, there are occasions that warrant monitoring and troubleshooting.

Monitoring SUS

The Monitor Server page of the SUS Administration Web site displays statistics that reflect the number of updates available for each platform, and the date and time of the most recent update. The information is summarized from the Windows Update metadata that is downloaded during each synchronization. Metadata information is written to disk and stored in memory to improve performance as systems request platform appropriate updates.

You can also monitor SUS and Automatic Updates using the following logs:

- Synchronization Log You can retrieve information about current or past synchronizations, and the specific packages that were downloaded by clicking View Synchronization Log in the left navigation bar. You can also use any text editor to open the (Extensible Markup Language) XML–based database (History-Sync.xml) directly from the SUS Web site's \AutoUpdate\Administration directory in IIS.
- Approval Log For information about packages that have been approved, click View Approval Log in the left navigation bar. Alternatively, you can open History-Approve.xml from the SUS Web site's \AutoUpdate\Administration directory in IIS.
- Windows Update Log The Automatic Updates client logs activity in the %Windir%\Windows Update.log file on the client's local hard disk.
- Wutrack.bin The client's interaction with SUS is logged to the specified statistics server's IIS logs, typically stored in the folder: %Windir%\System32\Logfiles \W3svc1. These logs, which are verbose and cryptic, are designed to be analyzed by programs, not by humans.

Exam Tip Although you should know what logs are available, and where they are located, you are not required for the 70-290 exam to be able to interpret cryptic messages or log entries. The SUS Deployment White Paper includes appendices with detailed information about event descriptions and log syntax.

SUS System Events

The synchronization service generates event log messages for each synchronization performed by the server, and when updates are approved. These messages can be viewed in the System log using Event Viewer. The events relate to the following scenarios:

- Unable to connect Automatic Updates could not connect to the update service (Windows Update or the computer's assigned SUS server).
- Install ready—no recurring schedule Updates listed in the event were downloaded and are pending installation. An administrator must click the notification icon and click Install.
- Install ready—recurring schedule Updates listed in the event are downloaded and will be installed at the date and time specified in the event.
- Installation success Updates listed in the event were installed successfully.

- Installation failure Updates listed in the event failed to install properly.
- Restart required—no recurring schedule An update requires a restart. If installation behavior is set for notification, restart must be performed manually. Windows cannot search for new updates until the restart has occurred.
- Restart required—recurring schedule When Automatic Updates is configured to automatically install updates, an event is registered if an update requires restart. Restart will occur within five minutes. Windows cannot search for new updates until after the restart has occurred.

Troubleshooting SUS

Software Update Services on a Windows Server 2003 computer may require the following troubleshooting steps:

- Reloading the memory cache If no new updates appear since the last time you synchronized the server, it is possible that no new updates are available. However, it is also possible that memory caches are not loading new updates properly. From the SUS administration site, click Monitor Server and then click Refresh.
- Restarting the synchronization service If you receive a message that the synchronization service is not running properly, or if you cannot modify settings in the Set Options page of the administration Web site, open the Microsoft Management Console (MMC) Services snap-in, right-click Software Update Services Synchronization Service and choose Restart.
- Restarting IIS If you cannot connect to the administration site, or if clients cannot connect to the SUS serve, restart the World Wide Web Publishing Service in the same manner.

  If Automatic Updates clients do not appear to be receiving updates properly, open the registry of a client and ensure that the following values appear in HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Windows\WindowsUpdate:

- WUServer Should have the URL of the SUS server, for example, *http: // SUS_Servername*
- WUStatusServer Should have the URL of the same SUS server or another IIS server on which synchronization statistics are logged

  And, in the AU subkey:

- UseWUServer Should be set to dword:00000001

SUS Backup and Recovery

As with any other server role or application, you must plan for recovery in the event of a server failure.

Backing Up SUS

To back up SUS, you must back up the folder that contains SUS content, the SUS Administration Web site, and the IIS metabase.

> **Exam Tip** The process described to back up the IIS metabase is useful not only for backing up SUS, but for any other Web site or application running on Windows Server 2003 and IIS 6.0.

First, back up the metabase—an XML database containing the configuration of IIS. Using the MMC IIS snap-in, select the server to back up and, from the Action menu, select All Tasks, then Backup/Restore Configuration. Click Create Backup and enter a name for the backup. When you click OK, the metabase is backed up.

Then back up the following using Ntbackup or another backup utility:

- The default Web site, which is located unless otherwise configured in C:\Inetpub\Wwwroot.
- The SUS Administration Web site. SUSAdmin is, by default, a subfolder of C:\Inetpub\Wwwroot. In that event, it will be backed up when you back up the default Web site.
- The AutoUpdate virtual directory, also by default a subfolder of C:\Inetpub\Wwwroot.
- The SUS content location you specified in SUS setup or the SUS options. You can confirm the SUS content location in IIS manager by clicking Default Web Site and examining the path to the Content virtual root in the details pane.
- The metabase backup directory, %Windir%\System32\Inetsrv\Metabac k, which contains the copy of the metabase made earlier.

> **See Also** For more information about the Ntbackup utility, see Chapter 7.

This process of backing up the metabase, and then backing up the components of SUS, should be repeated regularly because updates will be added and approved with some frequency.

SUS Server Recovery

To restore a failed SUS server, perform the steps described below. If a certain step is unnecessary, you may skip it, but perform the remaining steps in sequence.

1. Disconnect the server from the network to prevent it from being infected with viruses.
2. Install Windows Server 2003, being sure to give the server the same name it had previously.
3. Install IIS with the same components it had previously.
4. Install the latest service pack and security fixes. If the server must be connected to the network to achieve this step, take all possible precautions to prevent unnecessary exposure.
5. Install SUS into the same folder it was previously installed.
6. Run Ntbackup to restore the most recent backup of SUS. This will include the SUS content folder, the Default Web Site, including the SUSAdmin and AutoUpdate virtual directories, and the IIS metabase backup.
7. Open the MMC IIS snap-in and select the server to restore. From the Action menu, select All Tasks, then Backup/Restore Configuration and select the backup that was just restored. Click Restore.
8. Confirm the success of your recovery by opening the SUS Administration Web site and clicking Set Options. Check that the previous settings are in place, and that the previously approved updates are still approved.

> **Note** The preceding steps apply to Windows Server 2003 only. If you are recovering a Windows 2000-based SUS server, refer to SUS documentation for appropriate steps.

Lesson Review

The following questions are intended to reinforce key information presented in this lesson. If you are unable to answer a question, review the lesson materials and try the question again. You can find answers to the questions in the "Questions and Answers" section at the end of this chapter.

1. You are configuring a Software Update Services infrastructure. One server is synchronizing metadata and content from Windows Update. Other servers (one in each site) are synchronizing content from the parent SUS server. Which of the following steps is required to complete the SUS infrastructure?
    - **a.** Configure Automatic Updates clients using Control Panel on each system

   b. Configure GPOs to direct clients to the SUS server in their sites
   c. Configure a manual content distribution point
   d. Approve updates using the SUS administration page

2. You are configuring SUS for a group of Web servers. You want the Web servers to update themselves nightly based on a list of approved updates on your SUS server. However, once in a while an administrator is logged on, performing late-night maintenance on a Web server, and you do not want update installation and potential restart to interfere with those tasks. What Windows Update policy configuration should you use in this scenario?
   a. Notify For Download And Notify For Install
   b. Auto Download And Notify For Install
   c. Auto Download And Schedule The Install

3. You want all network clients to download and install updates automatically during night hours, and you have configured scheduled installation behavior for Automatic Updates. However, you discover that some users are turning off their machines at night, and updates are not being applied. Which policy allows you to correct this situation without changing the installation schedule?
   a. Specify Intranet Microsoft Update Service Location
   b. No Auto-Restart For Scheduled Automatic Updates Installations
   c. Reschedule Automatic Updates Scheduled Installations
   d. Configure Automatic Update

Lesson Summary

- SUS is an intranet application that runs on IIS 6.0 (or on IIS 5.0 on a Windows 2000 Server) and is administered through a Web-based administration site: *http: // SUS_Servername/SUSAdmin*.
- The SUS server synchronizes information about critical updates and security rollups and allows an administrator to configure approval centrally for each update. Typically, an enterprise configures SUS to download the actual update files as well.
- Automatic Updates, which runs on Windows 2000, Windows XP, and Windows Server 2003, is responsible for downloading and installing updates on the client.
- Group Policy can be used to configure Automatic Updates to retrieve patches from an SUS server rather than from the Windows Update servers. GPOs can also drive the download, installation and restart behavior of the client computers.

Questions and Answers

Lesson Review

1. You are configuring a Software Update Services infrastructure. One server is synchronizing metadata and content from Windows Update. Other servers (one in each site) are synchronizing content from the parent SUS server. Which of the following steps is required to complete the SUS infrastructure?

   a. Configure Automatic Updates clients using Control Panel on each system

   b. Configure GPOs to direct clients to the SUS server in their sites

   c. Configure a manual content distribution point

   d. Approve updates using the SUS administration page

   The correct answers are b and d.

2. You are configuring SUS for a group of Web servers. You want the Web servers to update themselves nightly based on a list of approved updates on your SUS server. However, once in a while an administrator is logged on, performing late-night maintenance on a Web server, and you do not want update installation and potential restart to interfere with those tasks. What Windows Update policy configuration should you use in this scenario?

   a. Notify For Download And Notify For Install

   b. Auto Download And Notify For Install

   c. Auto Download And Schedule The Install

   The correct answer is c. You want the Web servers to update themselves, so you must schedule the installation of updates. However, an administrator always has the option to cancel the installation.

3. You want all network clients to download and install updates automatically during night hours, and you have configured scheduled installation behavior for Automatic Updates. However, you discover that some users are turning off their machines at night, and updates are not being applied. Which policy allows you to correct this situation without changing the installation schedule?

   a. Specify Intranet Microsoft Update Service Location

   b. No Auto-Restart For Scheduled Automatic Updates Installations

   c. Reschedule Automatic Updates Scheduled Installations

   d. Configure Automatic Update

   The correct answer is c. Updates are automatically downloaded using background processes and idle bandwidth, but the installation is triggered by the specified schedule. If a computer is turned off at the installation time, it waits until the next scheduled date and time. The Reschedule Wait Time policy, if set between 1 and 60, causes Automatic Updates to start update installation 1 to 60 minutes after system startup.