

# Lesson 2: Implementing Patch Management

MOAC 70-411: Administering  
Windows Server 2012

# Overview

- Exam Objective 1.2: Implement Patch Management
- Understanding Windows Updates and Automatic Updates
- Deploying Windows Server Update Services (WSUS)
- Understanding System Center Configuration Manager (SCCM)

# Understanding Windows Updates and Automatic Updates

Lesson 2: Implementing Patch Management

# Windows Updates

**Windows Update:** The program that scans your system to determine the updates and fixes your system needs.

**Patch Tuesday:** The second Tuesday of each month, when Microsoft routinely releases security updates.

**Out-of-band patch:** A patch deemed critical or time-sensitive; released when needed.

**Out-of-band update:** An update released when needed.

# Hotfixes and Cumulative Patches

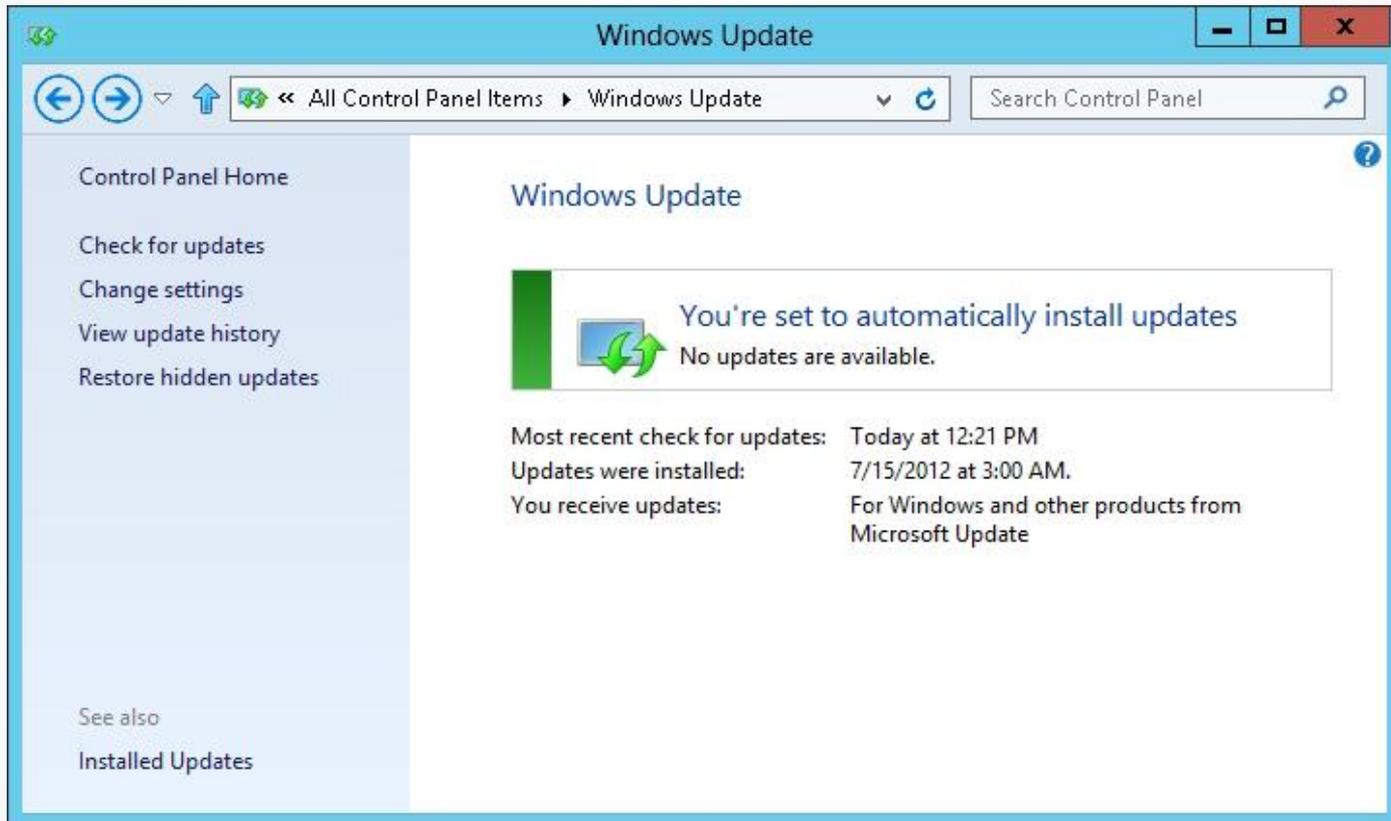
**Hotfix:** A single, cumulative package that includes one or more files used to address a problem in a software product, such as a software bug.

**Cumulative patch:** Multiple hotfixes combined into a single package.

# Using Automatic Updates

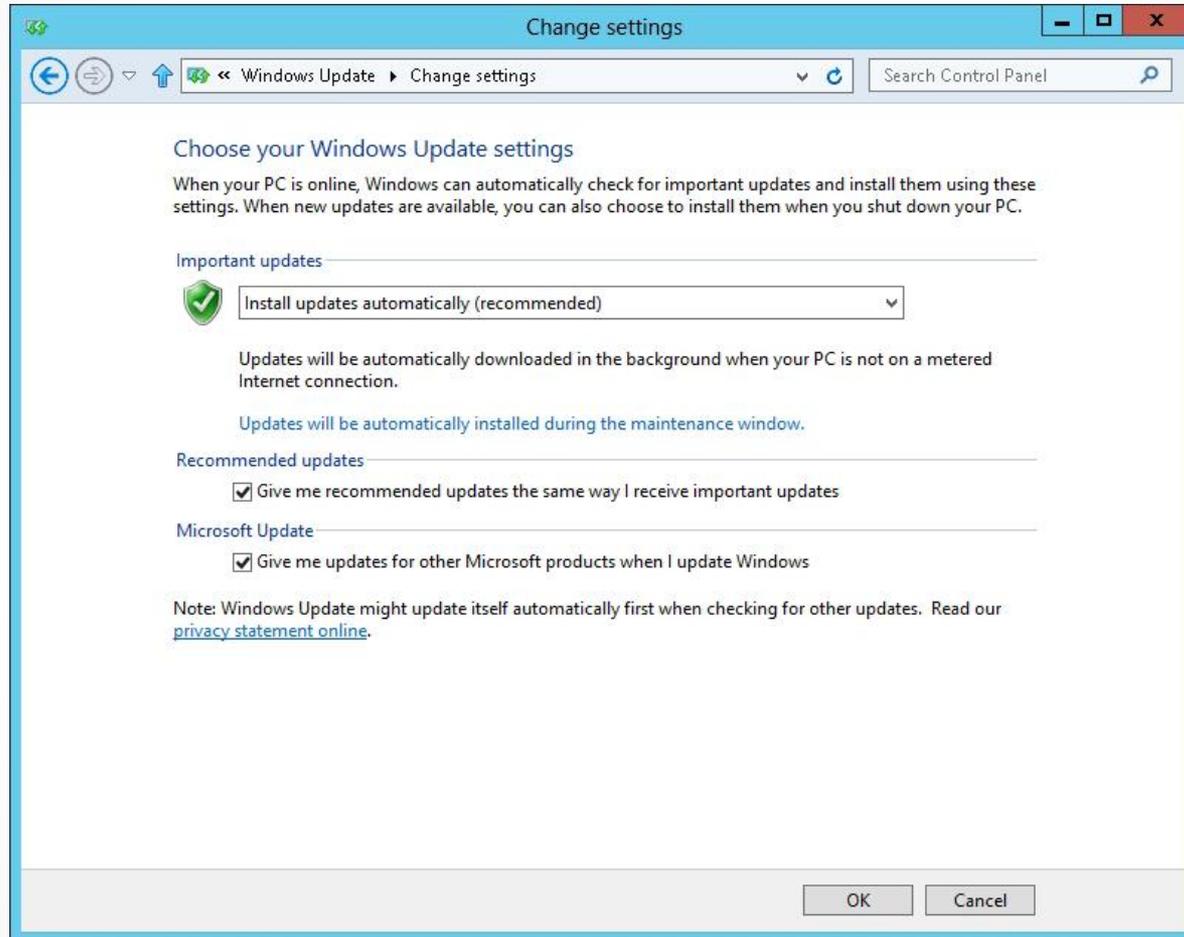
- Ensures that critical updates, security updates, and compatibility updates are made available for installation automatically
- Doesn't significantly affect regular use of the Internet
- Is ideal for small environments

# Update Windows Server 2012



Checking for updates

# Windows Update Settings



Changing Windows Update settings

# Automatic Updates Using Group Policies

Primary options:

- Notify for download and notify for install
- Auto download and notify for install
- Auto download and schedule the install
- Allow local admin to choose setting

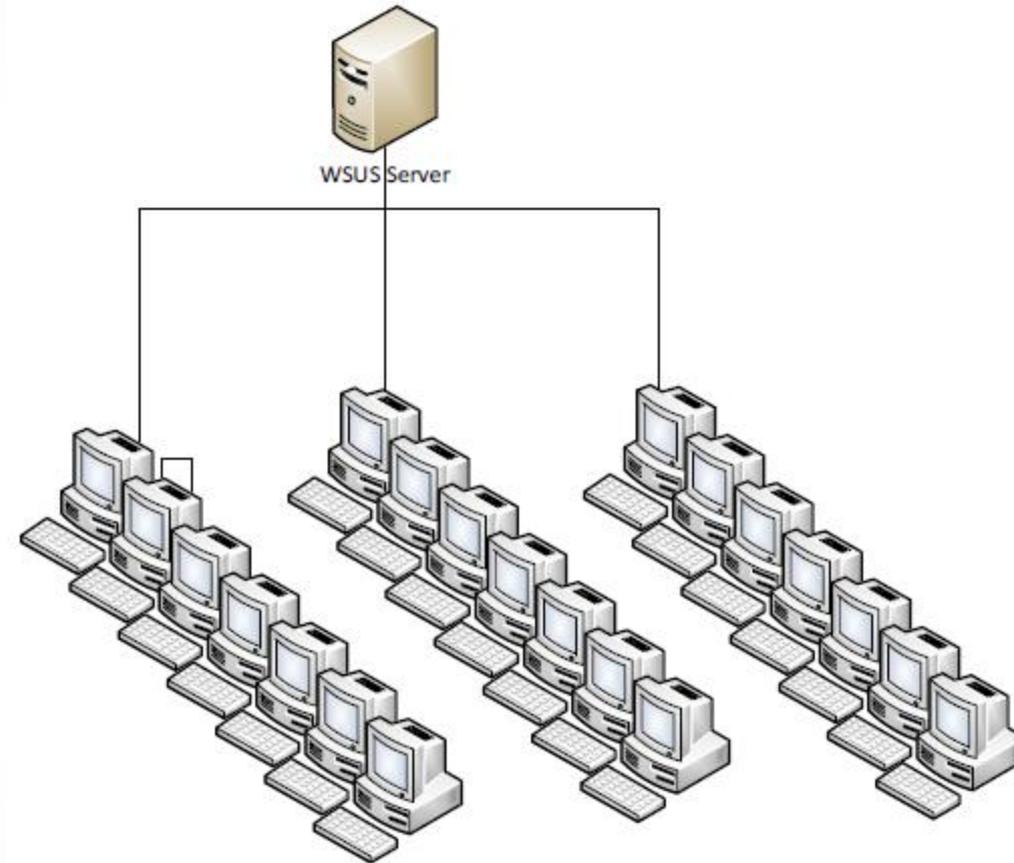
# Deploying Windows Server Update Services (WSUS)

Lesson 2: Implementing Patch Management

# Windows Server Update Services (WSUS)

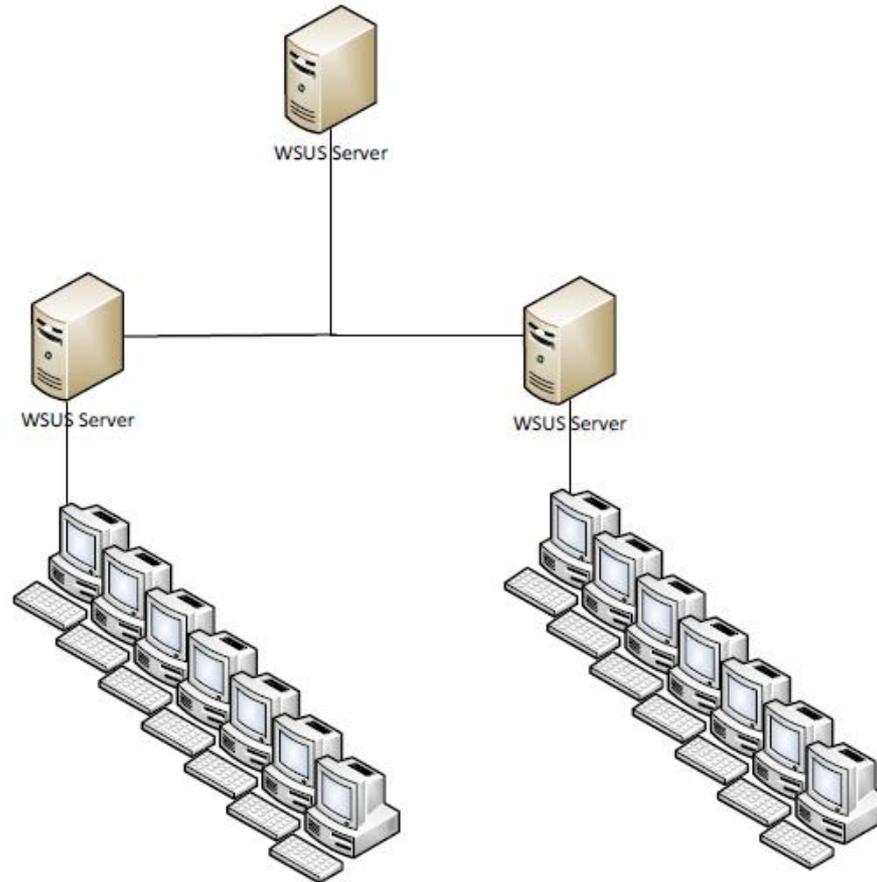
- A program included with today's Windows Servers
- Allows administrators to manage the distribution of updates and other patches to computers within an organization
- Can retrieve updates directly from Microsoft Update or from another WSUS server on the network
- Works in autonomous or replica mode

# A Single WSUS Server for a Few Hundred Computers



A simple WSUS configuration

# Multiple WSUS Servers for Larger Sites or Multiple Sites

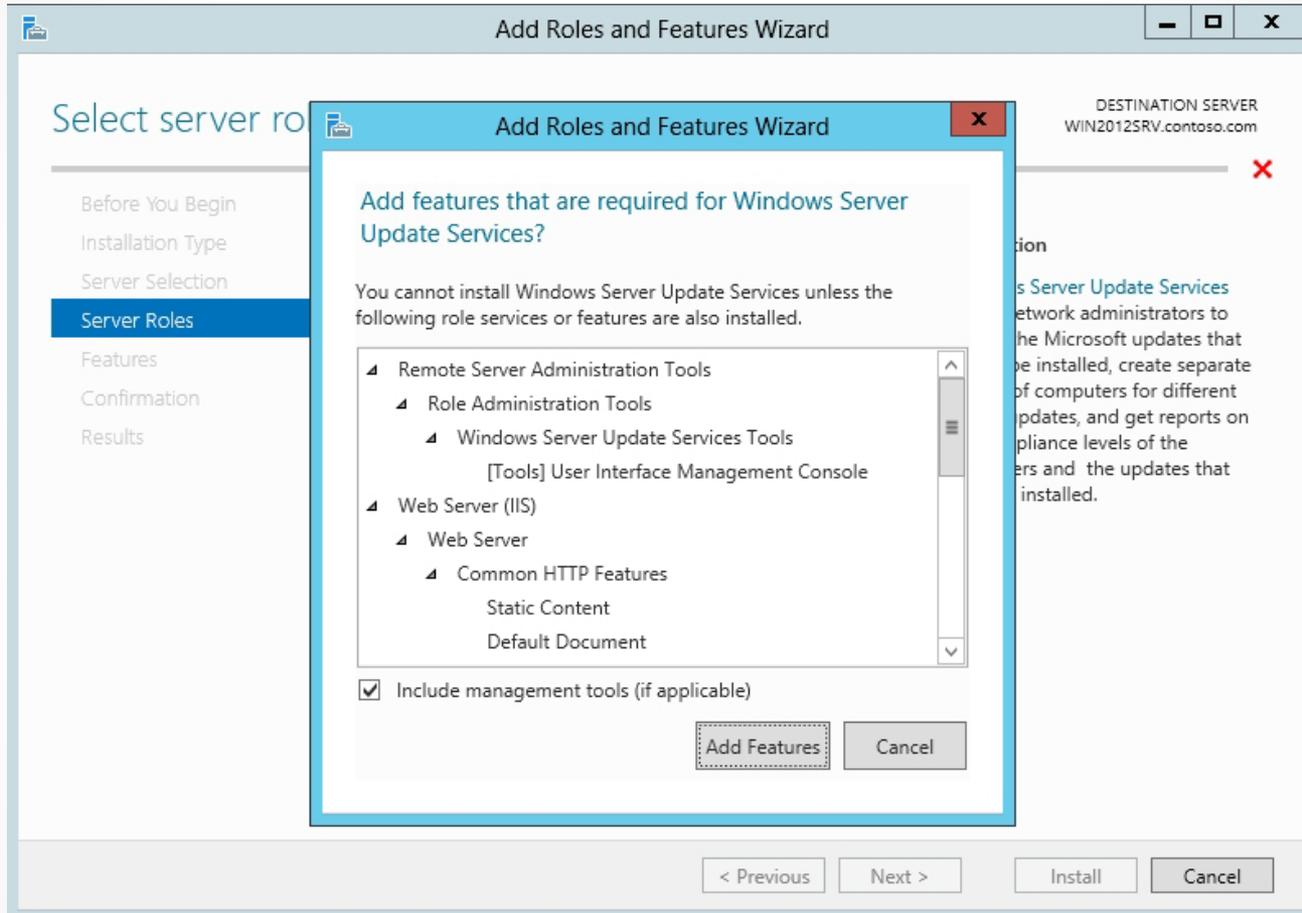


The WSUS hierarchy

# Installing WSUS

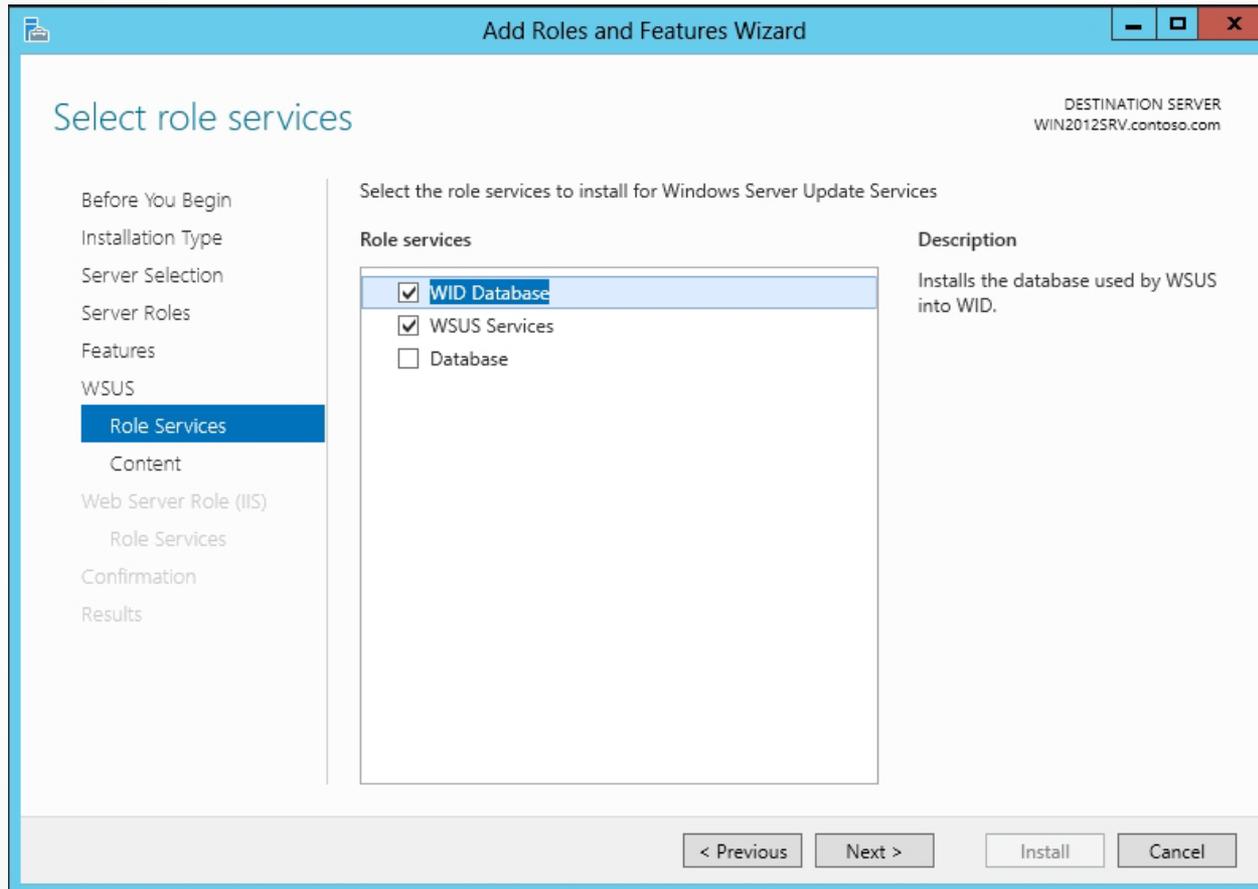
- Ensure WSUS server meets minimum hardware and software requirements.
- A single WSUS server can support thousands of clients.
- A single WSUS server with 4 GB of RAM and dual quad-core processor can support up to 100,000 clients.
- Multiple WSUS servers reduce the load on wide area network (WAN) links.

# Install WSUS



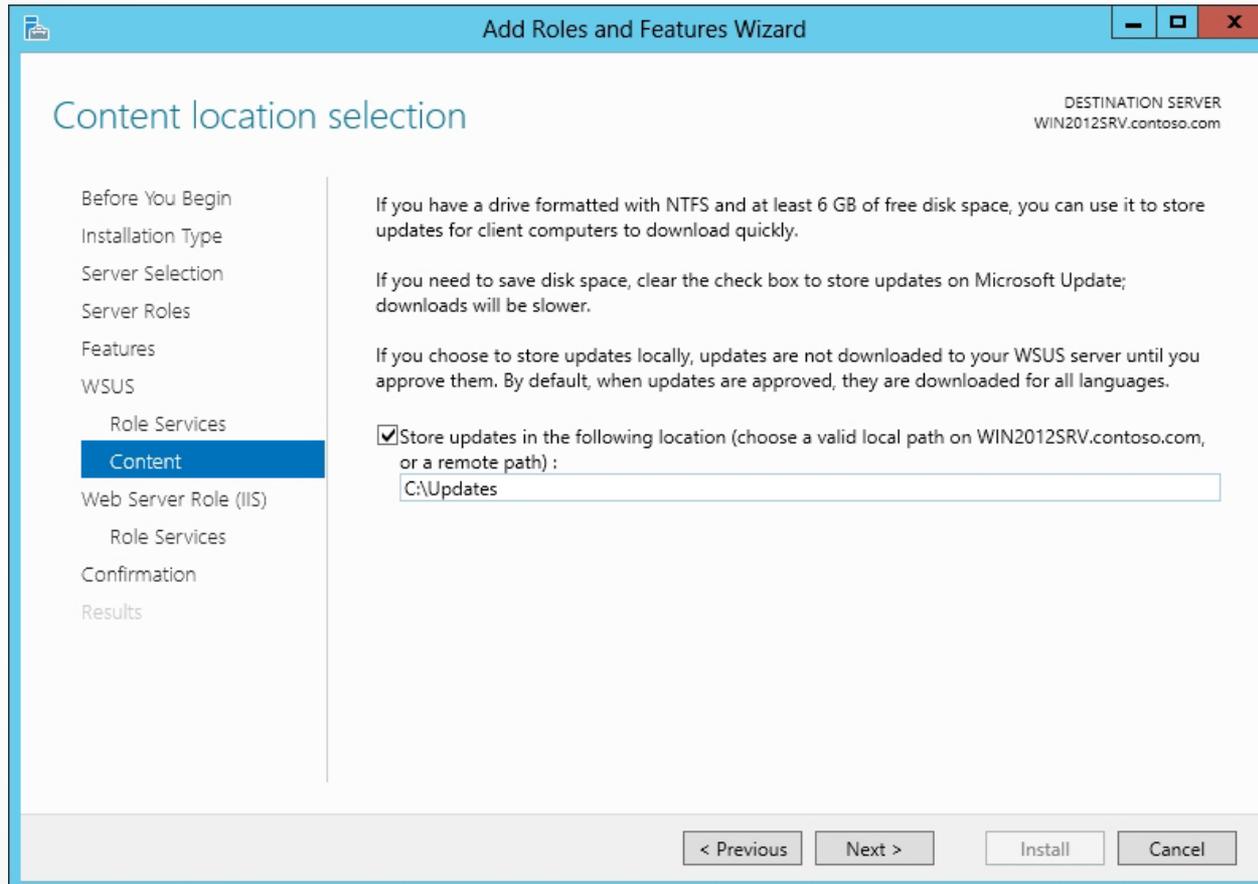
Adding features

# Install WSUS



Selecting the database type

# Install WSUS

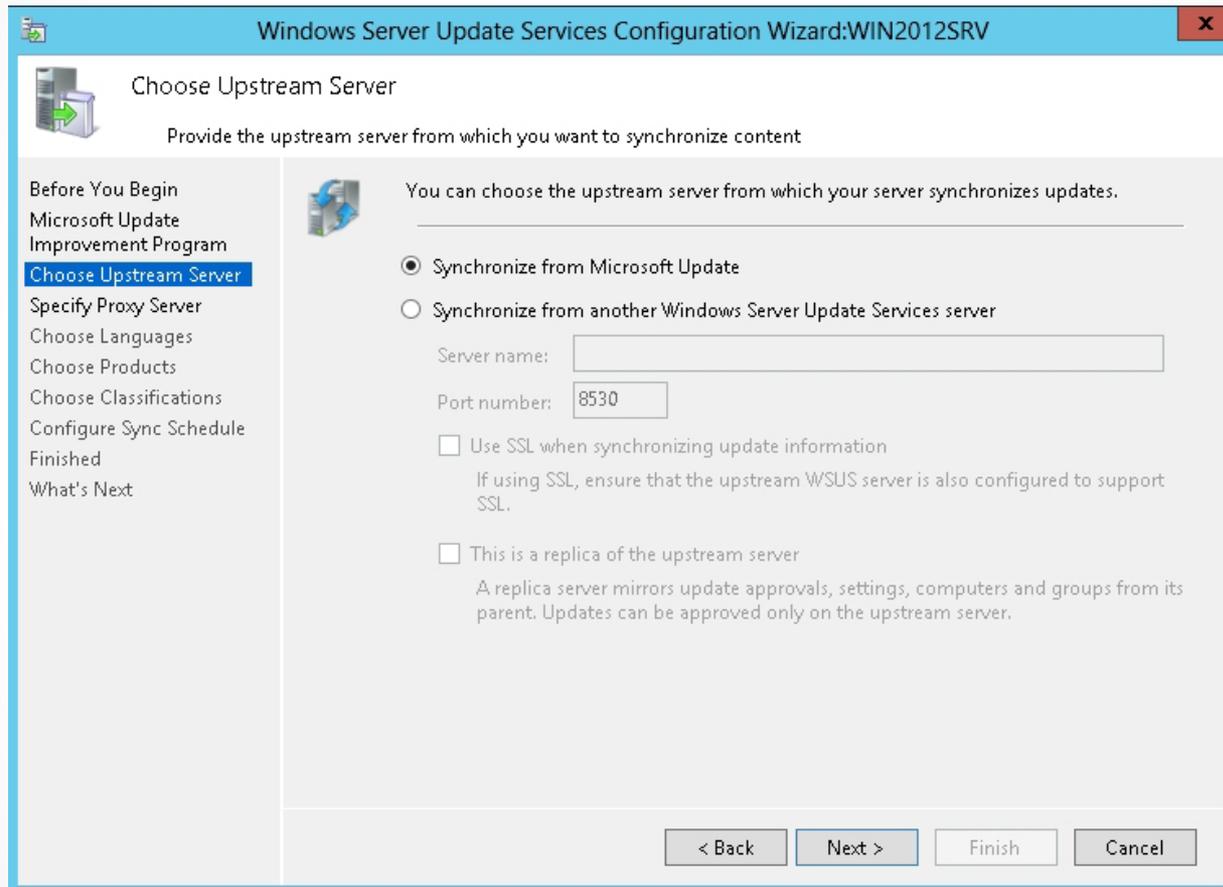


Specifying the content location

# Configuring WSUS

- Configure how the WSUS server will download updates, what updates will be downloaded, and if downloads will occur automatically or manually.
- Organize the client computers into computer groups.
- Configure the clients to use the WSUS using group policies.
- Approve the updates for deployment.
- Review the update status of the computers and generate reports as necessary.

# Initial Configuration of WSUS Using the Update Services Console



The screenshot shows the 'Choose Upstream Server' step of the Windows Server Update Services Configuration Wizard. The window title is 'Windows Server Update Services Configuration Wizard:WIN2012SRV'. The main heading is 'Choose Upstream Server' with a sub-instruction: 'Provide the upstream server from which you want to synchronize content'. A left-hand navigation pane lists steps: 'Before You Begin', 'Microsoft Update Improvement Program', 'Choose Upstream Server' (highlighted), 'Specify Proxy Server', 'Choose Languages', 'Choose Products', 'Choose Classifications', 'Configure Sync Schedule', 'Finished', and 'What's Next'. The main content area contains a heading 'You can choose the upstream server from which your server synchronizes updates.' followed by two radio button options: 'Synchronize from Microsoft Update' (selected) and 'Synchronize from another Windows Server Update Services server'. Below these are input fields for 'Server name:' and 'Port number:' (containing '8530'). There are also three checkboxes: 'Use SSL when synchronizing update information' (unchecked), 'This is a replica of the upstream server' (unchecked), and a note explaining that a replica server mirrors update approvals, settings, computers and groups from its parent.

Windows Server Update Services Configuration Wizard:WIN2012SRV

### Choose Upstream Server

Provide the upstream server from which you want to synchronize content

Before You Begin  
Microsoft Update Improvement Program  
**Choose Upstream Server**  
Specify Proxy Server  
Choose Languages  
Choose Products  
Choose Classifications  
Configure Sync Schedule  
Finished  
What's Next

You can choose the upstream server from which your server synchronizes updates.

Synchronize from Microsoft Update

Synchronize from another Windows Server Update Services server

Server name:

Port number:

Use SSL when synchronizing update information  
If using SSL, ensure that the upstream WSUS server is also configured to support SSL.

This is a replica of the upstream server  
A replica server mirrors update approvals, settings, computers and groups from its parent. Updates can be approved only on the upstream server.

< Back   Next >   Finish   Cancel

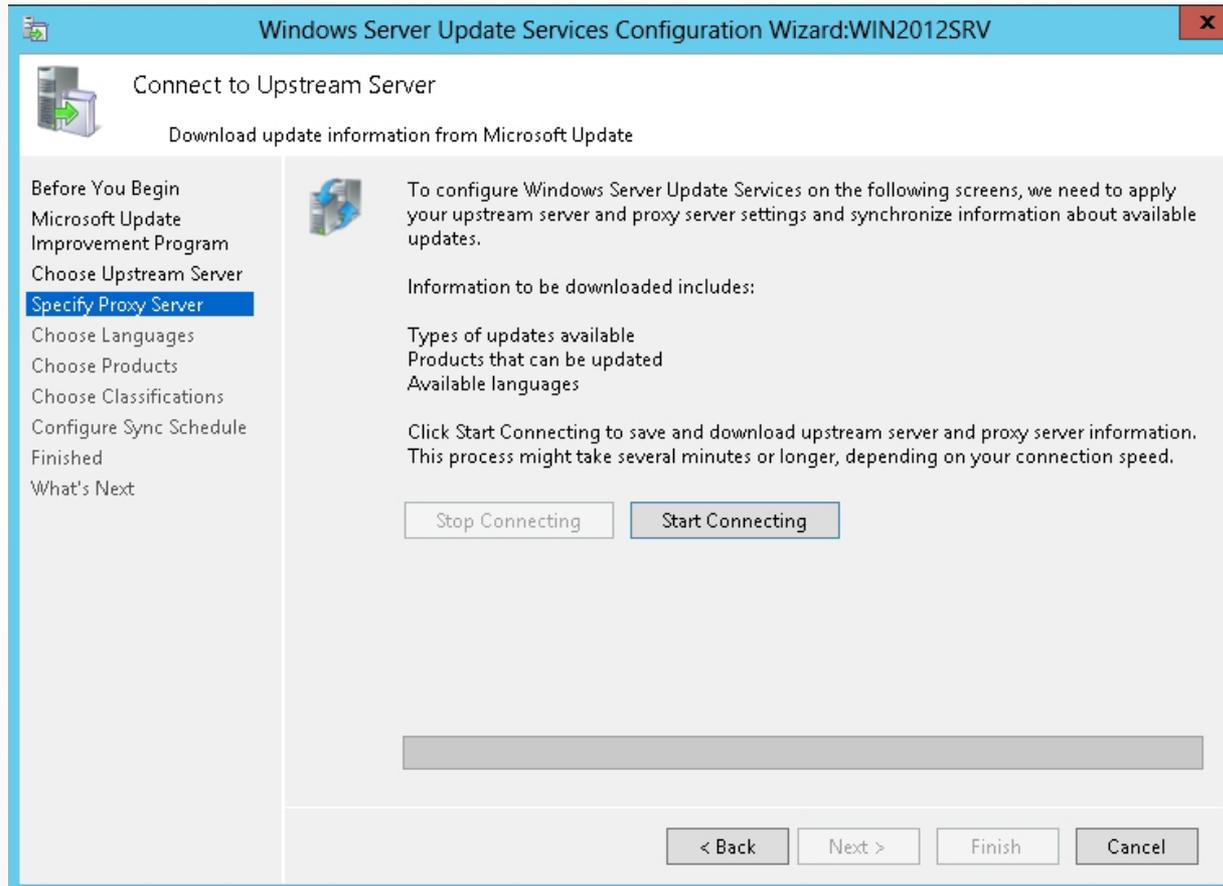
Choosing an upstream server

# Initial Configuration of WSUS Using the Update Services Console

The screenshot shows the 'Specify Proxy Server' page of the Windows Server Update Services Configuration Wizard. The window title is 'Windows Server Update Services Configuration Wizard: WIN2012SRV'. The page is titled 'Specify Proxy Server' and includes a sub-header: 'Provide proxy server settings for synchronizing updates with Microsoft Update'. A navigation pane on the left lists the following steps: 'Before You Begin', 'Microsoft Update Improvement Program', 'Choose Upstream Server', 'Specify Proxy Server' (highlighted), 'Choose Languages', 'Choose Products', 'Choose Classifications', 'Configure Sync Schedule', 'Finished', and 'What's Next'. The main content area features a globe icon and the text: 'If this server requires a proxy server to access the upstream server, you can configure the proxy server settings here.' Below this, there are four unchecked checkboxes with corresponding input fields: 1. 'Use a proxy server when synchronizing' with 'Proxy server name:' and 'Port number:' (set to 80) fields. 2. 'Use user credentials to connect to the proxy server' with 'User name:', 'Domain:', and 'Password:' fields. 3. 'Allow basic authentication (password is sent in cleartext)'. At the bottom, there are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

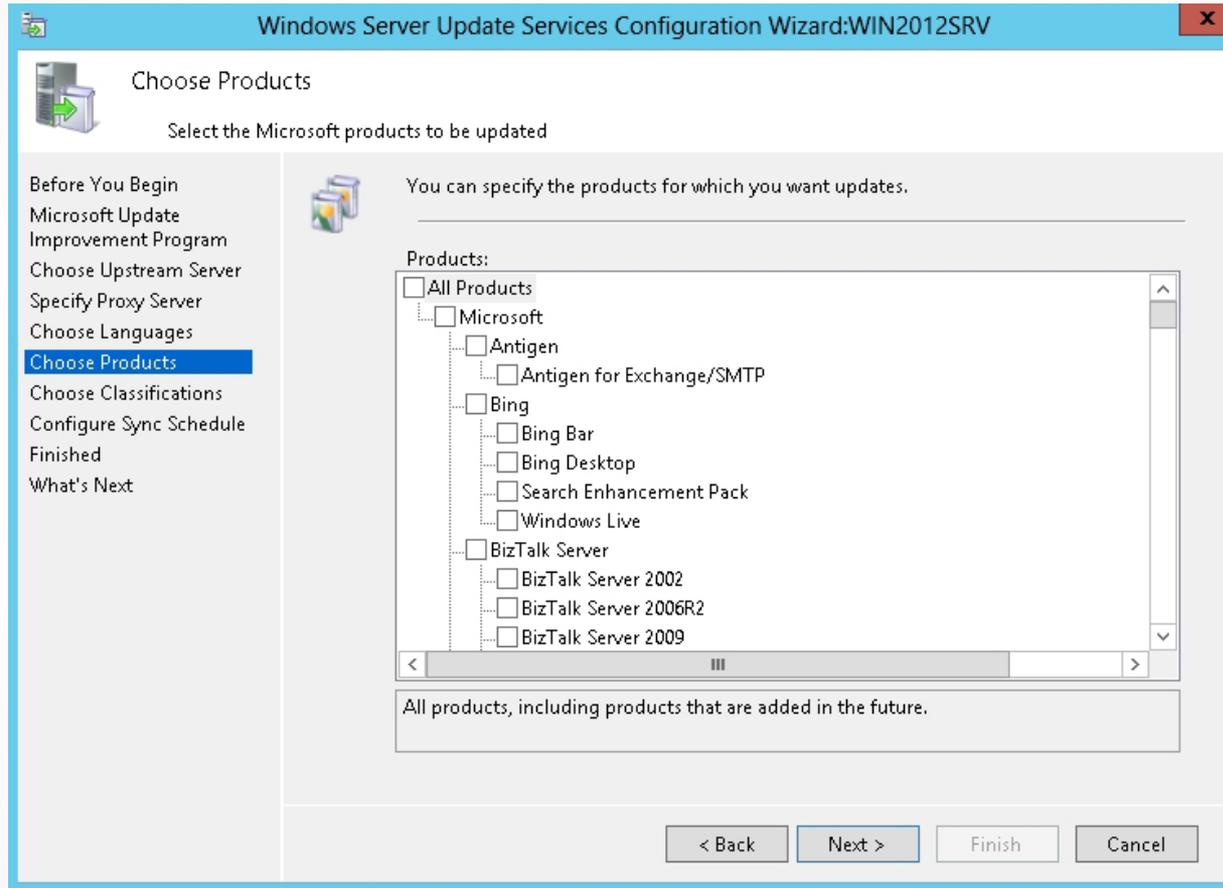
Using the Specify Proxy Server page

# Initial Configuration of WSUS Using the Update Services Console



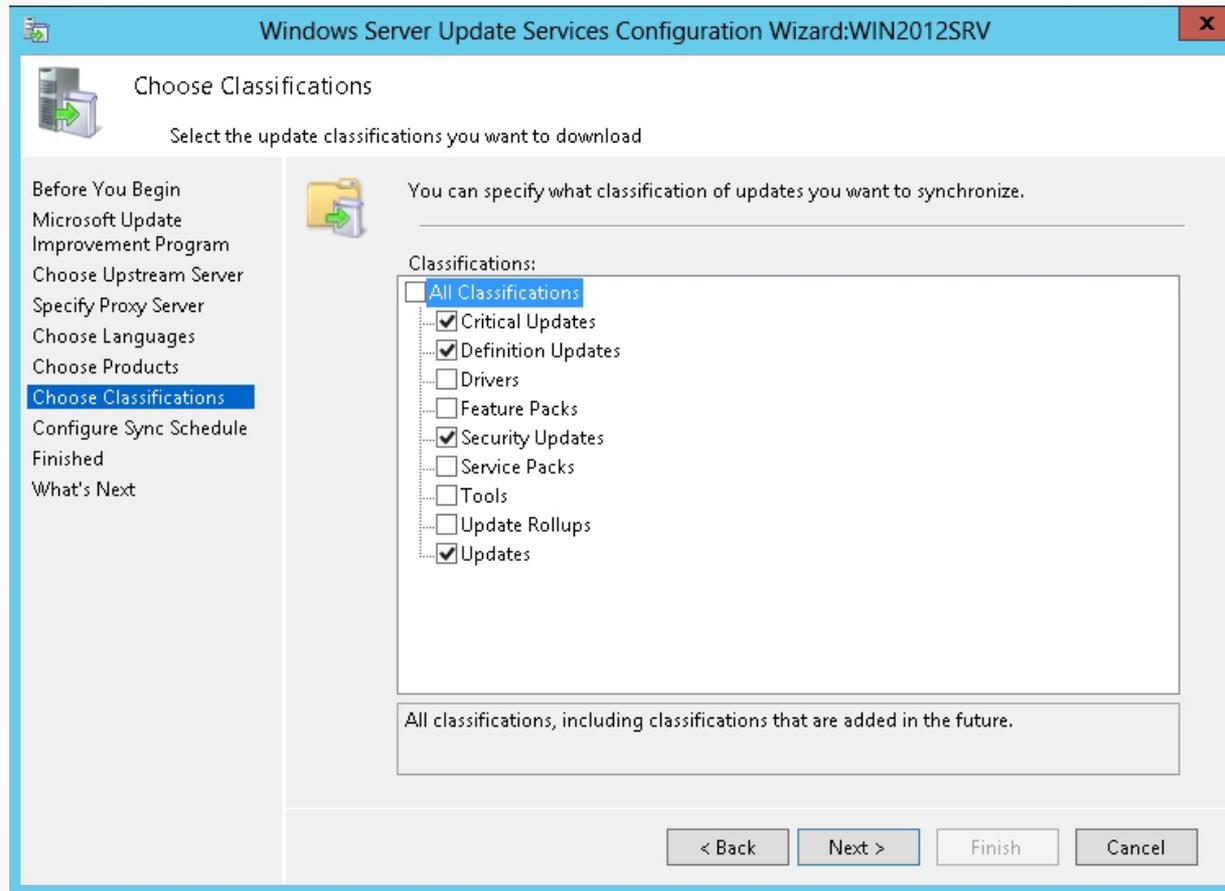
Connecting to an upstream server

# Initial Configuration of WSUS Using the Update Services Console



Selecting products

# Initial Configuration of WSUS Using the Update Services Console



Selecting classifications

# Initial Configuration of WSUS Using the Update Services Console

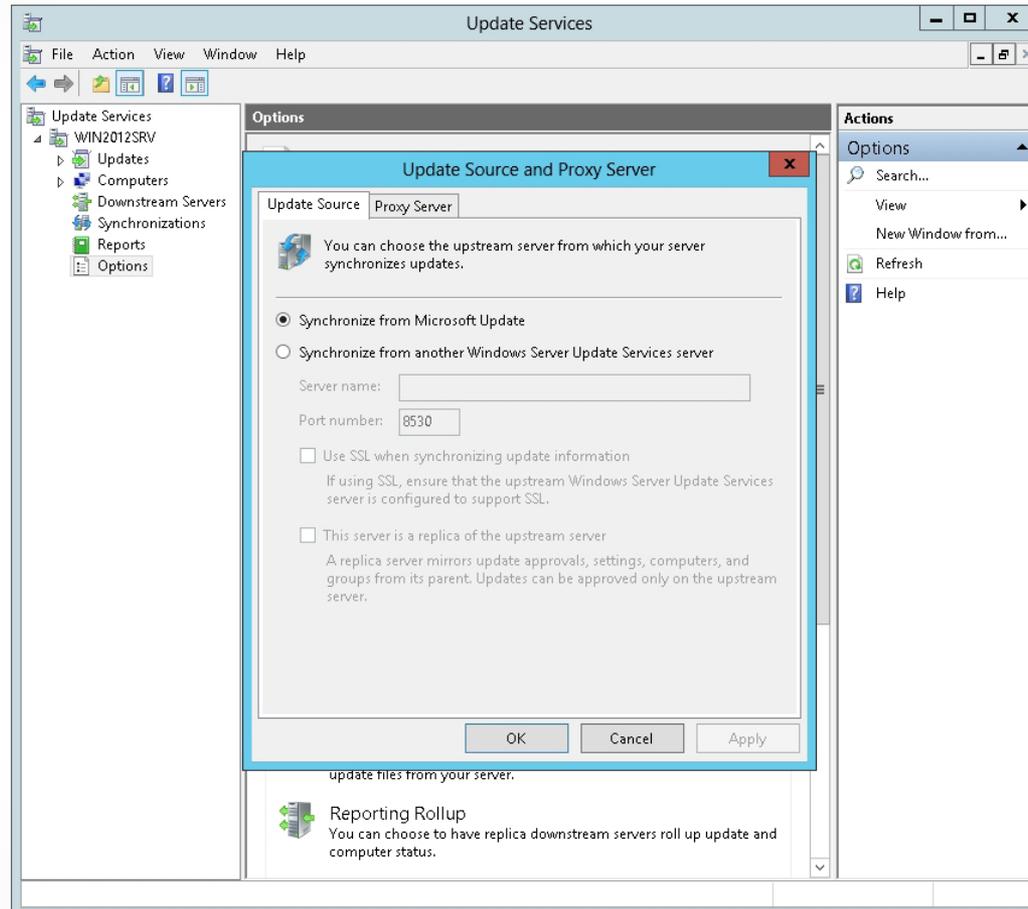
The screenshot shows the 'Set Sync Schedule' step of the Windows Server Update Services Configuration Wizard. The window title is 'Windows Server Update Services Configuration Wizard: WIN2012SRV'. The left sidebar contains a list of steps: 'Before You Begin', 'Microsoft Update Improvement Program', 'Choose Upstream Server', 'Specify Proxy Server', 'Choose Languages', 'Choose Products', 'Choose Classifications', 'Configure Sync Schedule' (highlighted in blue), 'Finished', and 'What's Next'. The main area has a sub-header 'Set Sync Schedule' and a description: 'Configure when this server synchronizes with Microsoft Update'. Below this, there is a section titled 'You can synchronize updates manually or set a schedule for daily automatic synchronization.' with two radio button options: 'Synchronize manually' (selected) and 'Synchronize automatically'. Under the 'Synchronize automatically' option, there are two input fields: 'First synchronization:' with a time picker set to '8:50:05 AM' and 'Synchronizations per day:' with a dropdown menu set to '1'. A note below these fields states: 'Note that when scheduling a daily synchronization from Microsoft Update, the synchronization start time will have a random offset up to 30 minutes after the specified time.' At the bottom of the wizard, there are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

Setting a sync schedule

# Configuring WSUS Synchronization

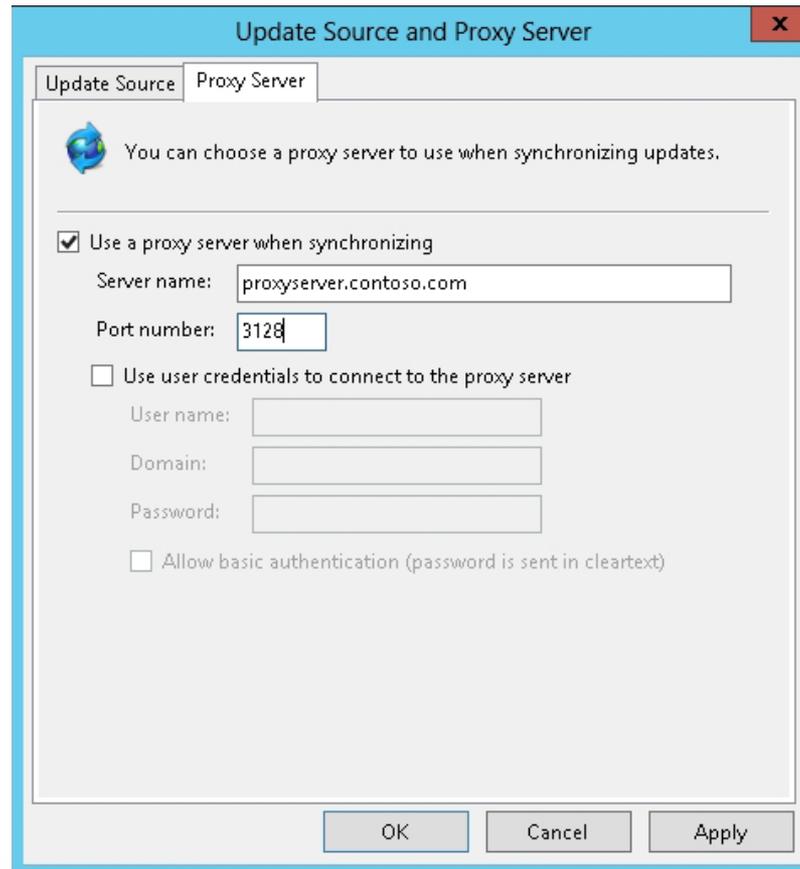
- Configure the update source and proxy server.
- Specify what products and type of updates you want to download.
- Specify where to store the files.
- Specify what languages you want to support.
- Specify a synchronization schedule.

# Configure the Update Source and Proxy Server



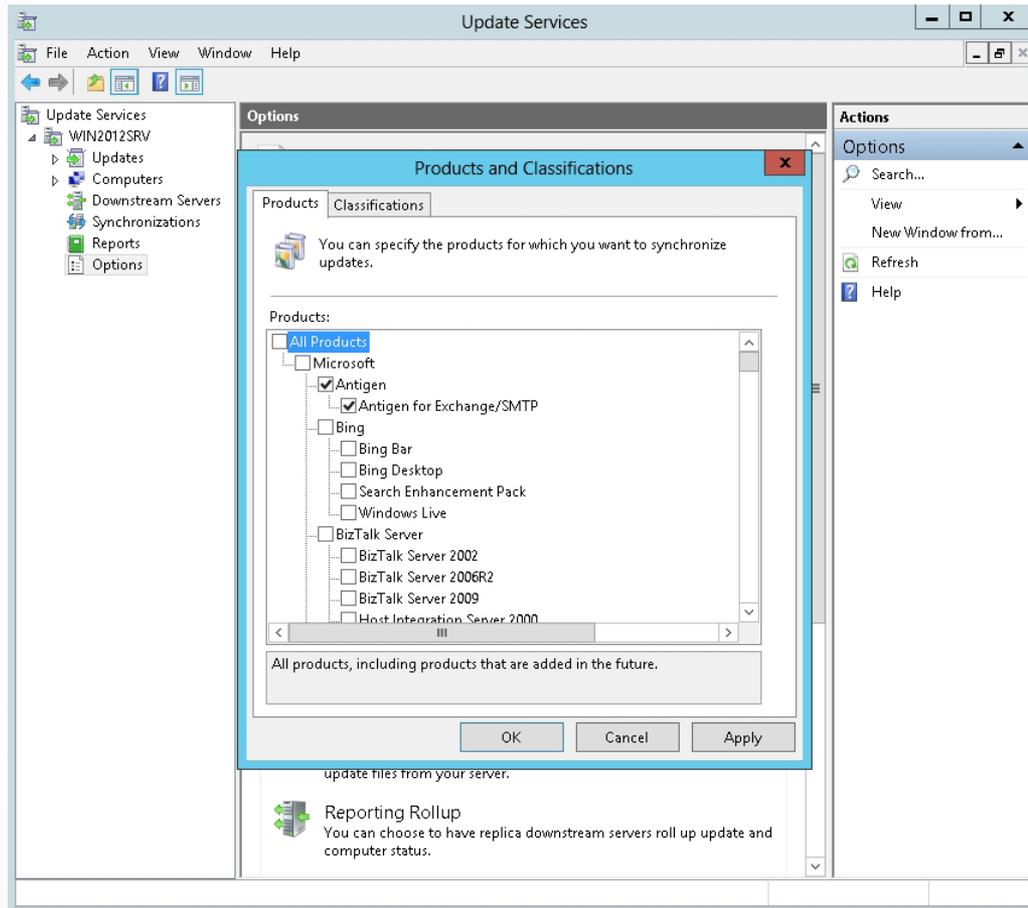
Configuring the Update Source settings

# Configure the Update Source and Proxy Server



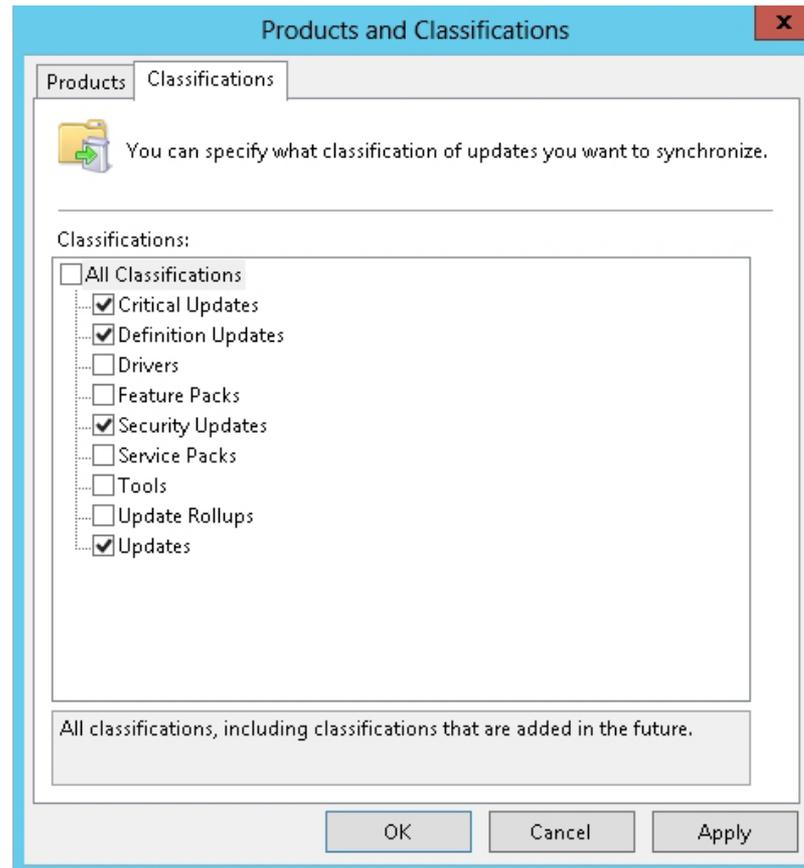
Configuring the Proxy Server settings

# Specify What WSUS Will Synchronize



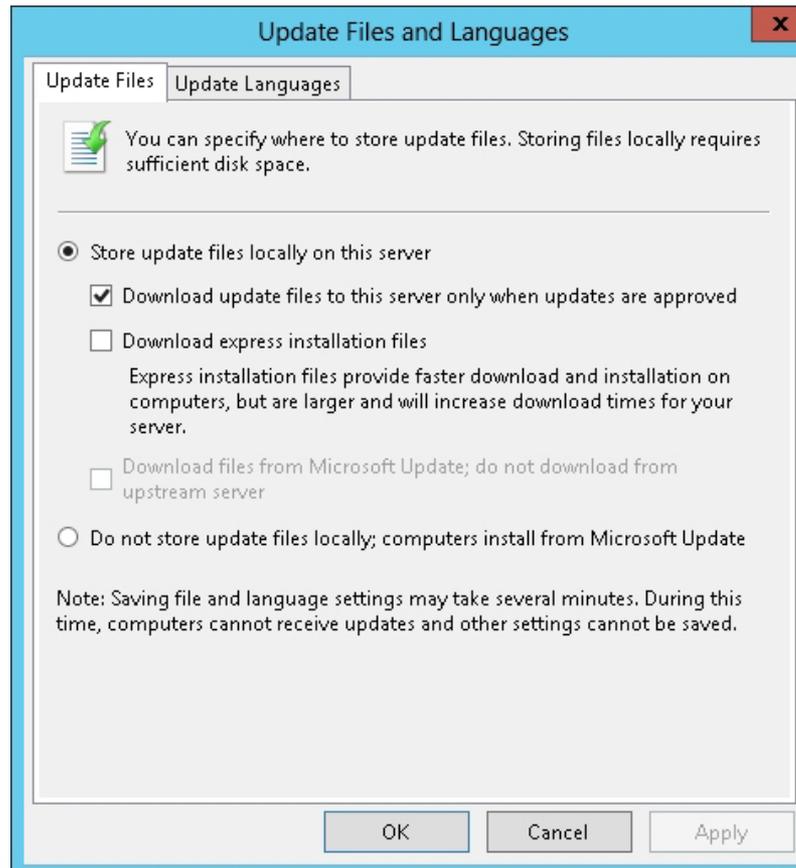
Selecting and deselecting products

# Specify What WSUS Will Synchronize



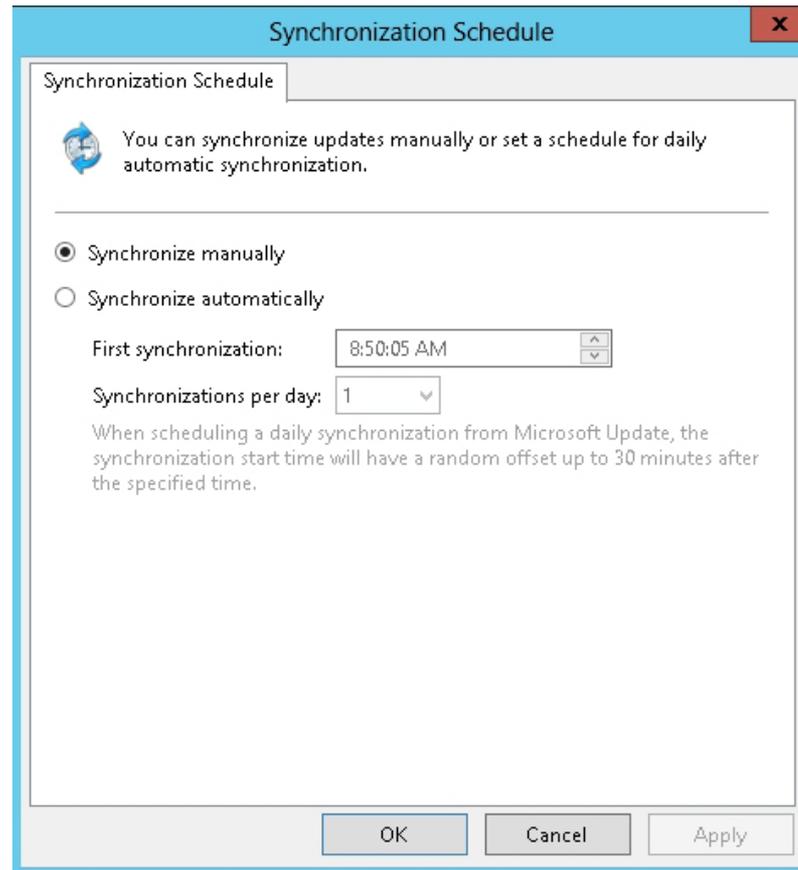
Selecting and deselecting classifications

# Specify What WSUS Will Synchronize



Updating files

# Specify a Synchronization Schedule

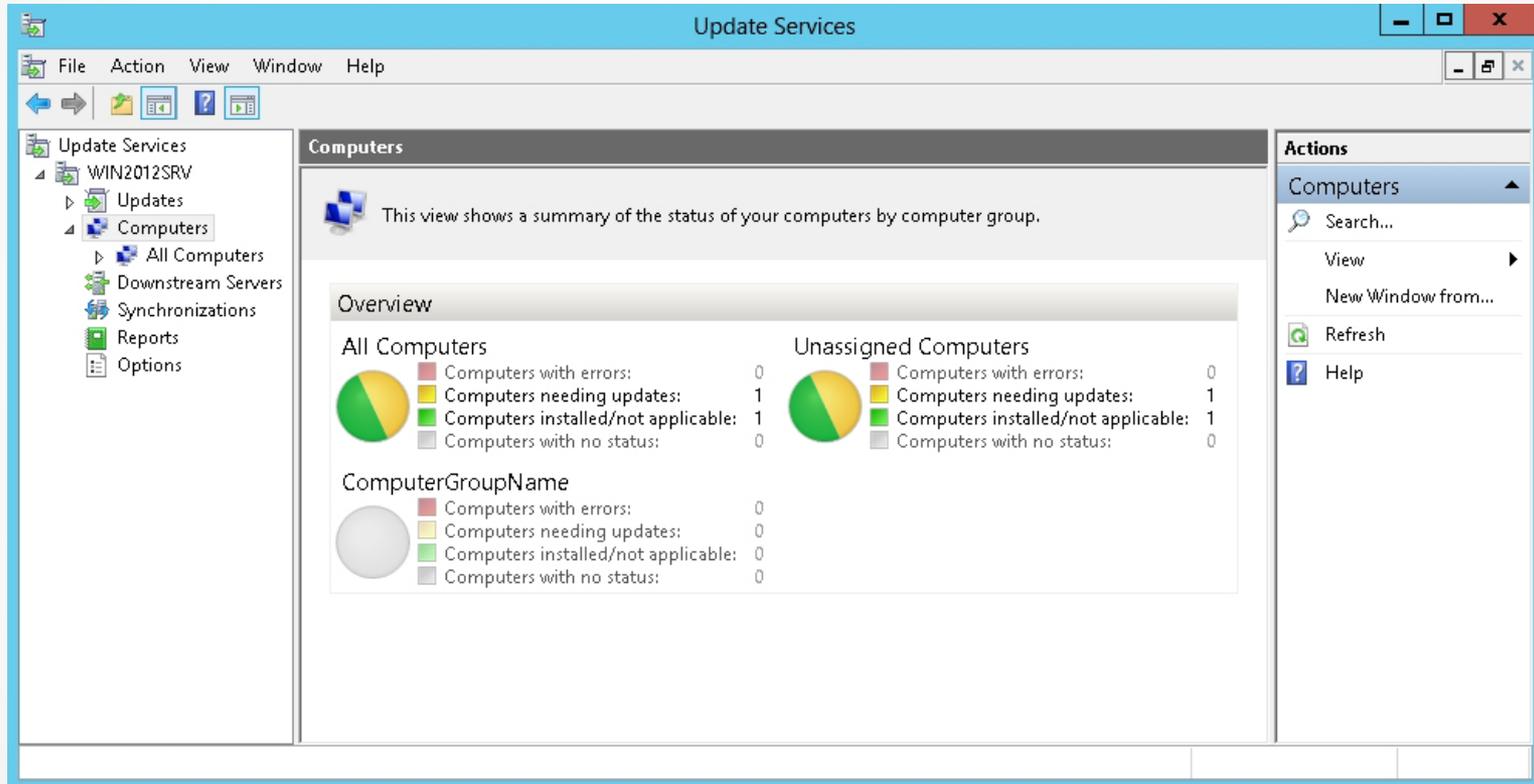


Configuring a synchronization schedule

# Configuring WSUS Computer Groups

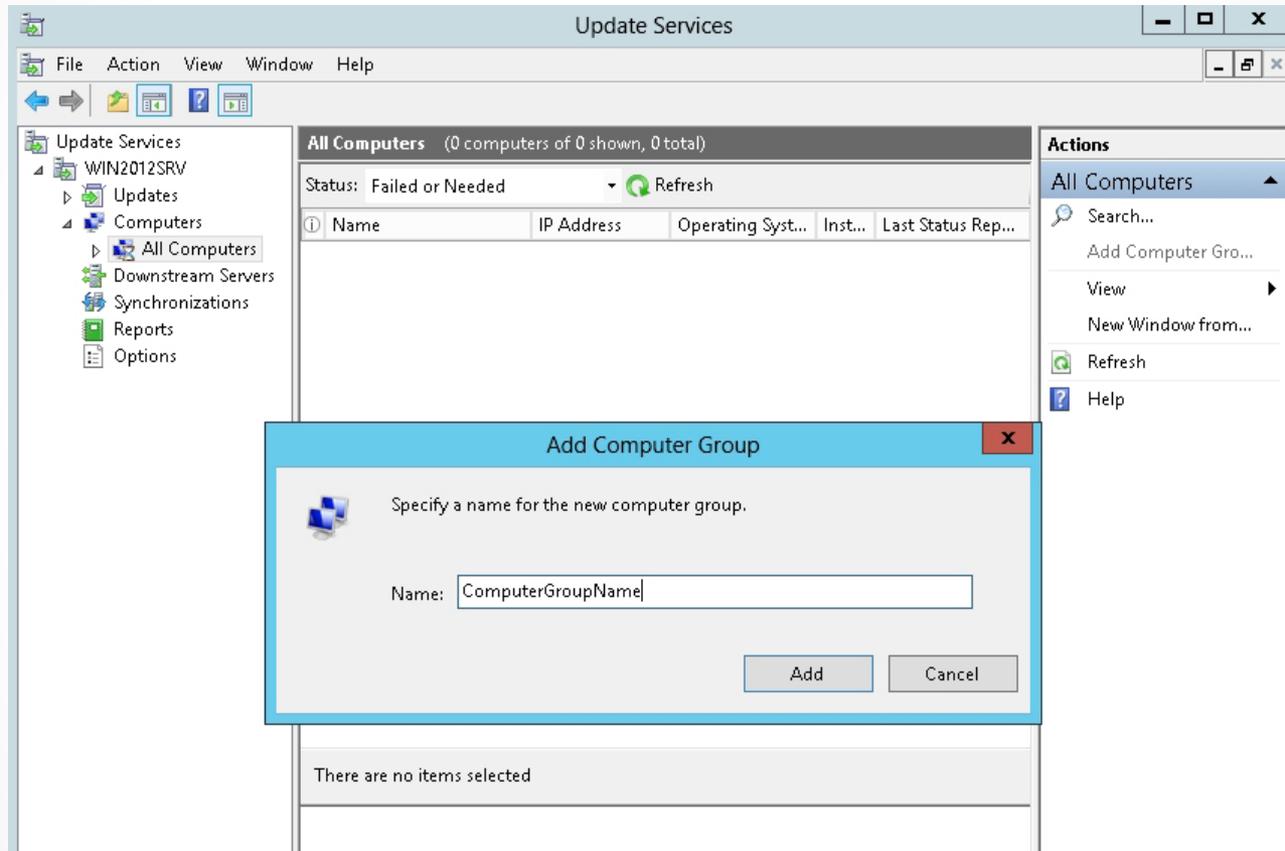
- Computer groups help you specify what updates go to which computers at what time.
- By default, each computer is assigned to the All Computers group.
- As new computers are added, they are assigned to the Unassigned Computers group until you assign them to another group.
- Other than members of the All Computers group, a computer can only be assigned to one other group.
- Using a layered approach allows you to push updates to a test group first, and then roll out the updates to other groups as needed.

# Create a Computer Group



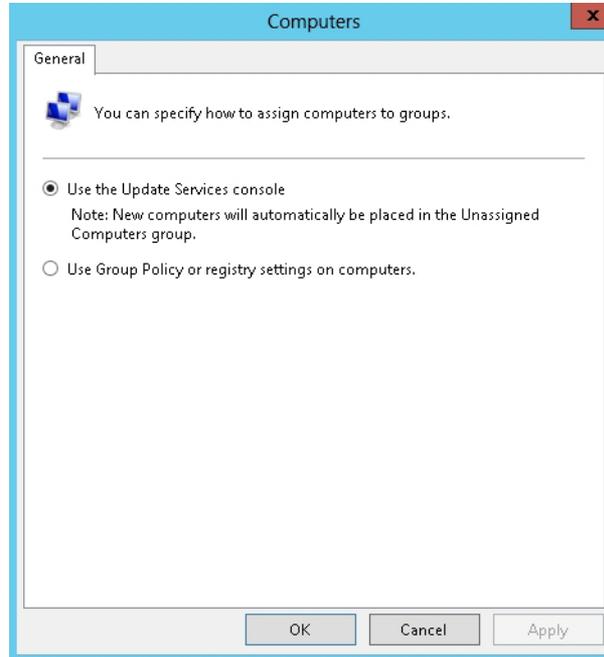
Viewing Computers node

# Create a Computer Group



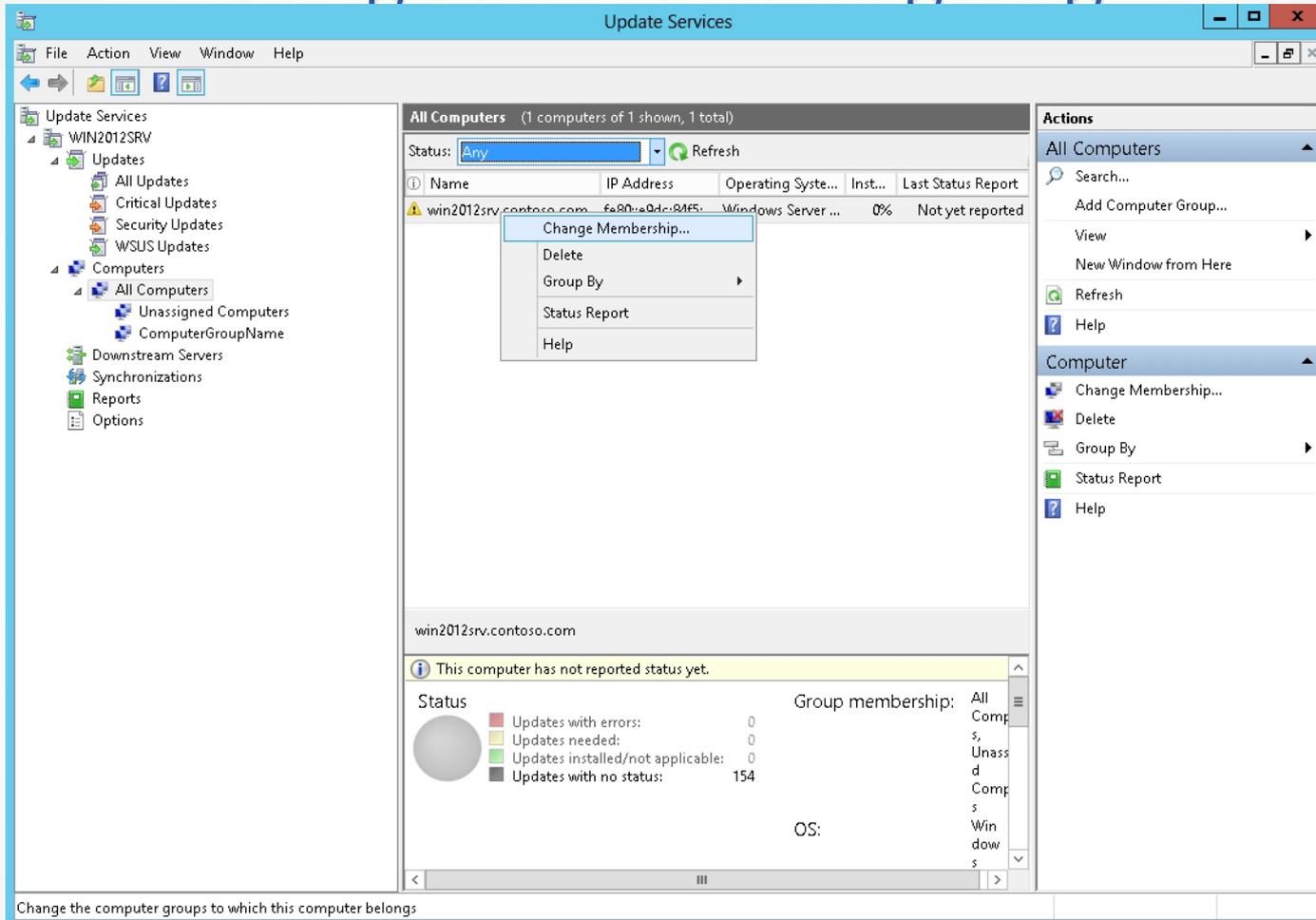
Typing a computer name group

# Specify the Method of Assigning Computers to Groups



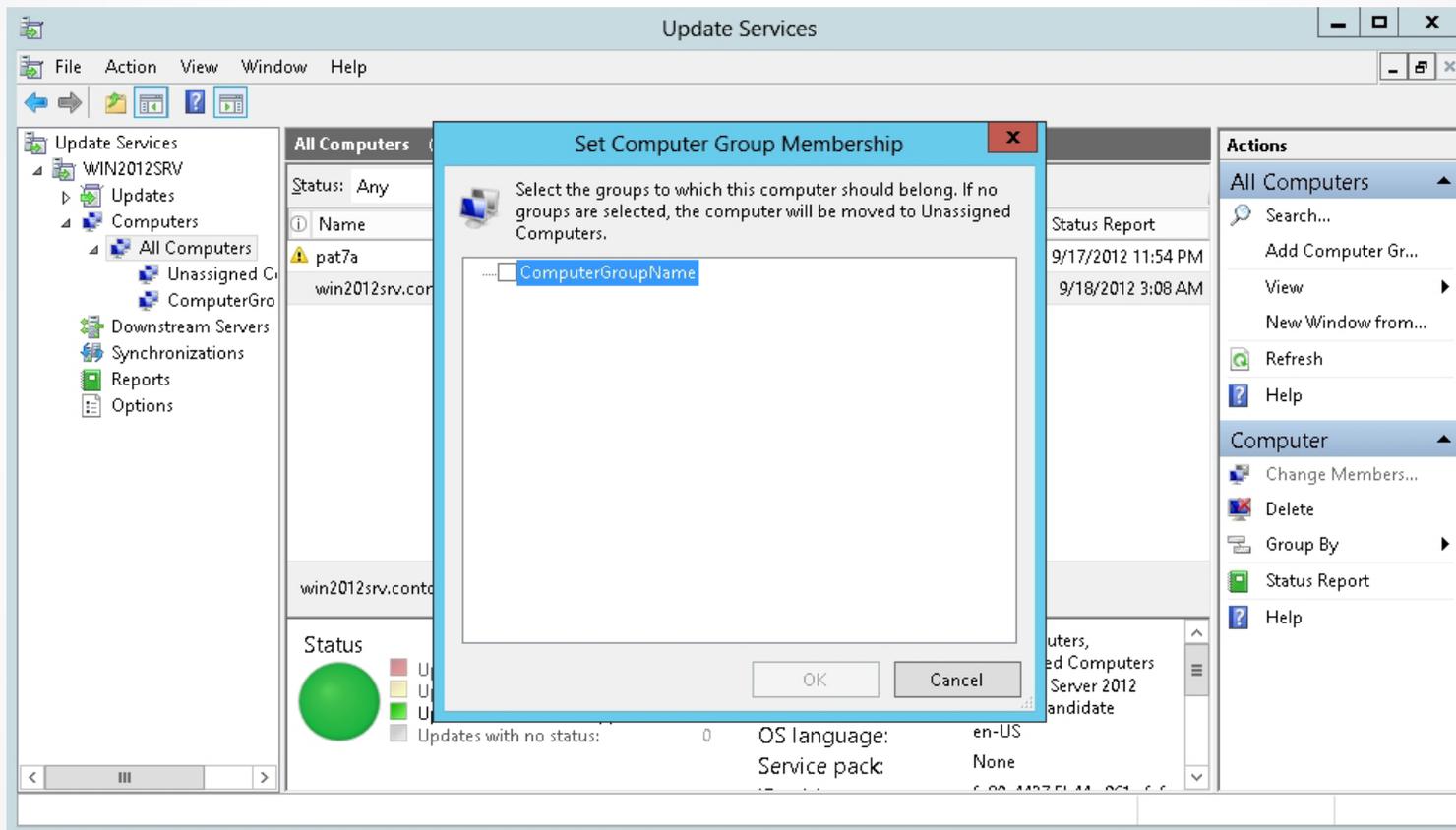
Specifying how computers are assigned to groups

# Move a Computer to a Group Using Server-Side Targeting



Moving a computer

# Move a Computer to a Group Using Server-Side Targeting

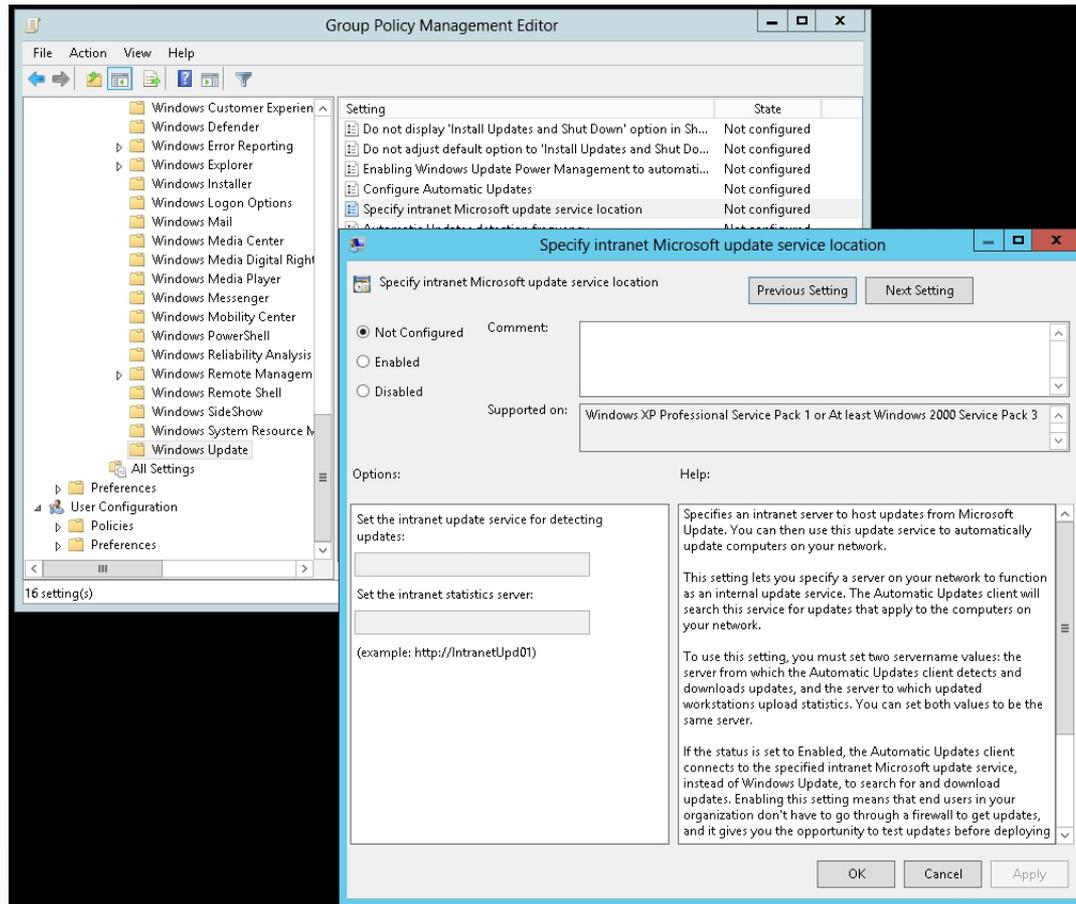


Selecting a computer group

# Configuring Group Policies for Updates

- By default, Windows computers get their updates from Windows Update.
- You can use group policies to have the domain computers use the specified WSUS server.

# Configure a Computer to Use WSUS for Updates Using Group Policies

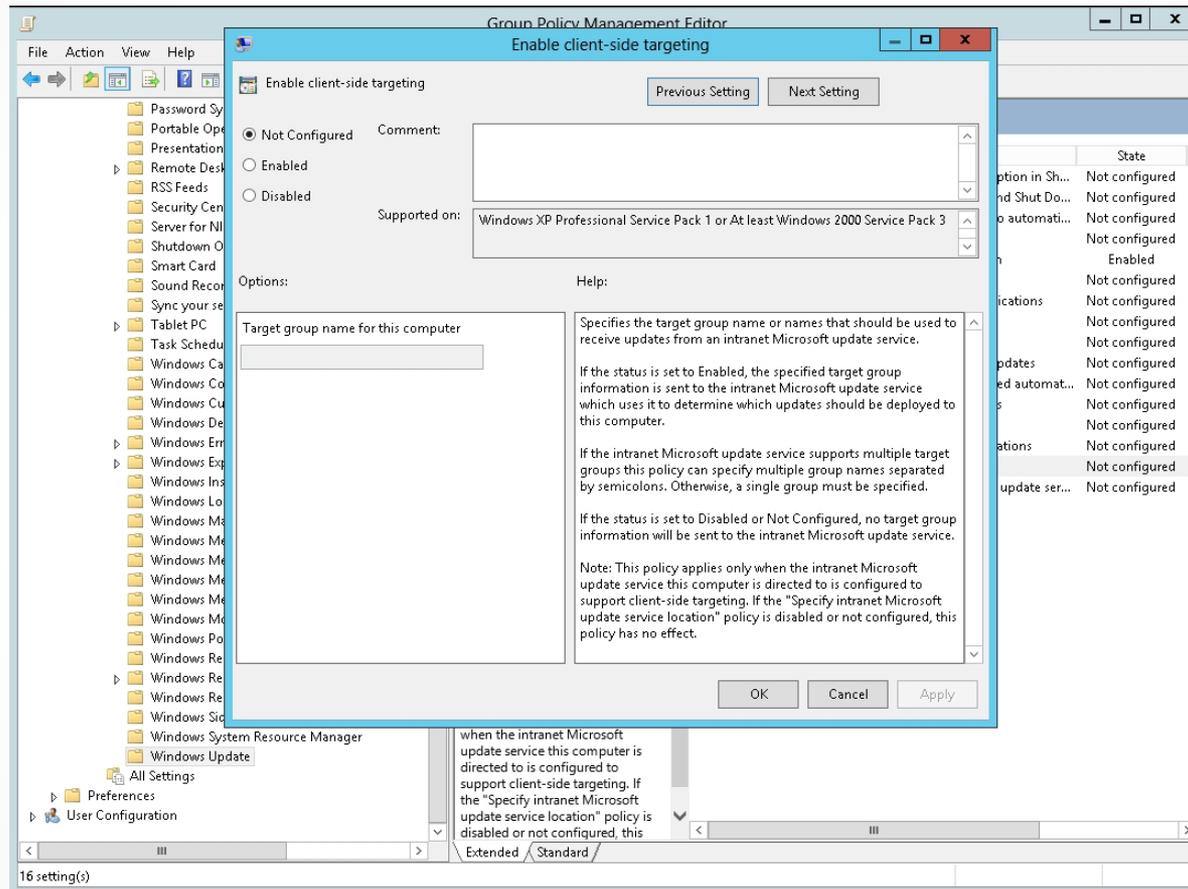


Specifying the intranet Microsoft update service location using group policies

# Configuring Client-Side Targeting

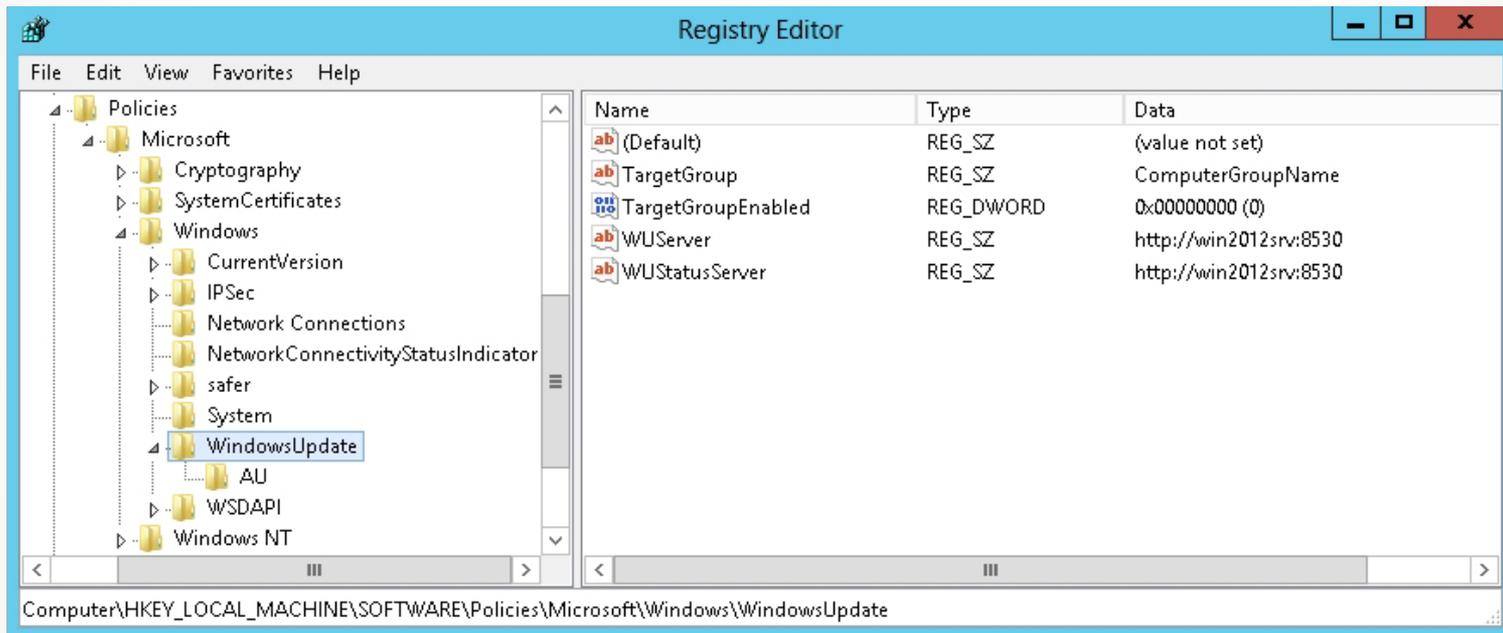
- Automates the process of assigning computers to computer groups
- For domain computers, use group policies
- Good option if you have several computers

# Enable Client-Side Targeting Using Group Policies



Enabling client side targeting using group policies

# Enable Client-Side Targeting Using Group Policies



Modifying Windows Update Registry settings

# Approving Updates

- Test updates before rolling out to production environment
- Update might cause unforeseen problems affecting hundreds of computers
- Setting a deadline causes clients to install the update at a specific time
  - Can specify a deadline when you approve updates on the WSUS server
  - If an update has a deadline and requires a restart, system reboots at the time of the deadline

# Approve Updates

The screenshot shows the Windows Update Services console with the following components:

- Left Navigation Pane:** Shows the hierarchy: Update Services > WIN2012SRV > Updates > All Updates.
- Header:** 'All Updates (154 updates of 156 shown, 156 total)'. Includes filters for 'Approval: Unapproved' and 'Status: Any', and a 'Refresh' button.
- Table:** A list of updates with columns: Title, Classification, Installation progress, and Approval. The selected update is 'Security Update for Microsoft PowerPoint 2010 (KB2553185) 32-Bit Edition'.
- Summary Panel:**
  - Message: 'This update supersedes another update. Before you decline any superseded update, we recommend that you verify it is no longer needed by any computers. To do so, approve the superseding update first.'
  - Status: A pie chart showing 0 computers with errors, 0 needing the update, 0 installed/not applicable, and 0 with no status.
  - MSRC severity: Important
  - MSRC number: MS11-094
  - Release date: Tuesday, December 13, 2011
  - KB article numbers: 2553185
- Right Action Pane:** Shows options like 'Approve...', 'Decline', 'Group By', 'Revision History', 'File Information', and 'Status Report'.

The All Updates option



# Approve Updates

The screenshot shows the Windows Update Services console for a server named WIN2012SRV. The main pane displays a list of updates under the heading "All Updates (154 updates of 156 shown, 156 total)". The updates are filtered by "Approval: Unapproved" and "Status: Any". A context menu is open over a selected update, showing options: "Approve...", "Decline", "Group By", "Status Report", and "Help".

Title	Classification	Insta...	Approval
Update for Microsoft Office 2010 (KB2077208)	Critical Updat...	0%	Not approved
Security Update for Microsoft PowerPoint 2010 (KB2...	Security Upd...	0%	Not approved
Security Update for Microsoft PowerPoint 2010 (KB2...	Security Upd...	0%	Not approved
Update for Microsoft Office 2010 (KB2553385) 32-Bit ...	Critical Updat...	0%	Not approved
Update for Microsoft Excel 2010 (KB2553439) 64-Bit E...	Critical Updat...	0%	Not approved
Security Update for M...	Security Upd...	0%	Not approved
Update for Microsoft...	Critical Updat...	0%	Not approved
Security Update for M...	Security Upd...	0%	Not approved
Security Update for M...	Security Upd...	0%	Not approved
Update for Microsoft Office 2010 (KB2233270) 64-bit ...	Critical Updat...	0%	Not approved
Security Update for Microsoft SharePoint Foundatio...	Security Upd...	0%	Not approved
Security Update for Microsoft Visio Viewer 2010 (KB2...	Security Upd...	0%	Not approved
Security Update for Microsoft Visio Viewer 2010 (KB2...	Security Upd...	0%	Not approved
Security Update for Microsoft Office 2010 (KB258932...	Security Upd...	0%	Not approved
Security Update for Microsoft Office 2010 (KB258932...	Security Upd...	0%	Not approved
Security Update for Microsoft PowerPoint 2010 (KB2553185) 64-Bit Edition			

Below the list, a message states: "This update supersedes another update. Before you decline any superseded update, we recommend that you verify it is no longer needed by any computers. To do so, approve the superseding update first."

**Status:**

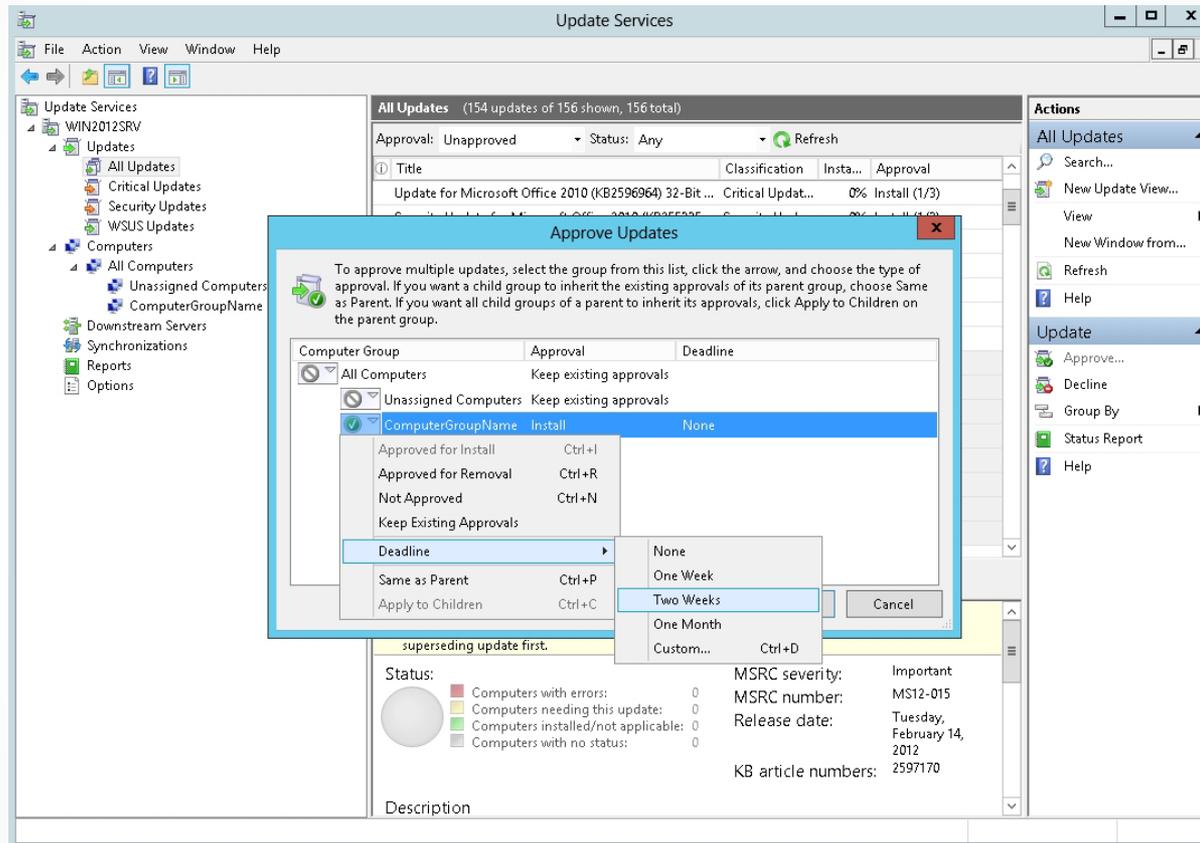
- Computers with errors: 0
- Computers needing this update: 0
- Computers installed/not applicable: 0
- Computers with no status: 0

**MSRC severity:** Important  
**MSRC number:** MS11-094  
**Release date:** Tuesday, December 13, 2011  
**KB article numbers:** 2553185

The bottom of the console shows a status bar with the text "Approve selected updates".

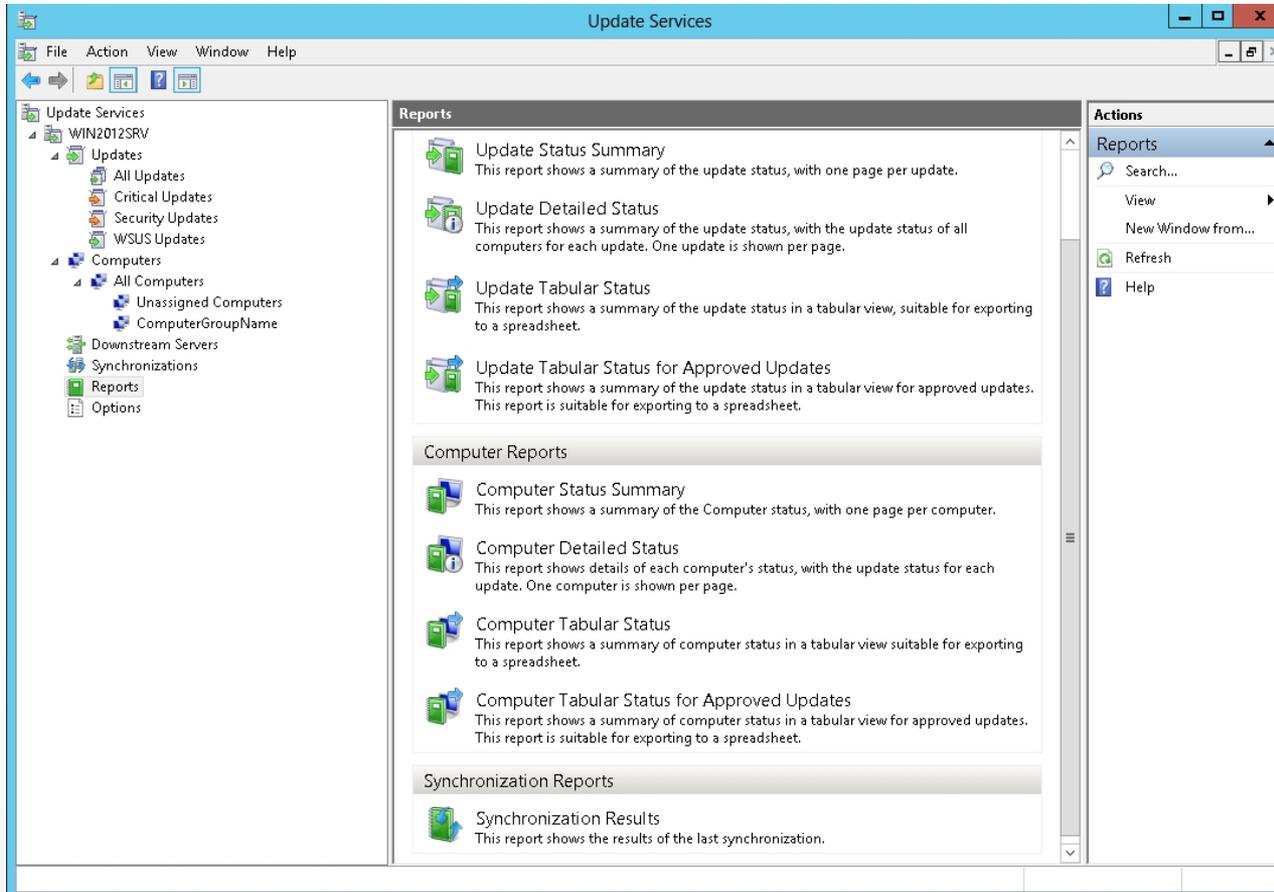
## Approving updates

# Approve Updates



Selecting a deadline

# Viewing Reports



# Viewing Reports

- To view reports:
  - Install Microsoft .NET Framework 3.5 (which includes 2.0 and 3.0)
  - Download and install Microsoft Report Viewer 2008 Redistributable from Microsoft website

# Administering WSUS with Commands

WSUSutil.exe options:

- `export`: Exports the update metadata to an export package file.
- `import`: Imports the update metadata from an export package file.
- `movecontent`: Changes the file system location where the WSUS server stores update files and optionally copies any update files from the old location to the new location.

# Administering WSUS with Commands

WSUSutil.exe options:

- `reset`: Checks that every update metadata row in the database has corresponding update files stored in the file system.
- `deleteunneededrevisions`: Purges the update metadata for unnecessary update revisions from the database.

# Administering WSUS with Commands

Windows PowerShell commands:

- `Add-WsusComputer`: Adds an already registered specified client computer to a specified target group.
- `Approve-WsusUpdate`: Approves an update to be applied to clients.
- `Deny-WsusUpdate`: Declines the update for deployment.
- `Get-WsusClassification`: Gets the list of all WSUS classifications currently available in the system.
- `Get-WsusComputer`: Gets the WSUS computer object that represents the client computer.
- `Get-WsusProduct`: Gets the list of all products currently available on WSUS by category.
- `Get-WsusServer`: Gets the value of the WSUS update server object.

# Administering WSUS with Commands

Windows PowerShell commands:

- `Get-WsusUpdate`: Gets the WSUS update object with details about the update.
- `Invoke-WsusServerCleanup`: Performs the process of cleanup on a specified WSUS server.
- `Set-WsusClassification`: Sets whether the classifications of updates that WSUS synchronizes are enabled or disabled.
- `Set-WsusProduct`: Sets whether the product representing the category of updates to synchronize is enabled or disabled.
- `Set-WsusServerSynchronization`: Sets whether the WSUS server synchronizes from Microsoft Update or from an upstream server and uses the upstream server properties.

# Troubleshooting Problems with Installing Updates

WSUS logs:

- Application event log
- C:\Program Files\Update Services\LogFiles\Change.txt
- C:\Program Files\Update Services\LogFiles\softwareDistribution.txt

# Troubleshooting Problems with Installing Updates

- For synchronization problems with Windows Update, open Windows Update on the server and download and install updates.
- For client connection problems, verify that a client can connect to the WSUS server with:  
`http://WSUSServerName/iuident.cab`
- Commands for starting and stopping Windows Update:  
`net stop wuauserv`  
`net start wuauserv`

# System Center Configuration Manager

- Provides remote control, patch management, software distribution, operating system deployment, network access protection, hardware inventory, and software inventory
- Formerly known as System Management Server (SMS)

# System Center Configuration Manager

- Uses an agent that must be installed on each computer
  - Agent can be pushed out from the SCCM console or can be pushed using group policies
- With multiple sites, you can set up distribution points so updates, software packages, and operating system packages have to be pushed to the site only once

# Lesson Summary

- Windows Update scans your system to determine what updates and fixes your system needs.
- A service pack is a tested, cumulative set of hotfixes, security updates, critical updates, and updates.
- Auto Update works in the background to identify new updates and download them to your computer.
- Windows Server Update Services (WSUS) distributes updates and other patches to computers within an organization.
- WSUS works in autonomous or replica mode.
- To install WSUS on Windows Server 2012, you install WSUS as a role.

# Lesson Summary

- To specify what updates go to correct computers at the correct time, organize your computers into computer groups.
- Each computer is assigned to the All Computers group by default. Newly added computers are assigned to the Unassigned Computers group until assigned to another group.
- Server-side targeting manually assigns a computer to a group.
- Client-side targeting automatically assigns computers to computer groups using group policies.
- You can use group policies to have the domain computers use a specified WSUS server.
- WSUS can control which updates clients receive and when clients receive those updates.

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