JOHN POLICELLI

Active Directory Domain Services 2008

HOW-TO

Real Solutions for Active Directory 2008 Administrators

SAMS

JOHN POLICELLI

Active Directory Domain Services 2008

HOW-TO

SAMS | 800 East 96th Street, Indianapolis, Indiana 46240 USA

Active Directory Domain Services 2008 How-To
Copyright © 2009 by Pearson Education, Inc.

ISBN-13: 978-0-672-33045-2
ISBN-10: 0-672-33045-8

Library of Congress Cataloging-in-Publication Data
Policelli, John.
Active directory 2008 how-to / John Policelli.
p. cm.
ISBN-13: 978-0-672-33045-2
ISBN-10: 0-672-33045-8
1. Directory services (Computer network technology) 2. Microsoft Windows. I. Title.
TK5105.595.P65 2009
005.7'1376–dc22
2009011935

Printed in the United States of America

First Printing

Trademarks
All terms mentioned in this book that are known to be trademarks or service marks have been appropriately capitalized. Sams Publishing cannot attest to the accuracy of this information. Use of a term in this book should not be regarded as affecting the validity of any trademark or service mark.

Warning and Disclaimer
Every effort has been made to make this book as complete and as accurate as possible, but no warranty or fitness is implied. The information provided is on an “as is” basis. The author and the publisher shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising from the information contained in this book.

Bulk Sales
Sams Publishing offers excellent discounts on this book when ordered in quantity for bulk purchases or special sales. For more information, please contact

U.S. Corporate and Government Sales
1-800-382-3419
corpsales@pearsontechgroup.com

For sales outside of the U.S., please contact

International Sales
international@pearson.com

Editor-in-Chief
Karen Gettman

Executive Editor
Neil Rowe

Development Editor
Mark Renfrow

Managing Editor
Patrick Kanouse

Project Editor
Mandie Frank

Copy Editor
Megan Wade

Indexer
Ken Johnson

Proofreader
Leslie Joseph

Technical Editor
Todd Meister

Publishing Coordinator
Cindy Teeters

Designer
Gary Adair

Compositor
Bronkella
Publishing LLC

Contents at a Glance

Table of Contents

About the Author

John Policelli (Microsoft MVP for Directory Services, MCTS, MCSA, ITSM, iNet+, Network+, and A+) is a solutions-focused IT consultant with more than a decade of combined success in architecture, security, strategic planning, and disaster recovery planning. John has designed and implemented dozens of complex directory service, e-messaging, web, networking, and security enterprise solutions.

John has spent the past nine years focused on identity and access management and providing thought leadership for some of the largest installations of Active Directory in Canada. He has been involved as an author, a technical reviewer, and a subject matter expert for more than 50 training, exam writing, press, and whitepaper projects related to Windows Server 2008 Identity and Access Management, networking, and collaboration. John maintains a blog at http://policelli.com/blog.

Dedication

I dedicate this book to my parents, Rina and Anthony, and my brother, Dino. Thank you for your constant belief in me and for guiding me through life.

Acknowledgments

I would like to thank my beautiful wife Maria for her unconditional love and support, and for being my motivation to succeed.

Although my name appears on the cover of this book, there is a team of individuals at Pearson who worked diligently to evolve this book from the initial concept through to the final product. I would like to thank Neil Rowe for the publishing opportunity and the ongoing guidance throughout the various stages of the writing and publishing process. I would like to thank Mandie Frank, Mark Renfrow, Megan Wade, and Todd Meister for their invaluable assistance and hard work through the publishing process. I would also like to thank all of those from Pearson who worked on the publishing process, but who I did not get to meet.

We Want to Hear from You!

As the reader of this book, *you* are our most important critic and commentator. We value your opinion and want to know what we're doing right, what we could do better, what areas you'd like to see us publish in, and any other words of wisdom you're willing to pass our way.

You can email or write me directly to let me know what you did or didn't like about this book—as well as what we can do to make our books stronger.

Please note that I cannot help you with technical problems related to the topic of this book, and that due to the high volume of mail I receive, I might not be able to reply to every message.

When you write, please be sure to include this book's title and author as well as your name and phone or email address. I will carefully review your comments and share them with the author and editors who worked on the book.

E-mail: consumer@samspublishing.com

Mail: Neil Rowe
Executive Editor
Sams Publishing
800 East 96th Street
Indianapolis, IN 46240 USA

Reader Services

Visit our website and register this book at www.informit.com/title/9780672330452 for convenient access to any updates, downloads, or errata that might be available for this book.

This page intentionally left blank

INTRODUCTION

Overview of This Book

Active Directory has been on the market for roughly a decade now. Prior to Windows Server 2008, the changes in Active Directory functionality had been relatively minuscule in comparison to the changes introduced in Windows Server 2008. Windows Server 2008 is the first Windows Server operating system release to introduce such significant changes to Active Directory functionality since its inception in Windows 2000 Server. Now is likely the most important time for IT professionals to familiarize themselves with the new Active Directory Domain Services (AD DS) in Windows Server 2008.

IT professionals have access to more resources today than ever before. An infinite number of websites, blogs, newsgroups, magazines, and books claim to provide you with the latest and greatest Active Directory information. With the information overload we are experiencing today, it is a task in itself to decipher the profuse amount of information and find exactly what you are looking for.

Look no further! IT professionals can turn to this book first, to get reliable, easy-to-implement solutions they can trust—and use immediately. This completely up-to-date book brings together tested, step-by-step procedures for planning, installing, customizing, and managing AD DS in any production environment. This hands-on how-to guide walks you through performing approximately 200 tasks, with clear and accurate steps and diagrams for each one.

How-To Benefit from This Book

We've designed this book to be easy to read from cover to cover. This book will provide you with the ability to gain a full understanding of Active Directory Domain Services in Windows Sever 2008, while breaking down the subject matter into 13 easy-to-navigate chapters. They include

- Introduction to Active Directory Domain Services
- Prepare for Active Directory Domain Services Installation
- Install and Uninstall Active Directory Domain Services
- Manage Trusts and Functional Levels
- Manage Operations Master Roles and Global Catalog Servers
- Manage Sites and Replication

- Manage the Active Directory Domain Services Schema
- Manage Active Directory Domain Services Data
- Manage Group Policy
- Manage Password Replication Policies
- Manage Fine-Grained Password and Account Lockout Policies
- Manage Active Directory Domain Services Backup and Recovery
- Manage Active Directory Domain Services Auditing

Within each of these chapters are subheadings that focus on the primary elements of administering that portion of AD DS.

Beneath the subheadings are Scenario/Problem introductions. These serve as mini-starting points for the administrator to consider. At times, the information provided helps you deal with a specific problem you might be facing; however, typically a scenario is described that enables you to determine whether this direction is necessary for your particular organization.

How-To Continue Expanding Your Knowledge

Certainly there are more books, articles, and sites you can and should consider in expanding your knowledge of Windows Server 2008 Active Directory Domain Services, especially because it will no doubt continue to evolve and change as more and more features, fixes, and enhancements are added by Microsoft. How does one stay on top of the flood of information?

Well, several sites are invaluable. They include the following:

- **The Active Directory Domain Services Microsoft TechNet Library (http://technet.microsoft.com/en-ca/library/cc770946.aspx)**—This has to be one of the most valuable online resources for Windows Server 2008 AD DS information. Here you will find getting started guides, the AD DS planning and architecture guide, the AD DS deployment guide, the AD DS operations guide, and the AD DS Installed Help.
- **What's New in AD DS in Windows Server 2008 Microsoft document (http://technet.microsoft.com/en-us/library/cc755093.aspx)**—This document provides a great overview of each of the new AD DS features in Windows Server 2008, as well as links to more granular information on each new feature.
- **Ask the Directory Services Team Blog (http://blogs.technet.com/askds)**—This is Microsoft's official Enterprise Platform Support DS blog.
- **Discussions in Active Directory (http://www.microsoft.com/communities/newsgroups/en-us/default.aspx?dg=microsoft.public.windows.server.active_directory)**—This is Microsoft's Active Directory newsgroup.

In addition, several blog sites from Active Directory MVPs, Microsoft employees, and Active Directory gurus are worth investigating, including the following:

- http://blogs.dirteam.com (Dirteam.com/ActiveDir.org)
- http://www.identityblog.com (Kim Cameron)
- http://blogs.technet.com/ad (Tim Springston)
- http://blog.joeware.net (Joe Richards)
- http://www.gilkirkpatrick.com/Blog (Gil Kirkpatrick)
- http://www.open-a-socket.com (Tony Murray)
- http://briandesmond.com/blog (Brian Desmond)

These are just a handful of the ones I personally enjoy, although you will easily find many more. Choose the ones you feel are most helpful to you.

Last, but certainly not least, you are welcome to visit my website for free AD DS education: http://www.policelli.com. It includes a link to my blog, articles I've written, a variety of publications, and so forth.

This page intentionally left blank

CHAPTER 1

Introduction to Active Directory Domain Services

IN THIS CHAPTER

- What's New in Windows Server 2008 Active Directory Domain Services
- Windows Server 2008 System Requirements
- Installing Windows Server 2008

Active Directory has changed significantly in Windows Server 2008. Windows Server 2008 includes a number of new features for the Active Directory Domain Services server role. The minimum and recommended system requirements for Active Directory Domain Services in Windows Server 2008 have also changed.

This chapter starts with an overview of the Active Directory Domain Services server role in Windows Server 2008. Thereafter, details on the new Active Directory Domain Services features are covered. Lastly, the system requirements for Windows Server 2008 and the steps to install Windows Server 2008 are covered in this chapter.

Active Directory Domain Services (AD DS) is Microsoft's implementation of a directory service that provides centralized authentication and authorization services. AD DS in Windows Server 2008 provides a powerful directory service to centrally store and manage security principals, such as users, groups, and computers, and it offers centralized and secure access to network resources.

AD DS is one of the most important server roles in Windows Server 2008. It provides the basis for authentication and authorization for virtually all other server roles in Windows Server 2008 and is the foundation for Microsoft's Identity and Access Solutions. Additionally, a number of enterprise products, including Exchange Server and Windows SharePoint Services, require AD DS.

What's New in Windows Server 2008 Active Directory Domain Services

Active Directory Domain Services in Windows Server 2008 provides a number of enhancements over previous versions, including these:

- **Auditing**—AD DS auditing has been enhanced significantly in Windows Server 2008. The enhancements provide more granular auditing capabilities through four new auditing categories: Directory Services Access, Directory Services Changes, Directory Services Replication, and Detailed Directory Services Replication. Additionally, auditing now provides the capability to log old and new values of an attribute when a successful change is made to that attribute.
- **Fine-Grained Password Policies**—AD DS in Windows Server 2008 now provides the capability to create different password and account lockout policies for different sets of users in a domain. User and group password and account lockout policies are defined and applied via a Password Setting Object (PSO). A PSO has attributes for all the settings that can be defined in the Default Domain Policy, except Kerberos settings. PSOs can be applied to both users and groups.
- **Read-Only Domain Controllers**—AD DS in Windows Server 2008 introduces a new type of domain controller called a read-only domain controller (RODC). RODCs contain a read-only copy of the AD DS database. RODCs are covered in more detail in Chapter 6, "Manage Sites and Replication."

- **Restartable Active Directory Domain Services**—AD DS in Windows Server 2008 can now be stopped and restarted through MMC snap-ins and the command line. The restartable AD DS service reduces the time required to perform certain maintenance and restore operations. Additionally, other services running on the server remain available to satisfy client requests while AD DS is stopped.
- **AD DS Database Mounting Tool**—AD DS in Windows Server 2008 comes with a AD DS database mounting tool, which provides a means to compare data as it exists in snapshots or backups taken at different times. The AD DS database mounting eliminates the need to restore multiple backups to compare the AD data that they contain and provides the capability to examine any change made to data stored in AD DS.

Windows Server 2008 System Requirements

The published system requirements for Windows Server 2008 are summarized in Table 1.1.

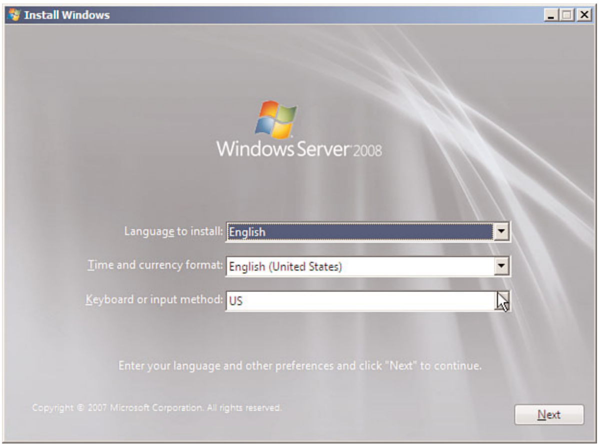
Table 1.1 **Windows Server 2008 System Requirements**

Component	**Requirement**
Processor	**Minimum**: 1GHz (for x86 processors) or 1.4GHz (for x64 processors) **Recommended**: 2GHz or faster **NOTE**: An Intel Itanium 2 processor is required for Windows Server 2008 for Itanium-Based Systems.
Memory	**Minimum**: 512MB **Recommended**: 2GB or more **Maximum (32-bit systems)**: 4GB (for Windows Server 2008 Standard) or 64GB (for Windows Server 2008 Enterprise or Windows Server 2008 Datacenter) **Maximum (64-bit systems)**: 32GB (for Windows Server 2008 Standard) or 2 TB (for Windows Server 2008 Enterprise, Windows Server 2008 Datacenter, or Windows Server 2008 for Itanium-Based Systems) **NOTE**: Computers with more than 16GB of RAM require more disk space for paging, hibernation, and dump files.
Disk space	**Minimum**: 10GB **Recommended**: 40GB or more **NOTE**: Computers with more than 16GB of RAM require more disk space for paging, hibernation, and dump files. DVD-ROM drive Super VGA (800 x 600) or higher-resolution monitor Keyboard and Microsoft mouse (or other compatible pointing device)

Installing Windows Server 2008

The procedure that follows provides the steps necessary to install Windows Server 2008. These steps cover a full installation of Windows Server 2008:

1. Insert the Windows Server 2008 installation media into the DVD drive.
2. Reboot the computer.
3. When prompted for an installation language and other regional options, make your selection and click Next.



Language to install: English

Time and currency format: English (United States)

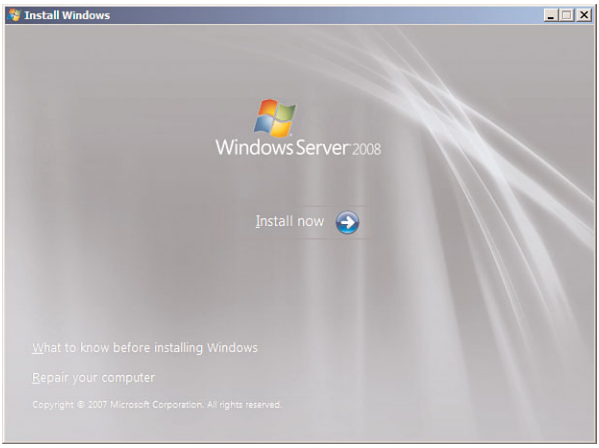
Keyboard or input method: US

Enter your language and other preferences and click "Next" to continue.

Copyright © 2007 Microsoft Corporation. All rights reserved.

FIGURE 1.1
Language and other preferences.

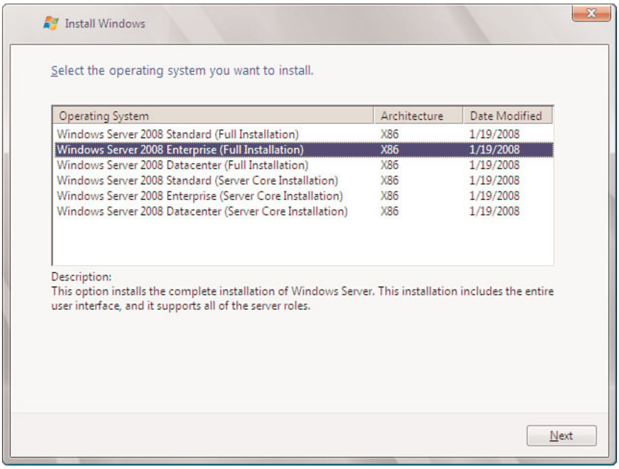
4. Click Install Now to begin the installation process.



Copyright © 2007 Microsoft Corporation. All rights reserved.

FIGURE 1.2
Install Now.

5. On the Select the Operating System You Want to Install page, select Windows Server 2008 Enterprise (Full Installation) and click Next.



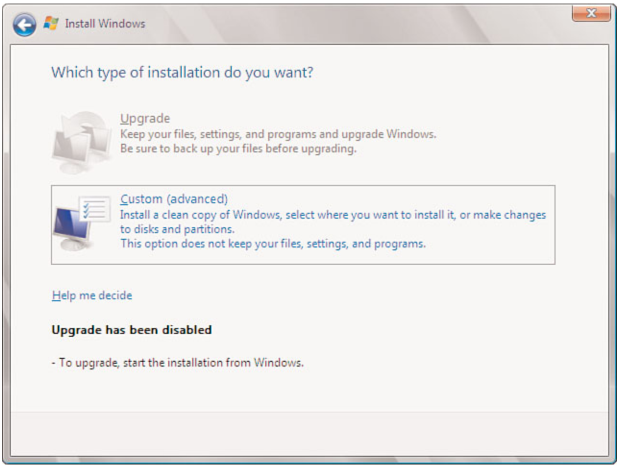
Select the operating system you want to install.

Operating System	Architecture	Date Modified
Windows Server 2008 Standard (Full Installation)	X86	1/19/2008
Windows Server 2008 Enterprise (Full Installation)	X86	1/19/2008
Windows Server 2008 Datacenter (Full Installation)	X86	1/19/2008
Windows Server 2008 Standard (Server Core Installation)	X86	1/19/2008
Windows Server 2008 Enterprise (Server Core Installation)	X86	1/19/2008
Windows Server 2008 Datacenter (Server Core Installation)	X86	1/19/2008

Description:
This option installs the complete installation of Windows Server. This installation includes the entire user interface, and it supports all of the server roles.

FIGURE 1.3
Select the operating system you want to install.

6. Read and accept the license terms by selecting the check box; then click Next.
7. On the Which Type of Installation Do You Want? page, select Custom (Advanced).



Which type of installation do you want?

Upgrade
Keep your files, settings, and programs and upgrade Windows.
Be sure to back up your files before upgrading.

Custom (advanced)
Install a clean copy of Windows, select where you want to install it, or make changes to disks and partitions.
This option does not keep your files, settings, and programs.

Help me decide

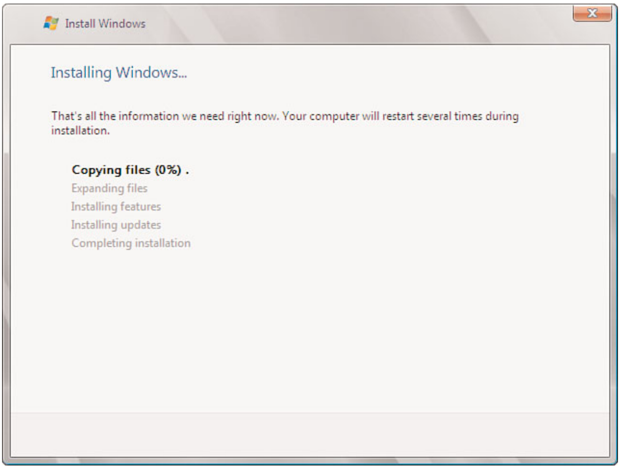
Upgrade has been disabled

- To upgrade, start the installation from Windows.

FIGURE 1.4
Which type of installation do you want?

8. On the Where Do You Want to Install Windows? click Drive Options, click New, and verify the size of the drive. Then click Apply, and then click Next.

9. The installation of Windows Server 2008 begins.



Installing Windows...

That's all the information we need right now. Your computer will restart several times during installation.

Copying files (0%) .

Expanding files

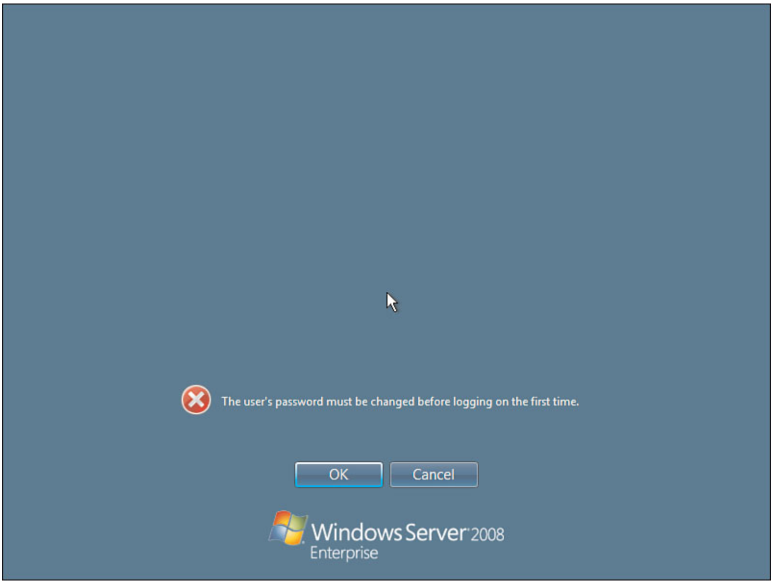
Installing features

Installing updates

Completing installation

FIGURE 1.5
Installing Windows.

10. When the installation process is complete, the server reboots and you are prompted to change the user's password before logging on for the first time, as shown in Figure 1.6.



The user's password must be changed before logging on the first time.

FIGURE 1.6
Initial password change.

11. Click OK to change the password for the Administrator account.
12. Enter a password of Today01! in the New Password field.
13. Reenter the password Today01! in the Confirm Password field and click the arrow, as shown in Figure 1.7.

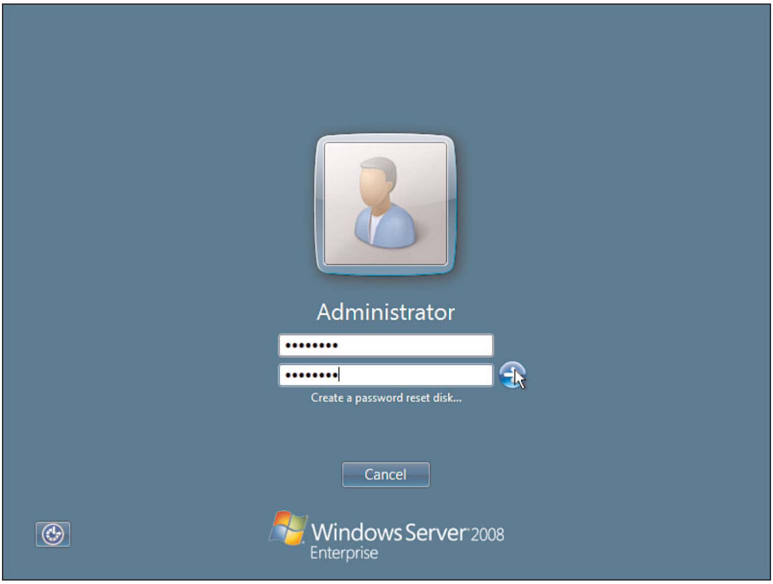


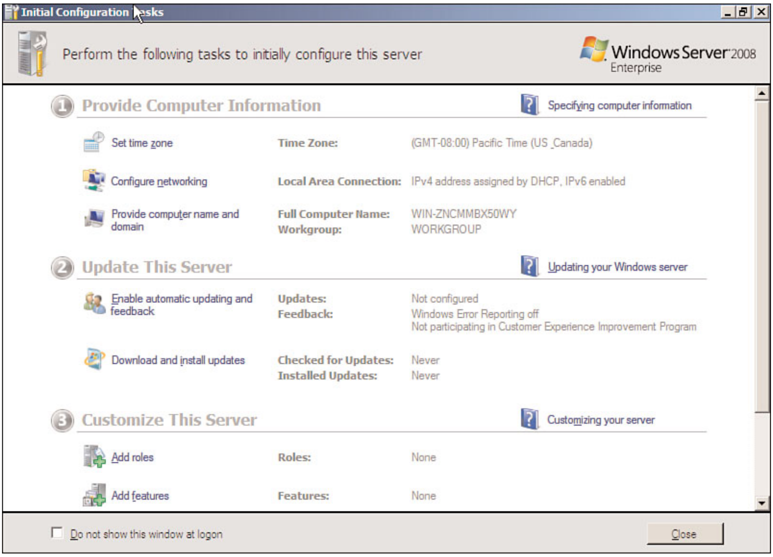
FIGURE 1.7
The Change Password Window.

14. Click OK on the password change confirmation page.

    Windows creates the profile for the Administrator account. After the profile is created, the Initial Configuration Tasks window appears, as shown in Figure 1.8.

15. On the Initial Configuration Tasks page, check the option Do Not Show This Window at Logon; then click Close.

    After the Initial Configuration Tasks page is closed, Server Manager opens automatically (see Figure 1.9).



Perform the following tasks to initially configure this server

1 Provide Computer Information — Specifying computer information

Set time zone	Time Zone:	(GMT-08:00) Pacific Time (US Canada)
Configure networking	Local Area Connection:	IPv4 address assigned by DHCP, IPv6 enabled
Provide computer name and domain	Full Computer Name: Workgroup:	WIN-ZNCMMBX50WY WORKGROUP

2 Update This Server — Updating your Windows server

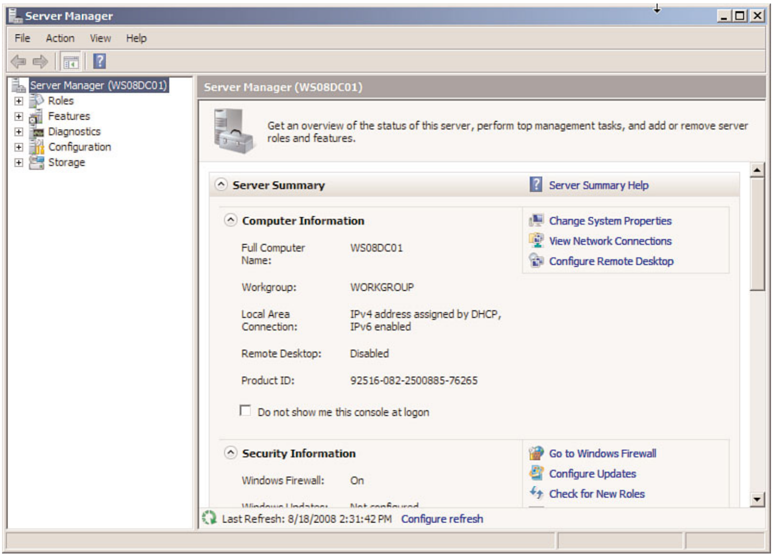
Enable automatic updating and feedback	Updates: Feedback:	Not configured Windows Error Reporting off Not participating in Customer Experience Improvement Program
Download and install updates	Checked for Updates: Installed Updates:	Never Never

3 Customize This Server — Customizing your server

Add roles	Roles:	None
Add features	Features:	None

□ Do not show this window at logon

FIGURE 1.8
Initial configuration tasks.



Server Manager (WS08DC01)

Get an overview of the status of this server, perform top management tasks, and add or remove server roles and features.

Server Summary

Computer Information

Full Computer Name:	WS08DC01
Workgroup:	WORKGROUP
Local Area Connection:	IPv4 address assigned by DHCP, IPv6 enabled
Remote Desktop:	Disabled
Product ID:	92516-082-2500885-76265

□ Do not show me this console at logon

Security Information

Windows Firewall:	On
Windows Updates:	Not configured

Last Refresh: 8/18/2008 2:31:42 PM

FIGURE 1.9
Server Manager.

16. On the Server Manager page, select the option Do Not Show Me This Console at Logon; then close Server Manager.

The installation of Windows Server 2008 is now complete.

CHAPTER 2

Prepare for Active Directory Domain Services Installation

IN THIS CHAPTER

- Prepare an Existing Forest for Windows Server 2008 Active Directory Domain Services
- Prepare an Existing Domain for Windows Server 2008 Active Directory Domain Services
- Prepare an Existing Domain for a Read-Only Domain Controller

Windows Server 2008 can be installed into an existing Windows 2000 Server or Windows Server 2003 Active Directory Domain Services (AD DS) forest. You must take certain steps to prepare for AD DS installation when your environment contains an existing forest.

The forest itself must be prepared for Windows Server 2008 AD DS. Thereafter, each domain that will contain domain controllers running Windows Server 2008 also needs to be prepared. Lastly, if you plan to deploy read-only domain controllers (RODCs) into the forest, additional preparation is required.

This chapter describes the steps necessary to prepare for Active Directory Domain Services installation.

Prepare an Existing Forest for Windows Server 2008 Active Directory Domain Services

Scenario/Problem: If your environment consists of an existing Windows 2000 Server or Windows Server 2003 Active Directory Domain Services forest, you must prepare the existing forest for Windows Server 2008 before you can add a domain controller that has Windows Server 2008 installed. Preparing an existing forest consists of updating the AD DS schema.

Solution: The schema update consists of extending the existing AD DS schema to include the attributes and classes that are new in Windows Server 2008. The Windows Server 2008 installation media includes the ADPrep command-line tool, which is used to prepare an existing forest for Windows Server 2008 AD DS. The schema update must be completed on the domain controller that holds the schema master operations master role.

To find the domain controller that holds the schema master operations master role, type the following command into a command prompt window:

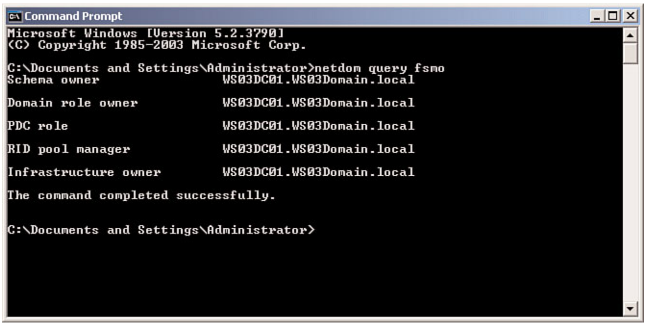
```
netdom query fsmo
```

NOTE The Netdom command-line tool is not installed with Windows Server 2000 or Windows Server 2003. Netdom can be installed from the Windows Support tools for these operating systems. The Netdom command-line tool is installed with the Windows Server 2008 operating system by default.

Figure 2.1 shows the output of the Netdom command-line tool.

To complete this task, you must use an AD DS account that has membership in the following AD DS groups:

- Enterprise Admins
- Schema Admins
- Domain Admins in the forest root domain



```
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Documents and Settings\Administrator>netdom query fsmo
Schema owner                WS03DC01.WS03Domain.local

Domain role owner           WS03DC01.WS03Domain.local

PDC role                    WS03DC01.WS03Domain.local

RID pool manager            WS03DC01.WS03Domain.local

Infrastructure owner        WS03DC01.WS03Domain.local

The command completed successfully.


C:\Documents and Settings\Administrator>
```

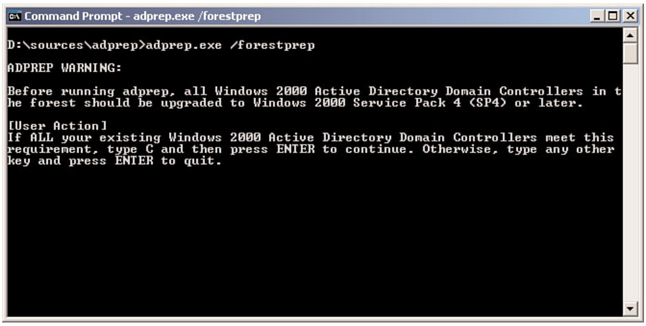
FIGURE 2.1
Using the Netdom command-line tool to find the schema master operations master role holder.

To prepare an existing forest for Windows Server 2008 Active Directory Domain Services, perform the following steps:

1. Log on to the schema master.
2. Insert the Windows Server 2008 DVD into the DVD drive.
3. Click Start and select Command Prompt.
4. Type the following command, and then press Enter:

   `D:\sources\adprep\adprep /forestprep`

   (where `D:` is your DVD drive's drive letter.)
5. As shown in Figure 2.2, `adprep.exe` presents a warning that indicates that all Windows 2000 domain controllers in the forest must have Service Pack 4 installed. If you meet this minimum requirement, type **`C`** and press Enter.



```
D:\sources\adprep>adprep.exe /forestprep

ADPREP WARNING:

Before running adprep, all Windows 2000 Active Directory Domain Controllers in t
he forest should be upgraded to Windows 2000 Service Pack 4 (SP4) or later.

[User Action]
If ALL your existing Windows 2000 Active Directory Domain Controllers meet this
requirement, type C and then press ENTER to continue. Otherwise, type any other
key and press ENTER to quit.
```

FIGURE 2.2
Forest prep completed successfully.

After the forest update is complete, you will receive a message that states `Adprep successfully updated the forest-wide information`.

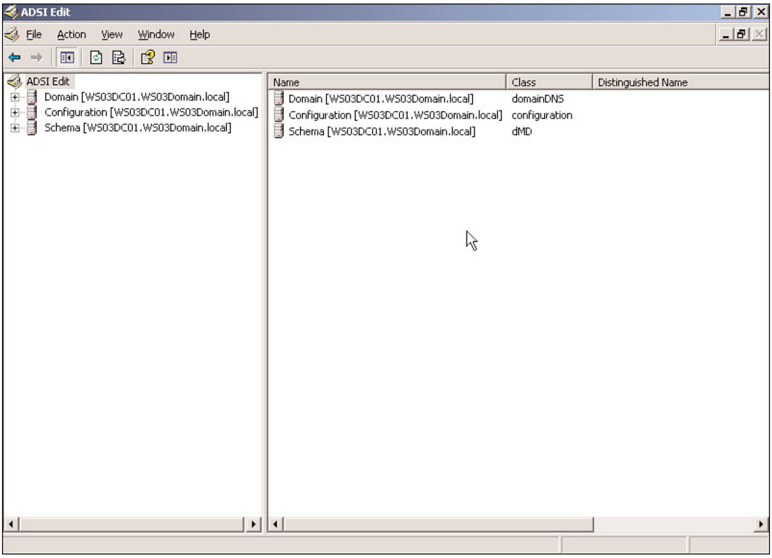
You can also use a number of methods to ensure the schema update was successful.

Start by examining the log file created by adprep; to accomplish this, follow these steps:

1. Select Start, Run.
2. In the Run dialog box, type **`%windir%\Debug\adprep\logs`**. Then click OK.
3. Open the folder that corresponds to the date and time that `adprep.exe` was run. For example, if the `adprep` command was run at 4:32:02 p.m. on August 18, 2008, the folder name will be `20080818163202`.
4. Examine the `adprep.log` file.

You can also verify the schema version is in fact version 44 after that completion of adprep by performing the following steps:

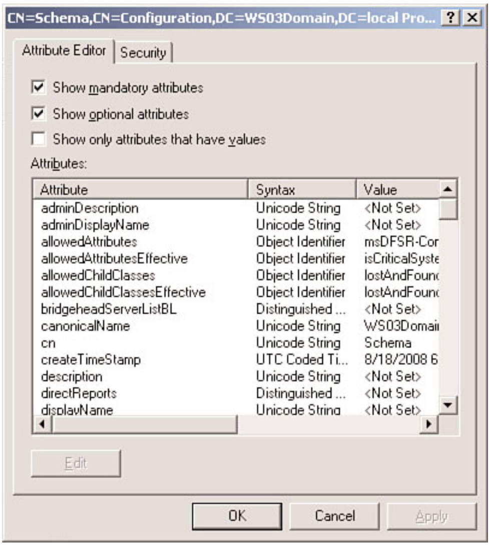
1. Select Start, Run.
2. In the Run dialog box, type **`adsiedit.msc`**; then click OK. The ADSI Edit console opens, as shown in Figure 2.3.


ADSI Edit
File
Action
View
Window
Help
ADSI Edit
Domain [WS03DC01.WS03Domain.local]
Configuration [WS03DC01.WS03Domain.local]
Schema [WS03DC01.WS03Domain.local]

Name	Class	Distinguished Name
Domain [WS03DC01.WS03Domain.local]	domainDNS	
Configuration [WS03DC01.WS03Domain.local]	configuration	
Schema [WS03DC01.WS03Domain.local]	dMD	

FIGURE 2.3
ADSI Edit Console.

3. Select the Schema node in the console tree on the left.
4. Right-click the schema container in the details pane, and select Properties. The Attribute Editor for the schema object opens, as shown in Figure 2.4.



CN=Schema,CN=Configuration,DC=WS03Domain,DC=local Pro...

☑ Show mandatory attributes

☑ Show optional attributes

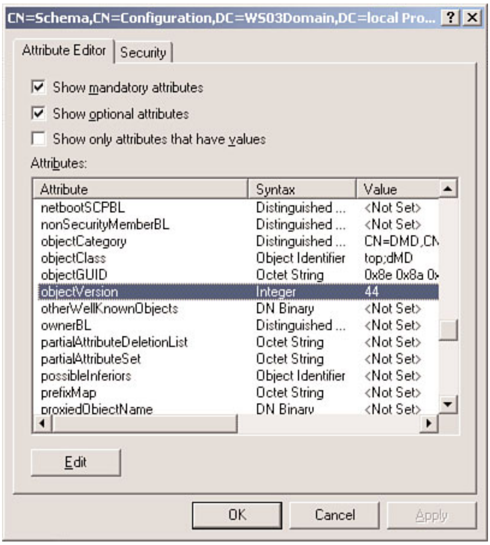
□ Show only attributes that have values

Attributes:

Attribute	Syntax	Value
adminDescription	Unicode String	<Not Set>
adminDisplayName	Unicode String	<Not Set>
allowedAttributes	Object Identifier	msDFSR-Cor
allowedAttributesEffective	Object Identifier	isCriticalSyste
allowedChildClasses	Object Identifier	lostAndFounc
allowedChildClassesEffective	Object Identifier	lostAndFounc
bridgeheadServerListBL	Distinguished ...	<Not Set>
canonicalName	Unicode String	WS03Domai
cn	Unicode String	Schema
createTimeStamp	UTC Coded Ti...	8/18/2008 6
description	Unicode String	<Not Set>
directReports	Distinguished ...	<Not Set>
displayName	Unicode String	<Not Set>

FIGURE 2.4
Schema Object Attribute Editor.

5. Scroll down to the `objectVersion` attribute and ensure the value is `44`, as shown in Figure 2.5.



CN=Schema,CN=Configuration,DC=WS03Domain,DC=local Pro...

☑ Show mandatory attributes

☑ Show optional attributes

□ Show only attributes that have values

Attributes:

Attribute	Syntax	Value
netbootSCPBL	Distinguished ...	<Not Set>
nonSecurityMemberBL	Distinguished ...	<Not Set>
objectCategory	Distinguished ...	CN=DMD,CN
objectClass	Object Identifier	top;dMD
objectGUID	Octet String	0x8e 0x8a 0x
objectVersion	Integer	44
otherWellKnownObjects	DN Binary	<Not Set>
ownerBL	Distinguished ...	<Not Set>
partialAttributeDeletionList	Octet String	<Not Set>
partialAttributeSet	Octet String	<Not Set>
possibleInferiors	Object Identifier	<Not Set>
prefixMap	Octet String	<Not Set>
proxiedObjectName	DN Binary	<Not Set>

FIGURE 2.5
objectVersion.

Prepare an Existing Domain for Windows Server 2008 Active Directory Domain Services

Scenario/Problem: After the existing forest has been prepared for Windows Server 2008 AD DS, you need to prepare each domain in the forest that will contain Windows Server 2008 domain controllers. Preparing existing domains for Windows Server 2008 AD DS consists of applying permission changes to AD DS.

Solution: Each existing domain that will contain one or more Windows Server 2008 domain controllers must be prepared. The Windows Server 2008 installation media includes the adprep command-line tool, which is used to prepare an existing domain for Windows Server 2008 AD DS. The domain update must be completed on the domain controller that holds the infrastructure master operations master role.

To find the domain controller that holds the infrastructure master operations master role, type the following command into a command prompt window:

```
netdom query /domain:DomainName fsmo
```

(where *DomainName* is the name of the domain you are trying to determine the infrastructure master role holder for).

To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Domain Admins in the domain you are preparing

To prepare an existing domain for Windows Server 2008 Active Directory Domain Services, perform the following steps:

1. Log on to the infrastructure master.
2. Insert the Windows Server 2008 DVD into the DVD drive.
3. Click Start and select Command Prompt.
4. Type the following command, and then press Enter:

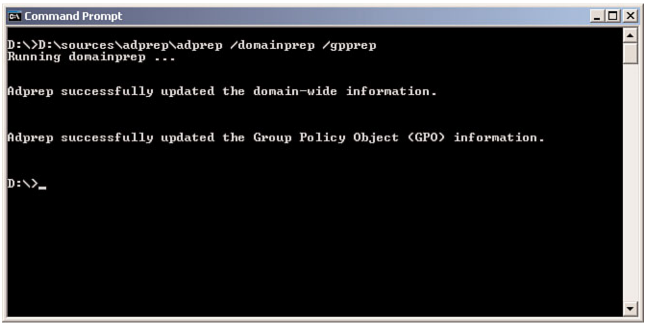
   ```
   D:\sources\adprep\adprep /domainprep /gpprep
   ```

   (where `D:` is your DVD drive's drive letter).

After the domain update is complete, you will receive a message that states `Adprep successfully updated the domain-wide information`, as shown in Figure 2.6.

The changes made by the domain update are also logged in the `%windir%\Debug\adprep\logs` directory.

The domain prep process creates a new object in the System container in the domain. This new container is used to store fine-grained password policies.



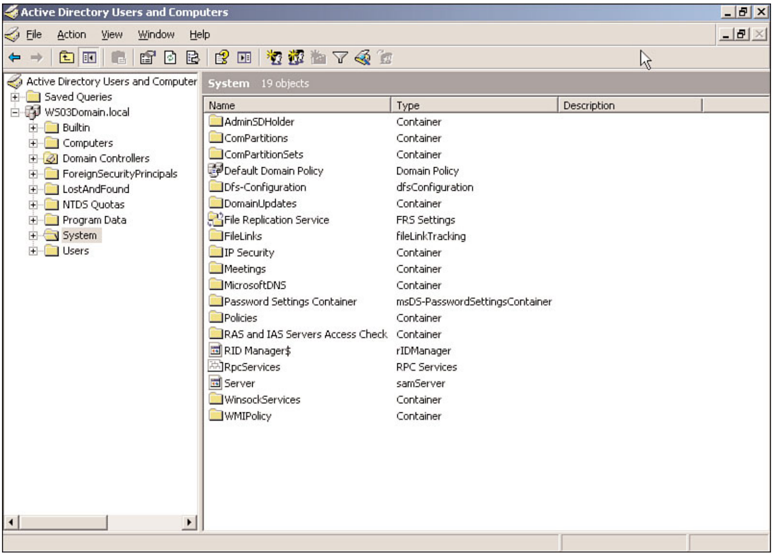
```
D:\>D:\sources\adprep\adprep /domainprep /gpprep
Running domainprep ...

Adprep successfully updated the domain-wide information.


Adprep successfully updated the Group Policy Object (GPO) information.


D:\>_
```

FIGURE 2.6
Domain prep completed successfully.

One additional method of verifying the completion of the domain prep process is to ensure the new container has been created. You can use the steps that follow to verify the successful completion of the domain prep process.

1. Select Start, Administrative Tools, Active Directory Users and Computers.
2. In the Active Directory Users and Computers console, go to View and select Advanced Features.
3. Expand the domain in the console tree and select the System container.

As shown in Figure 2.7, a container called Password Settings Container exists in the details pane; it was created by the domain prep process.



Name	Type	Description
AdminSDHolder	Container	
ComPartitions	Container	
ComPartitionSets	Container	
Default Domain Policy	Domain Policy	
Dfs-Configuration	dfsConfiguration	
DomainUpdates	Container	
File Replication Service	FRS Settings	
FileLinks	fileLinkTracking	
IP Security	Container	
Meetings	Container	
MicrosoftDNS	Container	
Password Settings Container	msDS-PasswordSettingsContainer	
Policies	Container	
RAS and IAS Servers Access Check	Container	
RID Manager$	rIDManager	
RpcServices	RPC Services	
Server	samServer	
WinsockServices	Container	
WMIPolicy	Container	

FIGURE 2.7
Password Settings Container.

Prepare an Existing Domain for a Read-Only Domain Controller

Scenario/Problem: If you plan to deploy read-only domain controllers into your forest, you must first prepare the forest for RODCs. This is required before you can add any RODCs to your forest.

Solution: Each forest that will contain one or more RODCs must be prepared. The Windows Server 2008 installation media includes the adprep command-line tool, which is used to prepare the forest for Windows Server 2008 RODCs. The RODC can be run on any member server.

To complete this task, you must use an AD DS account that has membership in the following AD DS group:

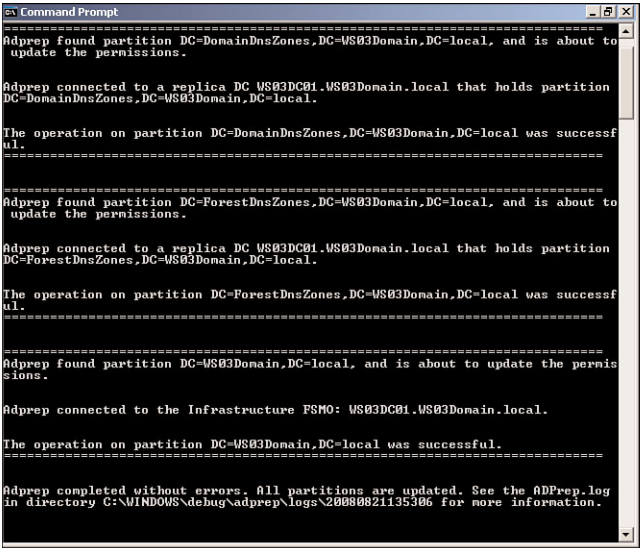
- Enterprise Admins

To prepare an existing domain for a read-only domain controller, perform the following steps:

1. Log on to any computer in the forest.
2. Insert the Windows Server 2008 DVD into the DVD drive.
3. Click Start, right-click Command prompt, and then click Run as Administrator.
4. Type the following command, and then press Enter:

   ```
   D:\sources\adprep\adprep /rodcprep
   ```

   (where D: is your DVD drive’s drive letter).
5. The RODC prep process will complete, and you will receive a message that states *Adprep completed without errors.* `All partitions are updated. See the ADPrep.log in directory…for more information`, as shown in Figure 2.8.



```
==============================================================================
Adprep found partition DC=DomainDnsZones,DC=WS03Domain,DC=local, and is about to
 update the permissions.


Adprep connected to a replica DC WS03DC01.WS03Domain.local that holds partition
DC=DomainDnsZones,DC=WS03Domain,DC=local.


The operation on partition DC=DomainDnsZones,DC=WS03Domain,DC=local was successf
ul.
==============================================================================


==============================================================================
Adprep found partition DC=ForestDnsZones,DC=WS03Domain,DC=local, and is about to
 update the permissions.


Adprep connected to a replica DC WS03DC01.WS03Domain.local that holds partition
DC=ForestDnsZones,DC=WS03Domain,DC=local.


The operation on partition DC=ForestDnsZones,DC=WS03Domain,DC=local was successf
ul.
==============================================================================


==============================================================================
Adprep found partition DC=WS03Domain,DC=local, and is about to update the permis
sions.


Adprep connected to the Infrastructure FSMO: WS03DC01.WS03Domain.local.


The operation on partition DC=WS03Domain,DC=local was successful.
==============================================================================


Adprep completed without errors. All partitions are updated. See the ADPrep.log
in directory C:\WINDOWS\debug\adprep\logs\20080821135306 for more information.
```

FIGURE 2.8
RODC prep completed successfully.

This page intentionally left blank

CHAPTER 3

Install and Uninstall Active Directory Domain Services

IN THIS CHAPTER:

- Install a New Windows Server 2008 Forest
- Install a New Windows Server 2008 Child Domain
- Install a New Windows Server 2008 Domain Tree
- Install an Additional Windows Server 2008 Domain Controller
- Perform a Staged Installation of a Read-Only Domain Controller
- Install AD DS from Restored Backup Media
- Remove a Domain Controller from a Domain
- Forcing the Removal of a Windows Server 2008 Domain Controller
- Performing Metadata Cleanup
- Rename a Domain Controller

Active Directory Domain Services (AD DS) was introduced with the release of Windows 2000 Server and has been included in each subsequent release of the server operating system from Microsoft. The majority of companies have at least one AD DS forest deployed. However, some companies continue to deploy new AD DS forests for various reasons.

This chapter describes the steps required to install and uninstall Active Directory Domain Services.

Install a New Windows Server 2008 Forest

Scenario/Problem: In some cases, you will deploy a new Windows Server 2008 Active Directory Domain Service forest instead of adding domain controllers (DCs) to an existing forest. Although the installation of a new Windows Server 2008 AD DS forest does not require any of the preparation steps that were performed in Chapter 2, "Prepare for Active Directory Domain Services Installation," you still need to perform the installation following specific steps.

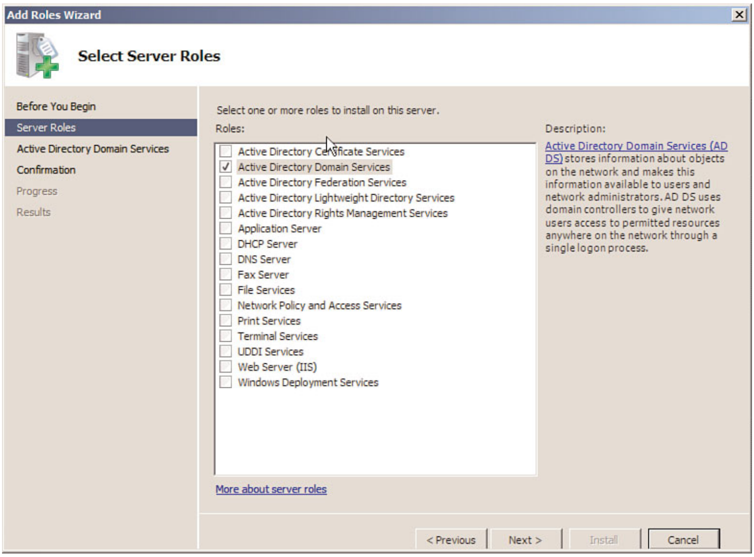
Solution: Installing a new Windows Server 2008 forest consists of promoting a Windows Server 2008 server to a domain controller. Thereafter, additional DCs and domains can be added to the new forest. The installation of a new Windows Server 2008 forest can be performed by using the Windows interface, the command line, and an answer file.

Install a New Forest by Using the Windows Interface

To install a new forest by using the Windows interface, perform the following steps using a local account that has membership in the following local group:

- Administrators

1. Log on to the server you want to promote to a domain controller.
2. Click Start and then click Server Manager.
3. In Roles Summary, click Add Roles.
4. On the Before You Begin page, click Next.
5. On the Select Server Roles page, shown in Figure 3.1, click the Active Directory Domain Services check box; then click Next.
6. On the Active Directory Domain Services page, click Next.
7. On the Confirm Installation Selections page, click Install.
8. On the Installation Results page, shown in Figure shown in Figure 3.2, verify that the installation succeeded and then click Close this wizard and launch the Active Directory Domain Services Installation Wizard (dcpromo.exe).



Select one or more roles to install on this server.

Roles:

- ☐ Active Directory Certificate Services
- ☑ Active Directory Domain Services
- ☐ Active Directory Federation Services
- ☐ Active Directory Lightweight Directory Services
- ☐ Active Directory Rights Management Services
- ☐ Application Server
- ☐ DHCP Server
- ☐ DNS Server
- ☐ Fax Server
- ☐ File Services
- ☐ Network Policy and Access Services
- ☐ Print Services
- ☐ Terminal Services
- ☐ UDDI Services
- ☐ Web Server (IIS)
- ☐ Windows Deployment Services

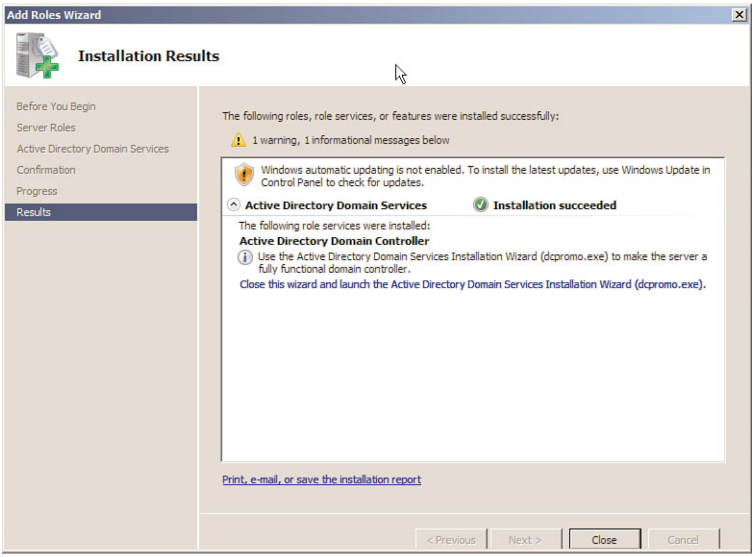
Description:

Active Directory Domain Services (AD DS) stores information about objects on the network and makes this information available to users and network administrators. AD DS uses domain controllers to give network users access to permitted resources anywhere on the network through a single logon process.

More about server roles

FIGURE 3.1

The Select Server Roles page.



The following roles, role services, or features were installed successfully:

⚠ 1 warning, 1 informational messages below

Windows automatic updating is not enabled. To install the latest updates, use Windows Update in Control Panel to check for updates.

Active Directory Domain Services ✓ **Installation succeeded**

The following role services were installed:

Active Directory Domain Controller

ⓘ Use the Active Directory Domain Services Installation Wizard (dcpromo.exe) to make the server a fully functional domain controller.

Close this wizard and launch the Active Directory Domain Services Installation Wizard (dcpromo.exe).

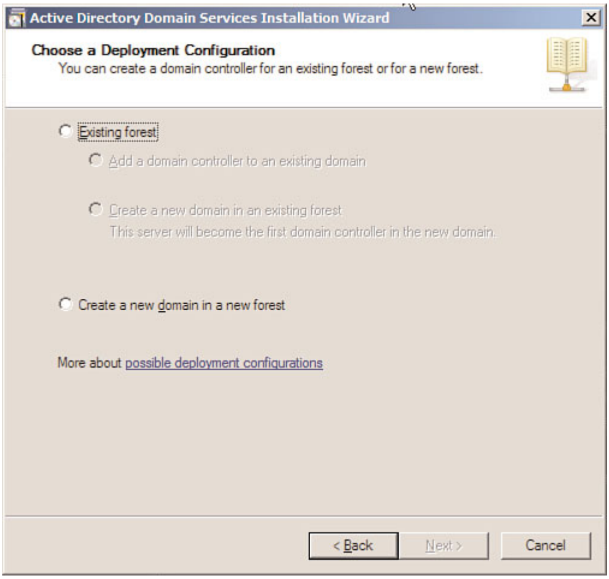
Print, e-mail, or save the installation report

FIGURE 3.2

The Installation Results page.

TIP It is a best practice to assign a static IP address as opposed to a dynamic IP address on a domain controller. If you have not assigned a static IP address, now is the best time to do so. If you proceed with the steps that follow without assigning a static IP address, you will be presented with a warning during the AD DS installation process. You can accept the warning and proceed with the installation if desired.

9. On the Welcome to the Active Directory Domain Services Installation Wizard page, click Next.
10. On the Operating System Compatibility page, click Next.
11. On the Choose a Deployment Configuration page, shown in Figure 3.3, click Create a new domain in a new forest; then click Next.



Active Directory Domain Services Installation Wizard

Choose a Deployment Configuration

You can create a domain controller for an existing forest or for a new forest.

○ Existing forest

○ Add a domain controller to an existing domain

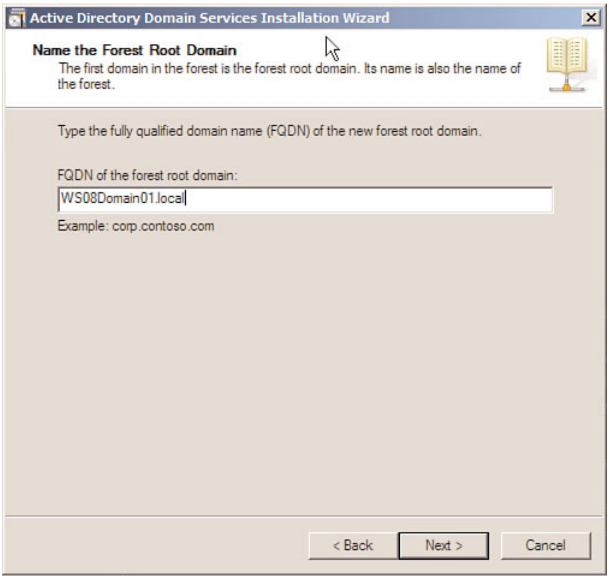
○ Create a new domain in an existing forest
This server will become the first domain controller in the new domain.

○ Create a new domain in a new forest

More about possible deployment configurations

FIGURE 3.3
The Choose a Deployment Configuration page.

12. On the Name the Forest Root Domain page, shown in Figure 3.4, type the fully qualified domain name (FQDN) for the forest root domain and then click Next.
13. On the Set Forest Functional Level page, shown in Figure 3.5, select the forest functional level that meets your requirements and click Next.



Name the Forest Root Domain

The first domain in the forest is the forest root domain. Its name is also the name of the forest.

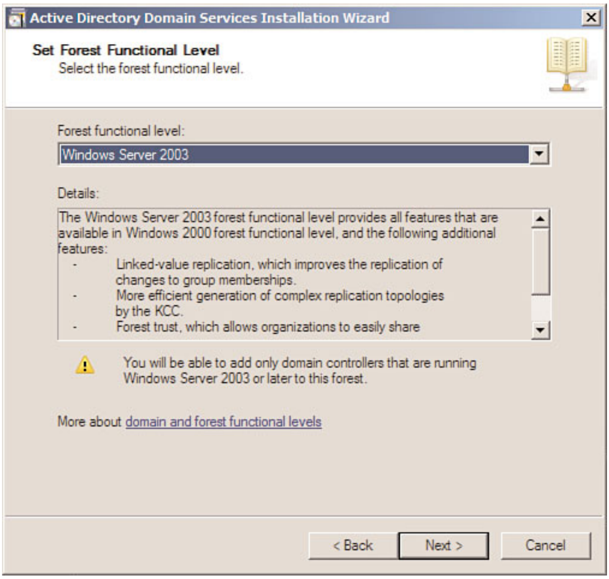
Type the fully qualified domain name (FQDN) of the new forest root domain.

FQDN of the forest root domain:

WS08Domain01.local

Example: corp.contoso.com

FIGURE 3.4
The Name the Forest Root Domain page.



Set Forest Functional Level

Select the forest functional level.

Forest functional level:

Windows Server 2003

Details:

The Windows Server 2003 forest functional level provides all features that are available in Windows 2000 forest functional level, and the following additional features:

- Linked-value replication, which improves the replication of changes to group memberships.
- More efficient generation of complex replication topologies by the KCC.
- Forest trust, which allows organizations to easily share

⚠ You will be able to add only domain controllers that are running Windows Server 2003 or later to this forest.

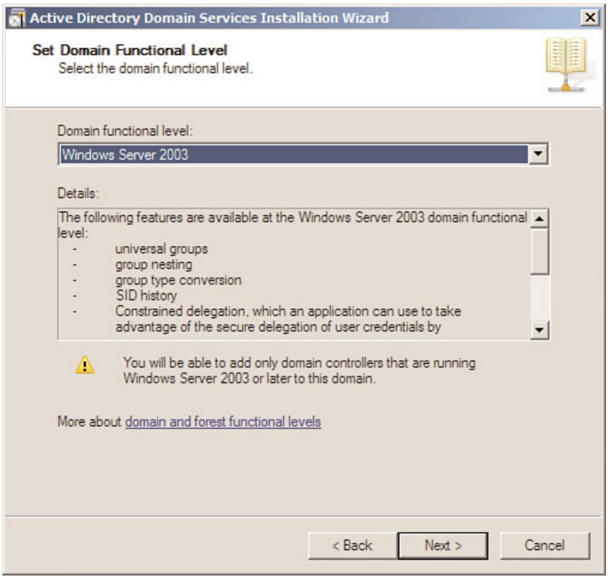
More about domain and forest functional levels

FIGURE 3.5
The Set Forest Functional Level page.

NOTE Active Directory Domain Services functional levels control the available domain or forest advanced features. For example, a number of the new features introduced in Windows Server 2008 require a domain functional level of Windows Server 2008. Functional levels also control the operating systems that you can run on domain controllers. If your domain functional level is set to Windows Server 2008, you cannot have domain controllers that have Windows Server 2003 installed. Lastly, once you set or raise a functional level, you cannot change the functional level to a lower level.

For more information on AD DS functional levels, go to http://technet.microsoft.com/en-us/library/cc754918.aspx.

14. If you set a forest functional level other than Windows Server 2008, the Set Domain Functional Level page displays, as shown in Figure 3.6. Select the domain functional level that meets your requirements and click Next.



Set Domain Functional Level

Select the domain functional level.

Domain functional level:

Windows Server 2003

Details:

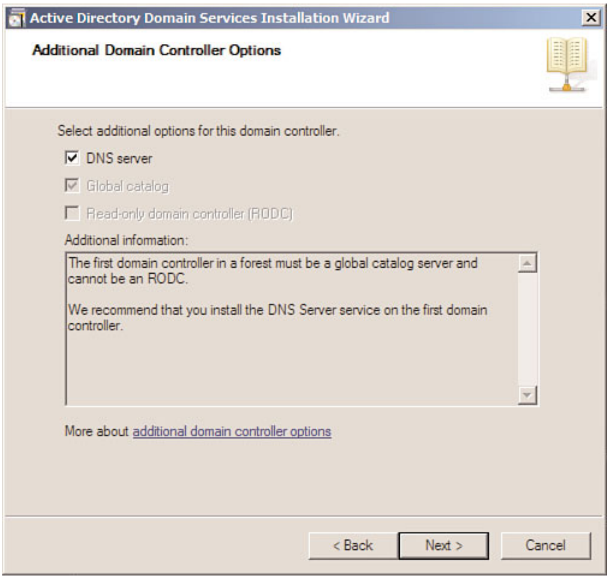
The following features are available at the Windows Server 2003 domain functional level:
- universal groups
- group nesting
- group type conversion
- SID history
- Constrained delegation, which an application can use to take advantage of the secure delegation of user credentials by

You will be able to add only domain controllers that are running Windows Server 2003 or later to this domain.

More about domain and forest functional levels

FIGURE 3.6
The Set Domain Functional Level page.

15. On the Additional Domain Controller Options page, shown in Figure 3.7, DNS Server is selected by default, which allows the DNS infrastructure to be created by the installation process. If you plan to use AD-Integrated DNS, click Next. If you plan to use an existing DNS infrastructure and do not want the domain controller to be a DNS server, clear the DNS Server check box and click Next.


Active Directory Domain Services Installation Wizard

Additional Domain Controller Options

Select additional options for this domain controller.

☑ DNS server

☑ Global catalog

□ Read-only domain controller (RODC)

Additional information:

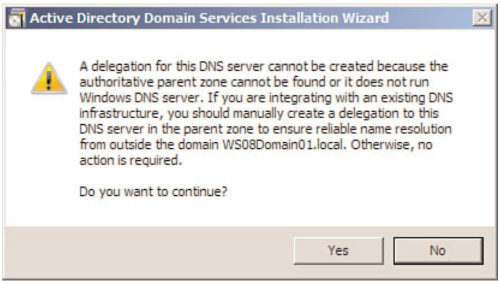
The first domain controller in a forest must be a global catalog server and cannot be an RODC.

We recommend that you install the DNS Server service on the first domain controller.

More about additional domain controller options

FIGURE 3.7
The Additional Domain Controller Options page.

16. If the wizard cannot create a delegation for the DNS server, it displays a message to indicate that you can create the delegation manually, as shown in Figure 3.8. To continue, click Yes.

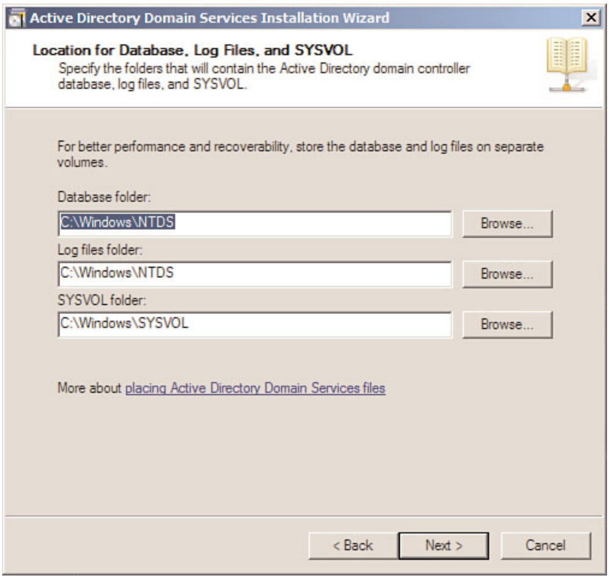

Active Directory Domain Services Installation Wizard

A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain WS08Domain01.local. Otherwise, no action is required.

Do you want to continue?

FIGURE 3.8
The manual DNS Delegation Message.

17. On the Location for Database, Log Files, and SYSVOL page, shown in Figure 3.9, type the volume and folder locations for the database file, the directory service log files, and the SYSVOL files; then click Next.



Active Directory Domain Services Installation Wizard

Location for Database, Log Files, and SYSVOL

Specify the folders that will contain the Active Directory domain controller database, log files, and SYSVOL.

For better performance and recoverability, store the database and log files on separate volumes.

Database folder: C:\Windows\NTDS

Log files folder: C:\Windows\NTDS

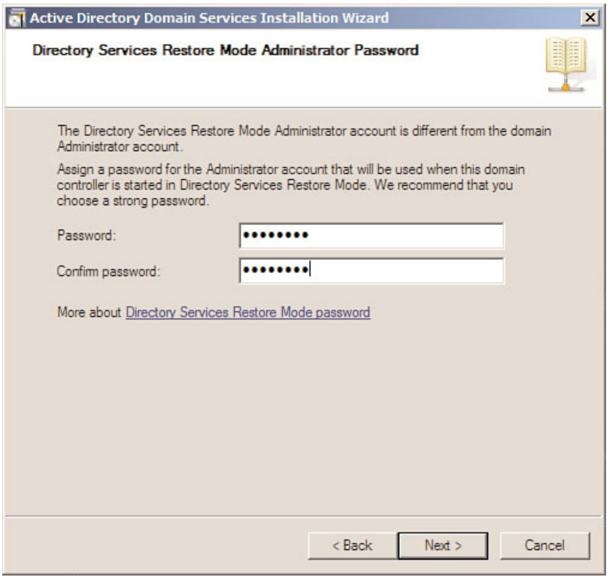
SYSVOL folder: C:\Windows\SYSVOL

More about placing Active Directory Domain Services files

FIGURE 3.9

The Location for Database, Log Files, and SYSVOL page.

18. On the Directory Services Restore Mode Administrator Password page, shown in Figure 3.10, type and confirm the restore mode password and then click Next.



Active Directory Domain Services Installation Wizard

Directory Services Restore Mode Administrator Password

The Directory Services Restore Mode Administrator account is different from the domain Administrator account.

Assign a password for the Administrator account that will be used when this domain controller is started in Directory Services Restore Mode. We recommend that you choose a strong password.

Password: ••••••••

Confirm password: ••••••••

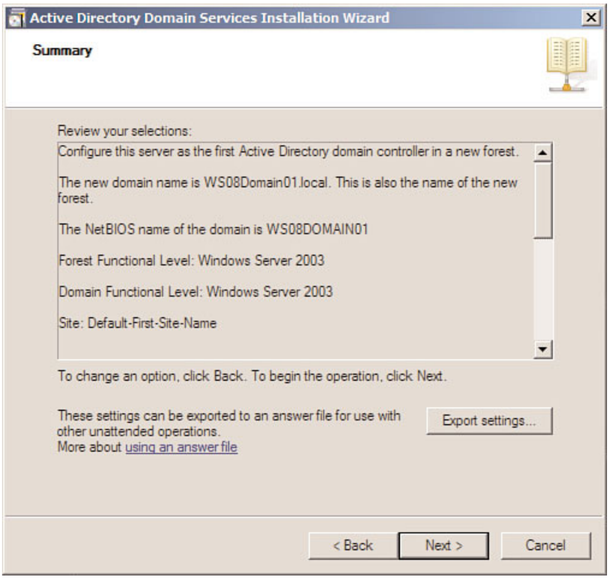
More about Directory Services Restore Mode password

FIGURE 3.10

The Directory Services Restore Mode Administrator Password page.

19. On the Summary page, shown in Figure 3.11, click Next after you review your selections.

TIP You can click the Export button to export the selections you made to an answer file, which can be used later for an unattended installation.



Review your selections:

Configure this server as the first Active Directory domain controller in a new forest.

The new domain name is WS08Domain01.local. This is also the name of the new forest.

The NetBIOS name of the domain is WS08DOMAIN01

Forest Functional Level: Windows Server 2003

Domain Functional Level: Windows Server 2003

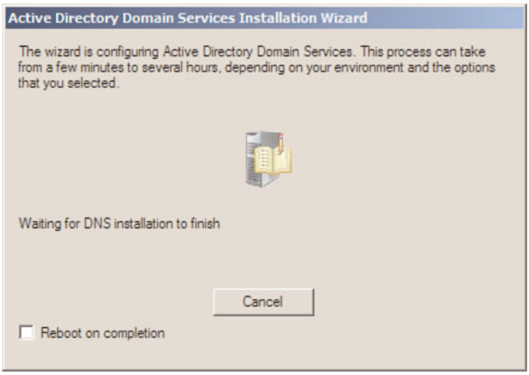
Site: Default-First-Site-Name

To change an option, click Back. To begin the operation, click Next.

These settings can be exported to an answer file for use with other unattended operations.
More about using an answer file

FIGURE 3.11
The Summary page.

The Active Directory Domain Services installation process starts, as shown in Figure 3.12.

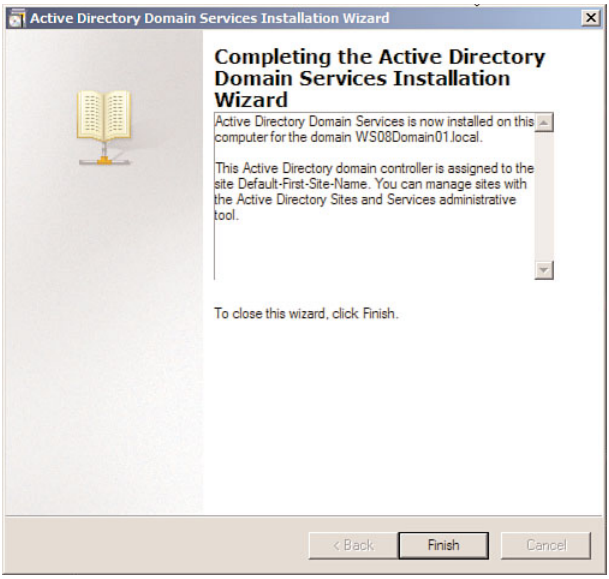


The wizard is configuring Active Directory Domain Services. This process can take from a few minutes to several hours, depending on your environment and the options that you selected.

Waiting for DNS installation to finish

FIGURE 3.12
The Active Directory Domain Services Installation page.

20. After the installation is complete, the Completing the Active Directory Domain Services Installation Wizard page appears, as shown in Figure 3.13. Ensure the installation was successful and click Finish.



Completing the Active Directory Domain Services Installation Wizard

Active Directory Domain Services is now installed on this computer for the domain WS08Domain01.local.

This Active Directory domain controller is assigned to the site Default-First-Site-Name. You can manage sites with the Active Directory Sites and Services administrative tool.

To close this wizard, click Finish.

FIGURE 3.13
The Completing the Active Directory Domain Services Installation Wizard page.

21. When prompted to restart, click Restart Now.
22. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
23. Open the DCPROMO.log file and analyze the results in the file.

Install a New Forest by Using the Command Line

Active Directory Domain Services can also be installed by using the command line. This is particularly useful when installing AD DS on a server that has a Server Core installation of Windows Server 2008.

The installation options when using the command line are the same as those used when installing AD DS using an unattended installation. When installing AD DS by using the command line, you type the installation options and parameters into the command line as opposed to an answer file, which is used for an unattended installation.

Table 3.1 lists the installation parameters used in the steps that follow and the corresponding action of each parameter.

TABLE 3.1 **Installing a New Forest by Using the Command Line Installation Parameters**

Installation Parameter	**Corresponding Action**
`InstallDns:yes`	DNS server will be installed.
`dnsOnNetwork:No`	DNS server will be installed.
`replicaOrNewDomain:domain`	A new domain will be created.
`newDomain:forest`	A new forest will be created.
`newDomainDnsName:WS08Domain02.local`	FQDN of the new domain.
`DomainNetbiosName:WS08Domain02`	NetBIOS name of the new domain.
`databasePath:"c:\Windows\ntds"`	Database path.
`logPath:"c:\Windows\ntds"`	Log file path.
`sysvolpath:"c:\Windows\sysvol"`	SYSVOL path.
`safeModeAdminPassword:Today01!`	DSRM Administrator password.
`forestLevel:2`	Forest functional level will be set to Windows Server 2003.
`domainLevel:2`	Domain functional level will be set to Windows Server 2003.
`rebootOnCompletion:yes`	Server will be rebooted after completion.

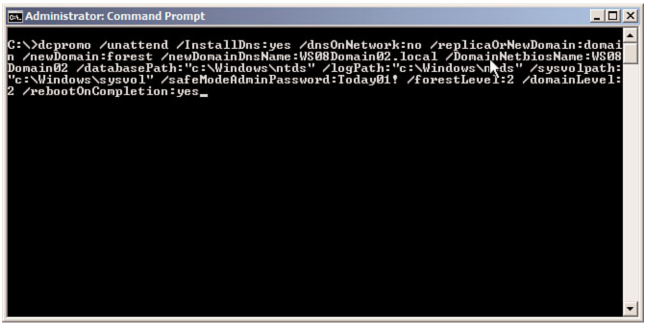
TIP For a complete list of installation options and parameters, go to http://technet.microsoft.com/en-us/library/cc733048.aspx.

To install a new forest by using the command line, perform the following steps using a local account that has membership in the following local group:

- Administrators

1. Log on to the server you want to promote to a domain controller.
2. Click Start and then click Command Prompt.
3. Type the following into the command prompt window, as shown in Figure 3.14, and then press Enter:

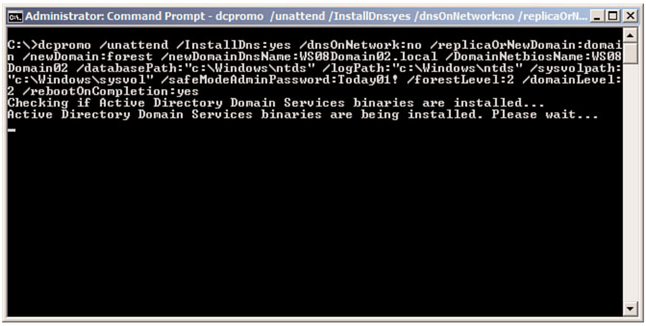
```
dcpromo /unattend /InstallDns:yes /dnsOnNetwork:no
/replicaOrNewDomain:domain /newDomain:forest
/newDomainDnsName:WS08Domain02.local
/DomainNetbiosName:WS08Domain02 /databasePath:"c:\Windows\ntds"
/logPath:"c:\Windows\ntds" /sysvolpath:"c:\Windows\sysvol"
/safeModeAdminPassword:Today01! /forestLevel:2 /domainLevel:2
/rebootOnCompletion:yes
```



```
C:\>dcpromo /unattend /InstallDns:yes /dnsOnNetwork:no /replicaOrNewDomain:domai
n /newDomain:forest /newDomainDnsName:WS08Domain02.local /DomainNetbiosName:WS08
Domain02 /databasePath:"c:\Windows\ntds" /logPath:"c:\Windows\ntds" /sysvolpath:
"c:\Windows\sysvol" /safeModeAdminPassword:Today01! /forestLevel:2 /domainLevel:
2 /rebootOnCompletion:yes_
```

FIGURE 3.14
Installing a new forest using the command line.

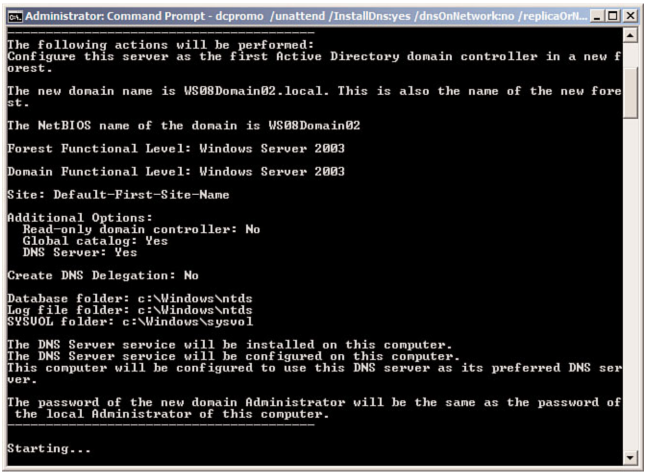
The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them, as shown in Figure 3.15.


Administrator: Command Prompt - dcpromo /unattend /InstallDns:yes /dnsOnNetwork:no /replicaOrN...

```
C:\>dcpromo /unattend /InstallDns:yes /dnsOnNetwork:no /replicaOrNewDomain:domai
n /newDomain:forest /newDomainDnsName:WS08Domain02.local /DomainNetbiosName:WS08
Domain02 /databasePath:"c:\Windows\ntds" /logPath:"c:\Windows\ntds" /sysvolpath:
"c:\Windows\sysvol" /safeModeAdminPassword:Today01! /forestLevel:2 /domainLevel:
2 /rebootOnCompletion:yes
Checking if Active Directory Domain Services binaries are installed...
Active Directory Domain Services binaries are being installed. Please wait...
_
```

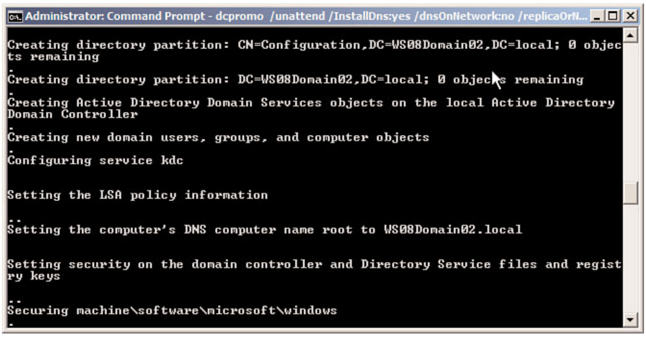
FIGURE 3.15
Installing AD DS services binaries.

4. After the AD DS binaries have been installed, a summary of the installation options is presented in the command prompt window, as shown in Figure 3.16. Then the AD DS installation process begins.
5. The status of the AD DS installing is updated in the command prompt window, as shown in Figure 3.17.


Administrator: Command Prompt - dcpromo /unattend /InstallDns:yes /dnsOnNetwork:no /replicaOrN...

```
----------------------------------------
The following actions will be performed:
Configure this server as the first Active Directory domain controller in a new f
orest.

The new domain name is WS08Domain02.local. This is also the name of the new fore
st.

The NetBIOS name of the domain is WS08Domain02

Forest Functional Level: Windows Server 2003

Domain Functional Level: Windows Server 2003

Site: Default-First-Site-Name

Additional Options:
  Read-only domain controller: No
  Global catalog: Yes
  DNS Server: Yes

Create DNS Delegation: No

Database folder: c:\Windows\ntds
Log file folder: c:\Windows\ntds
SYSVOL folder: c:\Windows\sysvol

The DNS Server service will be installed on this computer.
The DNS Server service will be configured on this computer.
This computer will be configured to use this DNS server as its preferred DNS ser
ver.

The password of the new domain Administrator will be the same as the password of
 the local Administrator of this computer.
----------------------------------------

Starting...
```

FIGURE 3.16
Installing AD DS.


Administrator: Command Prompt - dcpromo /unattend /InstallDns:yes /dnsOnNetwork:no /replicaOrN...

```
Creating directory partition: CN=Configuration,DC=WS08Domain02,DC=local; 0 objec
ts remaining
.
Creating directory partition: DC=WS08Domain02,DC=local; 0 objects remaining
.
Creating Active Directory Domain Services objects on the local Active Directory
Domain Controller
.
Creating new domain users, groups, and computer objects
.
Configuring service kdc


Setting the LSA policy information

..
Setting the computer's DNS computer name root to WS08Domain02.local


Setting security on the domain controller and Directory Service files and regist
ry keys

..
Securing machine\software\microsoft\windows
.
```

FIGURE 3.17
The installation's progress.

6. When the installation process is complete, the server reboots automatically if the `/rebootOnCompletion` option was used in the command line. If the `/rebootOnCompletion` option was not used in the command line, you are prompted to restart the server.
7. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
8. Open the DCPROMO.log file and analyze the results in the file.

Install a New Forest by Using an Answer File

Active Directory Domain Services can also be installed using an answer file. This is useful when installing AD DS on a server that has a Server Core installation of Windows Server 2008.

Table 3.2 lists the installation parameters used in the steps that follow and the corresponding action of each parameter.

TABLE 3.2 **Installing a New Forest by Using Answer File Installation Parameters**

Installation Parameter	Corresponding Action
`InstallDNS=yes`	DNS server will be installed.
`NewDomain=forest`	A new forest will be created.
`NewDomainDNSName=WS08Domain03.local`	FQDN of the new domain.
`DomainNetBiosName=WS08Domain03`	NetBIOS name of the new domain.
`ReplicaOrNewDomain=domain`	A new domain will be created.
`ForestLevel=3`	Forest functional level will be set to Windows Server 2008.
`DomainLevel=3`	Domain functional level will be set to Windows Server 2008.
`DatabasePath="c:\Windows\ntds"`	Database path.
`LogPath="c:\Windows\ntds"`	Log file path.
`RebootOnCompletion=yes`	Server will be rebooted after completion.
`SYSVOLPath=c:\Windows\sysvol"`	SYSVOL path.
`SafeModeAdminPassword=Today01!`	DSRM Administrator password.

TIP For a complete list of installation options and parameters, go to http://technet.microsoft.com/en-us/library/cc733048.aspx.

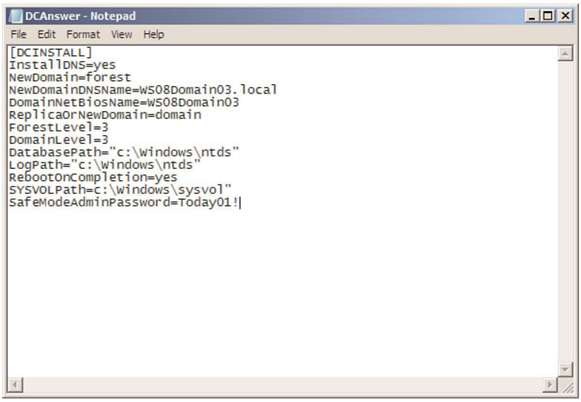
In order to install a new forest by using an answer file, perform the following steps using a local account that has membership in the following local group:

- Administrators

1. Log on to the server you want to promote to a domain controller.
2. Click Start, click Run, type **`notepad`**, and click OK.
3. On the first line, type **`[DCINSTALL]`**, and then press ENTER.

4. Type the following entries, one entry on each line, as shown in Figure 3.18:

```
InstallDNS=yes
NewDomain=forest
NewDomainDNSName=WS08Domain03.local
DomainNetBiosName=WS08Domain03
ReplicaOrNewDomain=domain
ForestLevel=3
DomainLevel=3
DatabasePath="c:\Windows\ntds"
LogPath="c:\Windows\ntds"
RebootOnCompletion=yes
SYSVOLPath="c:\Windows\sysvol"
SafeModeAdminPassword=Today01!
```



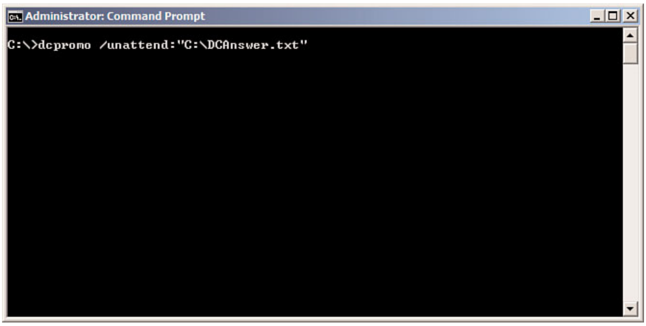
```
[DCINSTALL]
InstallDNS=yes
NewDomain=forest
NewDomainDNSName=WS08Domain03.local
DomainNetBiosName=WS08Domain03
ReplicaOrNewDomain=domain
ForestLevel=3
DomainLevel=3
DatabasePath="c:\Windows\ntds"
LogPath="c:\Windows\ntds"
RebootOnCompletion=yes
SYSVOLPath=c:\Windows\sysvol"
SafeModeAdminPassword=Today01!
```

FIGURE 3.18
The answer file.

5. Save the answer file as `C:\DCAnswer.txt`.
6. Click Start and then click Command Prompt.
7. Type the following into the command prompt window, as shown in Figure 3.19, and then press Enter:

   ```
   dcpromo /unattend:"C:\DCAnswer.txt"
   ```

   The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.
8. After the AD DS binaries have been installed, a summary of the installation options is presented in the command prompt window; then the AD DS installation process begins. The status of the AD DS installing is updated in the command prompt window.



```
C:\>dcpromo /unattend:"C:\DCAnswer.txt"
```

FIGURE 3.19
Installing a new forest by using an answer file.

9. When the installation process is complete, the server reboots automatically if the `/rebootOnCompletion` option was used in the answer file. If the `/rebootOnCompletion` was not used in the answer file, you are prompted to restart the server.
10. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
11. Open the DCPROMO.log file and analyze the results in the file.

Install a New Windows Server 2008 Child Domain

Scenario/Problem: You require additional domains within your AD DS forest. If the new domain is to share a contiguous namespace with one or more domains, you need to create a new child domain.

Solution: Installing a new Windows Server 2008 child domain consists of selecting the option to create a new child domain during the promotion of a domain controller. The installation of a new Windows Server 2008 child domain can be performed using the Windows interface, the command line, and an answer file.

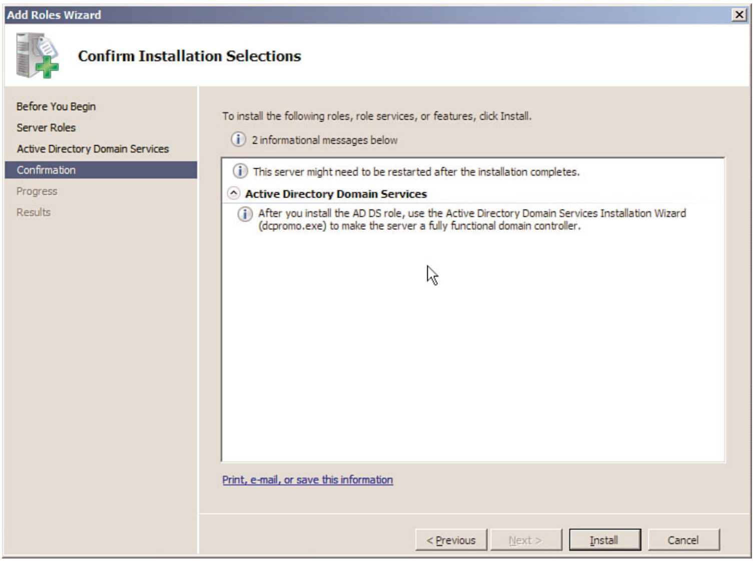
TIP If you are installing a new Windows Server 2008 child domain into an existing Windows Server 2008 forest, you do not have to prepare the forest before you begin the installation. However, if you are installing a new Windows Server 2008 child domain into an existing Windows 2000 Server or Windows Server 2003 forest, you must first prepare the forest by performing the steps in Chapter 2.

Install a Child Domain by Using the Windows Interface

To install a child domain by using the Windows interface, perform the following steps using an AD DS account that has membership in the following AD DS group:

- Enterprise Administrators

1. Log on to the server you want to promote to a domain controller.
2. Click Start and then click Server Manager.
3. In Roles Summary, click Add Roles.
4. On the Before You Begin page, click Next.
5. On the Select Server Roles page, click the Active Directory Domain Services check box; then click Next.
6. On the Active Directory Domain Services page, click Next.
7. On the Confirm Installation Selections page, shown in Figure 3.20, click Install.


Add Roles Wizard
Confirm Installation Selections
Before You Begin
Server Roles
Active Directory Domain Services
Confirmation
Progress
Results
Print, e-mail, or save this information
< Previous
Next >
Install
Cancel

To install the following roles, role services, or features, click Install.

2 informational messages below

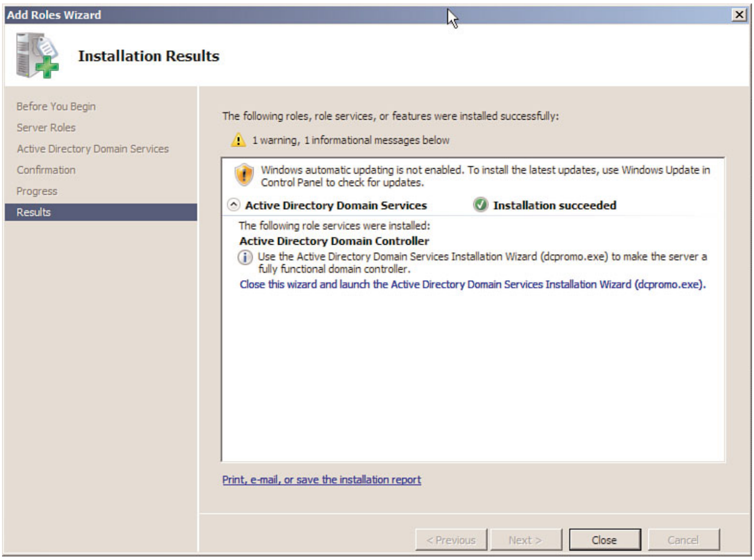
This server might need to be restarted after the installation completes.

Active Directory Domain Services

After you install the AD DS role, use the Active Directory Domain Services Installation Wizard (dcpromo.exe) to make the server a fully functional domain controller.

FIGURE 3.20
The Confirm Installation Selections page.

8. On the Installation Results page, shown in Figure 3.21, verify that the installation succeeded and then click Close this wizard and launch the Active Directory Domain Services Installation Wizard (dcpromo.exe).



The following roles, role services, or features were installed successfully:

1 warning, 1 informational messages below

Windows automatic updating is not enabled. To install the latest updates, use Windows Update in Control Panel to check for updates.

Active Directory Domain Services — Installation succeeded

The following role services were installed:

Active Directory Domain Controller

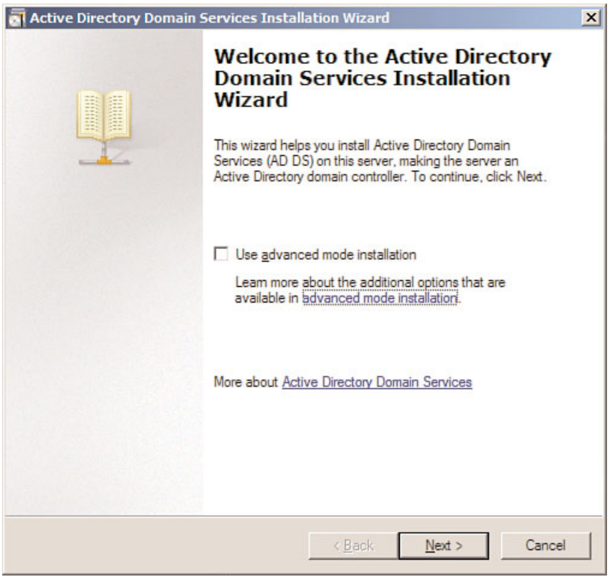
Use the Active Directory Domain Services Installation Wizard (dcpromo.exe) to make the server a fully functional domain controller.

Close this wizard and launch the Active Directory Domain Services Installation Wizard (dcpromo.exe).

Print, e-mail, or save the installation report

FIGURE 3.21
The Installation Results page.

9. On the Welcome to the Active Directory Domain Services Installation Wizard page, shown in Figure 3.22, click Next.



Welcome to the Active Directory Domain Services Installation Wizard

This wizard helps you install Active Directory Domain Services (AD DS) on this server, making the server an Active Directory domain controller. To continue, click Next.

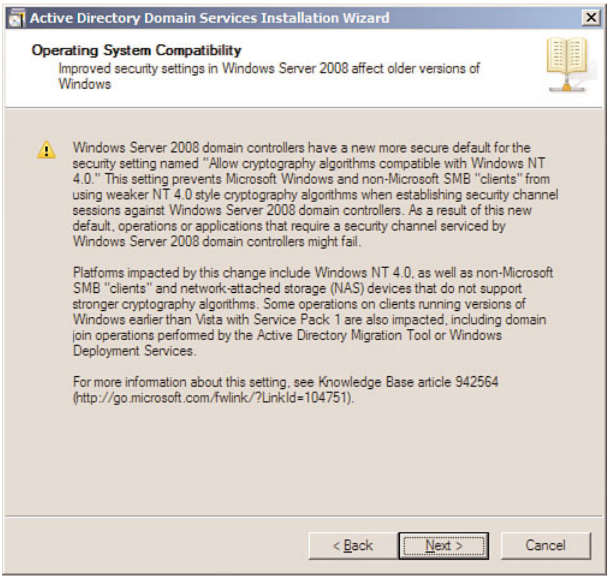
□ Use advanced mode installation

Learn more about the additional options that are available in advanced mode installation.

More about Active Directory Domain Services

FIGURE 3.22
The Welcome to the Active Directory Domain Services Installation Wizard page.

10. On the Operating System Compatibility page, shown in Figure 3.23, click Next.



Active Directory Domain Services Installation Wizard

Operating System Compatibility

Improved security settings in Windows Server 2008 affect older versions of Windows

Windows Server 2008 domain controllers have a new more secure default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0." This setting prevents Microsoft Windows and non-Microsoft SMB "clients" from using weaker NT 4.0 style cryptography algorithms when establishing security channel sessions against Windows Server 2008 domain controllers. As a result of this new default, operations or applications that require a security channel serviced by Windows Server 2008 domain controllers might fail.

Platforms impacted by this change include Windows NT 4.0, as well as non-Microsoft SMB "clients" and network-attached storage (NAS) devices that do not support stronger cryptography algorithms. Some operations on clients running versions of Windows earlier than Vista with Service Pack 1 are also impacted, including domain join operations performed by the Active Directory Migration Tool or Windows Deployment Services.

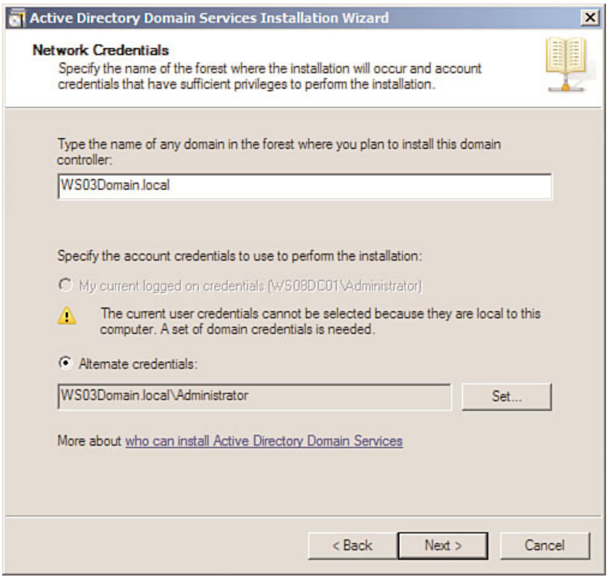
For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).

FIGURE 3.23
The Operating System Compatibility page.

11. On the Choose a Deployment Configuration page, select Existing forest, select Create a new domain in an existing forest, and click Next.

12. On the Network Credentials page, shown in Figure 3.24, type the DNS name of the domain you want to join. Under Specify the account credentials to use to perform the installation, click Alternate Credentials; then click Set. On the Windows Security dialog box, enter the username and password for an account that has the permission to add the domain to the forest, and then click OK. Click Next to proceed.

13. On the Name the New Domain page, shown in Figure 3.25, type the FQDN of the parent domain and the Single-label DNS name of the child domain. Then click Next.


Active Directory Domain Services Installation Wizard

Network Credentials

Specify the name of the forest where the installation will occur and account credentials that have sufficient privileges to perform the installation.

Type the name of any domain in the forest where you plan to install this domain controller:

WS03Domain.local

Specify the account credentials to use to perform the installation:

○ My current logged on credentials (WS08DC01\Administrator)

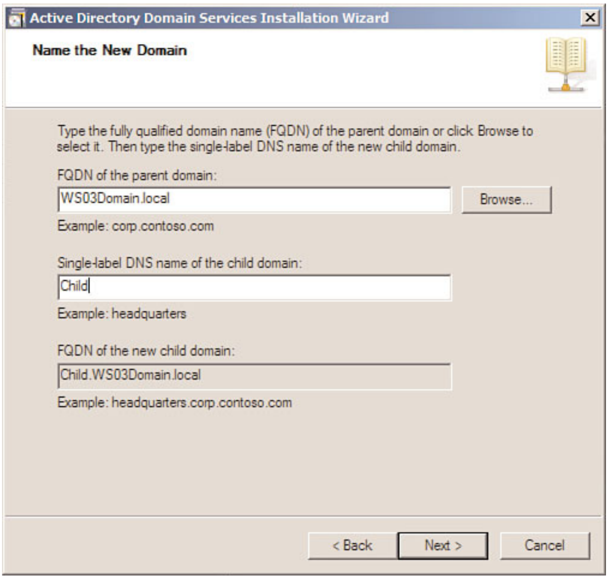
⚠ The current user credentials cannot be selected because they are local to this computer. A set of domain credentials is needed.

● Alternate credentials:

WS03Domain.local\Administrator

More about who can install Active Directory Domain Services

FIGURE 3.24
The Network Credentials page.


Active Directory Domain Services Installation Wizard

Name the New Domain

Type the fully qualified domain name (FQDN) of the parent domain or click Browse to select it. Then type the single-label DNS name of the new child domain.

FQDN of the parent domain:

WS03Domain.local

Example: corp.contoso.com

Single-label DNS name of the child domain:

Child

Example: headquarters

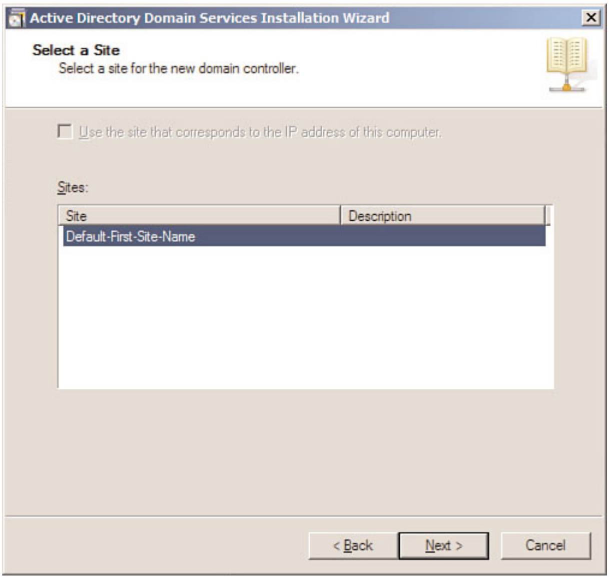
FQDN of the new child domain:

Child.WS03Domain.local

Example: headquarters.corp.contoso.com

FIGURE 3.25
The Name the New Domain page.

14. On the Set Domain Functional Level page, Select the domain functional level that meets your requirements and click Next.
15. On the Select a Site page, shown in Figure 3.26, select the site to which you want the domain controller to belong and click Next.



Active Directory Domain Services Installation Wizard

Select a Site

Select a site for the new domain controller.

□ Use the site that corresponds to the IP address of this computer.

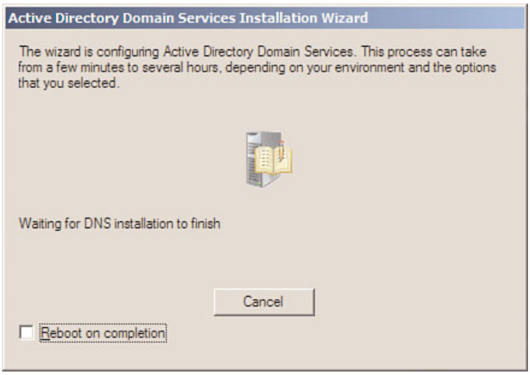
Sites:

Site	Description
Default-First-Site-Name	

FIGURE 3.26
The Select a Site page.

16. On the Additional Domain Controller Options page, select the desired additional options for the domain controller and click Next.
17. On the Location for Database, Log Files, and SYSVOL page, type the volume and folder locations for the database file, the directory service log files, and the SYSVOL files; then click Next.
18. On the Directory Services Restore Mode Administrator Password page, type and confirm the restore mode password and then click Next.
19. On the Summary page, click Next after you review your selections.

    The Active Directory Domain Services installation process starts, as shown in Figure 3.27.


Active Directory Domain Services Installation Wizard

The wizard is configuring Active Directory Domain Services. This process can take from a few minutes to several hours, depending on your environment and the options that you selected.

Waiting for DNS installation to finish

FIGURE 3.27 The Active Directory Domain Services Installation Wizard screen.

20. After the installation is complete, the Completing the Active Directory Domain Services Installation Wizard page appears. Ensure the installation was successful and click Finish.
21. When prompted to restart, click Restart Now.
22. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
23. Open the DCPROMO.log file and analyze the results in the file.

Install a Child Domain by Using the Command Line

Table 3.3 lists the installation parameters used in the steps that follow and the corresponding action of each parameter.

TABLE 3.3 **Installing a Child Domain by the Command Line Installation Parameters**

Installation Parameter	Corresponding Action
`/InstallDns:yes`	DNS server will be installed.
`/ParentDomainDNSName:WS03Domain.local`	Name of the parent domain to which this domain will be added.
`/replicaOrNewDomain:domain`	A new domain will be created.
`/newDomain:child`	The new domain will be a child domain.
`/newDomainDnsName:child02.WS03Domain.local`	FQDN of the new child domain.
`/childName:child02`	Name of the new child domain.
`/DomainNetbiosName:child02`	NetBIOS name of the new child domain.
`/databasePath:"c:\Windows\ntds"`	Database path.

TABLE 3.3 **Installing a Child Domain by the Command Line Installation Parameters** (continued)

Installation Parameter	Corresponding Action
`/logPath:"c:\Windows\ntds"`	Log file path.
`/sysvolpath:"c:\Windows\sysvol"`	SYSVOL path.
`/safeModeAdminPassword:Today01!`	DSRM Administrator password.
`/forestLevel:2`	Forest functional level will be set to Windows Server 2003.
`/domainLevel:2`	Domain functional level will be set to Windows Server 2003.
`/rebootOnCompletion:no`	Server will not be rebooted after completion.
`/userName:WS03Domain\Administrator`	The username that will be used to promote the server to a domain controller.
`/userDomain:WS03Domain`	The domain of the user account that will be used to promote the server to a domain controller.
`/password:Today01!`	The password of the user that will be used to promote the server to a domain controller.

TIP For a complete list of installation options and parameters, go to http://technet.microsoft.com/en-us/library/cc733048.aspx.

To install a child domain by using the command line, perform the following steps using an AD DS account that has membership in the following AD DS group:

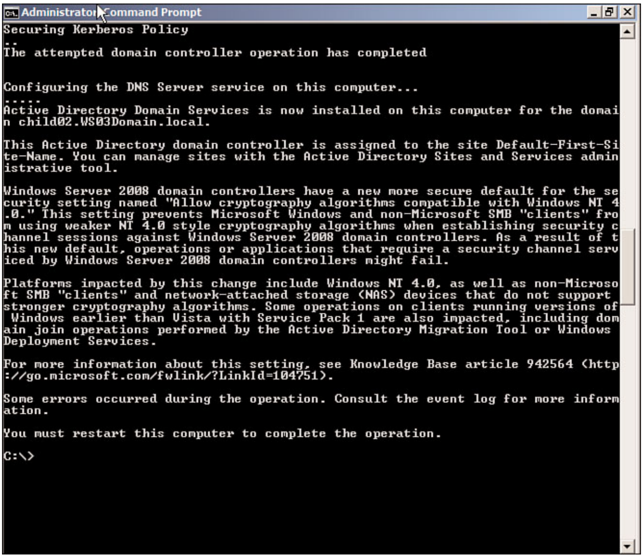
- Enterprise Administrators

1. Log on to the server you want to promote to a domain controller.
2. Click Start and then click Command Prompt.
3. Type the following into the command prompt window and then press Enter:

```
dcpromo /unattend /InstallDns:yes
/ParentDomainDNSName:WS03Domain.local
/replicaOrNewDomain:domain /newDomain:child
/newDomainDnsName:child02.WS03Domain.local /childName:child02
/DomainNetbiosName:child02 /databasePath:"c:\Windows\ntds"
/logPath:"c:\Windows\ntds" /sysvolpath:"c:\Windows\sysvol"
/safeModeAdminPassword:Today01! /forestLevel:2 /domainLevel:2
/rebootOnCompletion:no /userName:WS03Domain\Administrator
/userDomain:WS03Domain /password:Today01!
```

The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.

4. After the AD DS binaries have been installed, a summary of the installation options is presented in the command prompt window; then the AD DS installation process begins.
5. The status of the AD DS installing is updated in the command prompt window.
6. When the installation process is complete, the server reboots automatically if the `/rebootOnCompletion` option was used in the command line. If the `/rebootOnCompletion` was not used in the command line, you are prompted to restart the server, as shown in Figure 3.28.



```
Securing Kerberos Policy
..
The attempted domain controller operation has completed


Configuring the DNS Server service on this computer...
.....
Active Directory Domain Services is now installed on this computer for the domai
n child02.WS03Domain.local.

This Active Directory domain controller is assigned to the site Default-First-Si
te-Name. You can manage sites with the Active Directory Sites and Services admin
istrative tool.

Windows Server 2008 domain controllers have a new more secure default for the se
curity setting named "Allow cryptography algorithms compatible with Windows NT 4
.0." This setting prevents Microsoft Windows and non-Microsoft SMB "clients" fro
m using weaker NT 4.0 style cryptography algorithms when establishing security c
hannel sessions against Windows Server 2008 domain controllers. As a result of t
his new default, operations or applications that require a security channel serv
iced by Windows Server 2008 domain controllers might fail.

Platforms impacted by this change include Windows NT 4.0, as well as non-Microso
ft SMB "clients" and network-attached storage (NAS) devices that do not support
stronger cryptography algorithms. Some operations on clients running versions of
 Windows earlier than Vista with Service Pack 1 are also impacted, including dom
ain join operations performed by the Active Directory Migration Tool or Windows
Deployment Services.

For more information about this setting, see Knowledge Base article 942564 (http
://go.microsoft.com/fwlink/?LinkId=104751).

Some errors occurred during the operation. Consult the event log for more inform
ation.

You must restart this computer to complete the operation.

C:\>
```

FIGURE 3.28
Installation complete.

The installation is complete.

7. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
8. Open the DCPROMO.log file and analyze the results in the file.

Install a Child Domain by Using an Answer File

Table 3.4 lists the installation parameters used in the steps that follow and the corresponding action of each parameter.

TABLE 3.4 **Installing a Child Domain by Using Answer File Installation Parameters**

Installation Parameter	Corresponding Action
`ParentDomainDNSName=WS03Domain.local`	Name of parent domain to which this domain will be added.
`UserName=WS03Domain\Administrator`	The username that will be used to promote the server to a domain controller.
`UserDomain:WS03Domain`	The domain of the user account that will be used to promote the server to a domain controller.
`Password=Today01!`	The password of the user that will be used to promote the server to a domain controller.
`NewDomain=child`	The new domain will be a child domain.
`ChildName=Child03`	The new domain will be a child domain.
`DomainNetBiosName=Child03`	NetBIOS name of the new child domain.
`ReplicaOrNewDomain=domain`	Forest functional level will be set to Windows Server 2003.
`DomainLevel=2`	Domain functional level will be set to Windows Server 2003.
`DatabasePath="c:\Windows\ntds"`	Database path.
`LogPath="c:\Windows\ntds"`	Log file path.
`SYSVOLPath="c:\Windows\sysvol"`	SYSVOL path.
`InstallDNS=yes`	DNS server will be installed.
`SafeModeAdminPassword=Today01!`	DSRM Administrator password.
`RebootOnCompletion=no`	Server will not be rebooted after completion.

TIP For a complete list of installation options and parameters, go to http://technet.microsoft.com/en-us/library/cc733048.aspx.

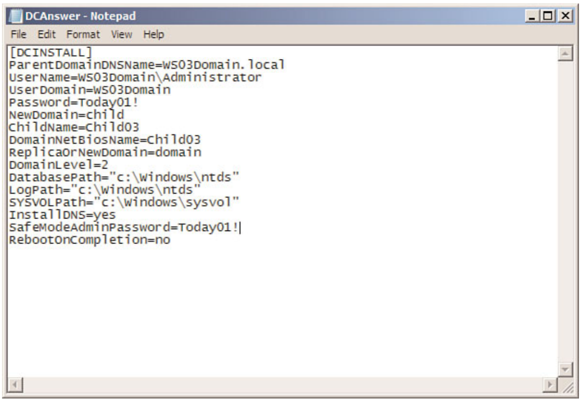
To install a child domain by using an answer file, perform the following steps using an AD DS account that has membership in the following AD DS group:

- Enterprise Administrators

1. Log on to the server you want to promote to a domain controller.
2. Click Start, click Run, type **`notepad`**, and click OK.
3. On the first line, type **`[DCINSTALL]`**; then press ENTER.

4. Type the following entries, one entry on each line, as shown in Figure 3.29:

   ```
   ParentDomainDNSName=WS03Domain.local
   UserName=WS03Domain\Administrator
   UserDomain=WS03Domain
   Password=Today01!
   NewDomain=child
   ChildName=Child03
   DomainNetBiosName=Child03
   ReplicaOrNewDomain=domain
   DomainLevel=2
   DatabasePath="c:\Windows\ntds"
   LogPath="c:\Windows\ntds"
   SYSVOLPath="c:\Windows\sysvol"
   InstallDNS=yes
   SafeModeAdminPassword=Today01!
   RebootOnCompletion=no
   ```



```
[DCINSTALL]
ParentDomainDNSName=WS03Domain.local
UserName=WS03Domain\Administrator
UserDomain=WS03Domain
Password=Today01!
NewDomain=child
ChildName=Child03
DomainNetBiosName=Child03
ReplicaOrNewDomain=domain
DomainLevel=2
DatabasePath="c:\Windows\ntds"
LogPath="c:\Windows\ntds"
SYSVOLPath="c:\Windows\sysvol"
InstallDNS=yes
SafeModeAdminPassword=Today01!
RebootOnCompletion=no
```

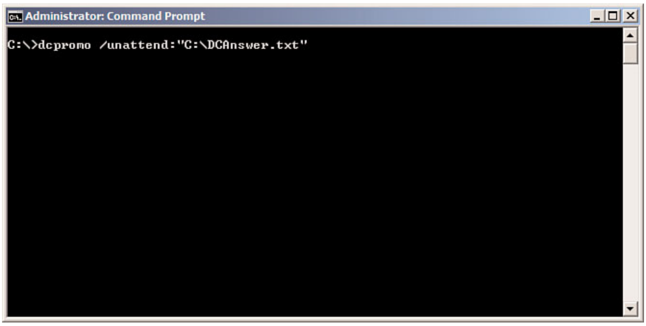
FIGURE 3.29 The answer file.

5. Save the answer file as `C:\DCAnswer.txt`.
6. Click Start and then click Command Prompt.
7. Type the following into the command prompt window, as shown in Figure 3.30, and then press Enter:

   ```
   dcpromo /unattend:"C:\DCAnswer.txt"
   ```

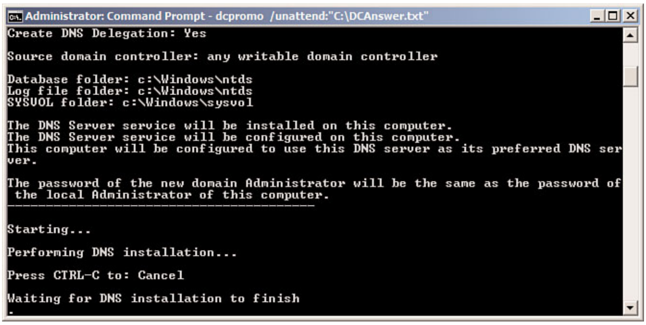
   The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.

8. After the AD DS binaries have been installed, a summary of the installation options is presented in the command prompt window; then the AD DS installation process begins. The status of the AD DS installing is updated in the command prompt window, as shown in Figure 3.31.



```
C:\>dcpromo /unattend:"C:\DCAnswer.txt"
```

FIGURE 3.30
Installing a new child domain using an answer file.


Administrator: Command Prompt - dcpromo /unattend:"C:\DCAnswer.txt"

```
Create DNS Delegation: Yes

Source domain controller: any writable domain controller

Database folder: c:\Windows\ntds
Log file folder: c:\Windows\ntds
SYSVOL folder: c:\Windows\sysvol

The DNS Server service will be installed on this computer.
The DNS Server service will be configured on this computer.
This computer will be configured to use this DNS server as its preferred DNS ser
ver.

The password of the new domain Administrator will be the same as the password of
 the local Administrator of this computer.
----------------------------------------

Starting...

Performing DNS installation...

Press CTRL-C to: Cancel

Waiting for DNS installation to finish
.
```

FIGURE 3.31
The status of installing AD DS.

9. When the installation process is complete, the server reboots automatically if the `/rebootOnCompletion` option was used in the answer file. If the `/rebootOnCompletion` was not used in the answer file, you are prompted to restart the server.

10. To validate the installation process, click Start, click Run, type in **`C:\Windows\Debug`**, and click OK.

11. Open the DCPROMO.log file and analyze the results in the file.

Install a New Windows Server 2008 Domain Tree

Scenario/Problem: When you create a new domain in a forest and the domain DNS namespace is not related to the other domains in the forest, you need to create a new domain tree.

Solution: Installing a new Windows Server 2008 domain tree consists of selecting the option to create a new domain tree during the promotion of a DC. The installation of a new Windows Server 2008 domain tree can be performed using the Windows interface, the command line, and an answer file.

TIP If you are installing a new Windows Server 2008 domain tree in an existing Windows Server 2008 forest, you do not have to prepare the forest before you begin the installation. However, if you are installing a new Windows Server 2008 domain tree in an existing Windows 2000 Server or Windows Server 2003 forest, you must first prepare the forest by performing the steps in Chapter 2.

Install a Domain Tree by Using the Windows Interface

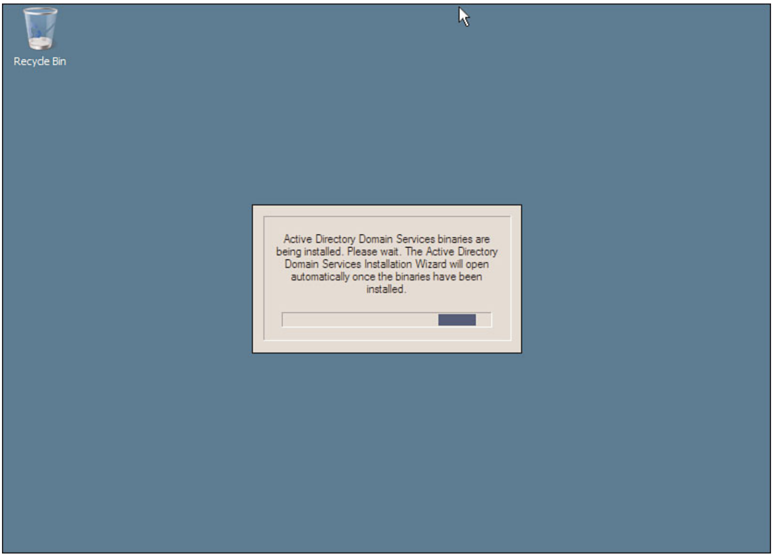
To install a domain tree by using the Windows interface, perform the following steps using an AD DS account that has membership in the following AD DS group:

- Enterprise Administrators

1. Log on to the server you want to promote to a domain controller.
2. Click Start, click Run, type **`dcpromo`**, and click OK.
3. The AD DS server role is installed, as shown in Figure 3.32.

TIP The AD DS server role can be installed by using the dcpromo command.

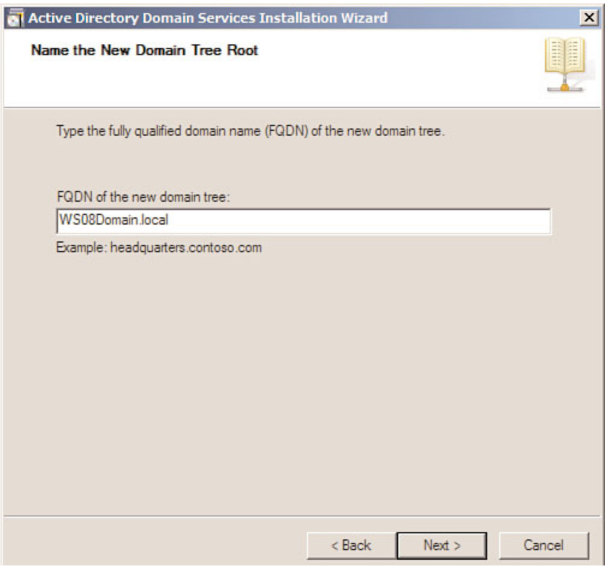
4. On the Welcome to the Active Directory Domain Services Installation Wizard page, select the Use Advanced Mode Installation option and click Next.
5. On the Operating System Compatibility page, click Next.
6. On the Choose a Deployment Configuration page, select Existing forest, select Create a new domain in an existing forest, select the Create a new domain tree root instead of a new child domain check box, and then click Next.
7. On the Network Credentials page, type the DNS name of the domain you want to join. Under Specify the account credentials to use to perform the installation, click Alternate credentials, and then click Set. On the Windows Security dialog box, enter the username and password for an account that has the permission to add the domain to the forest; then click OK. Click Next to proceed.



Active Directory Domain Services binaries are being installed. Please wait. The Active Directory Domain Services Installation Wizard will open automatically once the binaries have been installed.

FIGURE 3.32
Installing AD DS server role using dcpromo.

8. On the Name the New Domain Tree Root page, shown in Figure 3.33, type the FQDN of the new domain tree and click Next.


Active Directory Domain Services Installation Wizard
Name the New Domain Tree Root
< Back
Next >
Cancel

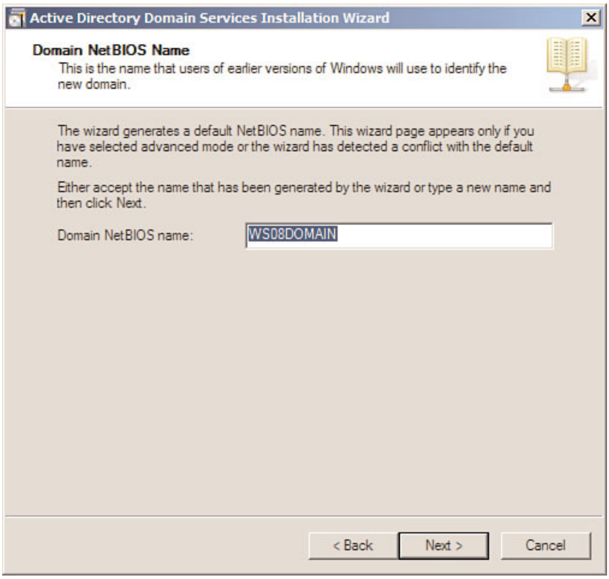
Type the fully qualified domain name (FQDN) of the new domain tree.

FQDN of the new domain tree: WS08Domain.local

Example: headquarters.contoso.com

FIGURE 3.33
The Name the New Domain Tree Root page.

9. On the Domain NetBIOS Name page, shown in Figure 3.34, enter the NetBIOS name for the new domain tree and click Next.



Active Directory Domain Services Installation Wizard

Domain NetBIOS Name

This is the name that users of earlier versions of Windows will use to identify the new domain.

The wizard generates a default NetBIOS name. This wizard page appears only if you have selected advanced mode or the wizard has detected a conflict with the default name.

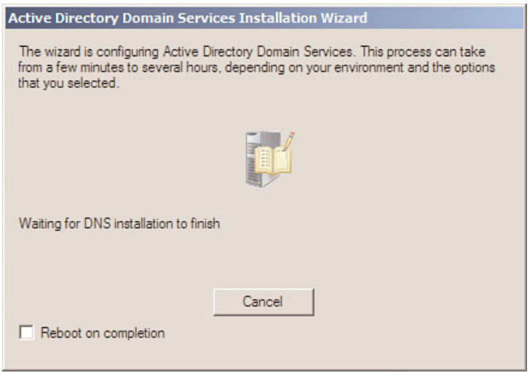
Either accept the name that has been generated by the wizard or type a new name and then click Next.

Domain NetBIOS name: WS08DOMAIN

FIGURE 3.34
The Domain NetBIOS Name page.

10. On the Set Domain Functional Level page, select the domain functional level that meets your requirements and click Next.
11. On the Select a Site page, select the site to which you want the domain controller to belong and click Next.
12. On the Additional Domain Controller Options page, select the desired additional options, such as DNS server and/or Global catalog, for the domain controller and click Next.
13. On the Location for Database, Log Files, and SYSVOL page, type the volume and folder locations for the database file, the directory service log files, and the SYSVOL files; then click Next.
14. On the Directory Services Restore Mode Administrator Password page, type and confirm the restore mode password. Then click Next.
15. On the Summary page, click Next after you review your selections.

    The Active Directory Domain Services installation process starts, as shown in Figure 3.35.


Active Directory Domain Services Installation Wizard

The wizard is configuring Active Directory Domain Services. This process can take from a few minutes to several hours, depending on your environment and the options that you selected.

Waiting for DNS installation to finish

□ Reboot on completion

FIGURE 3.35 The Active Directory Domain Services Installation Wizard page.

16. After the installation is complete, the Completing the Active Directory Domain Services Installation Wizard page appears. Ensure the installation was successful and click Finish.
17. When prompted to restart, click Restart Now.
18. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
19. Open the DCPROMO.log file and analyze the results in the file.

Install a Domain Tree by Using the Command Line

Table 3.5 lists the installation parameters used in the steps that follow and the corresponding action of each parameter.

TABLE 3.5 **Installing a Domain Tree by Using the Command Line Installation Parameters**

Installation Parameter	Corresponding Action
`/InstallDns:yes`	DNS server will be installed.
`/ParentDomainDNSName:WS03Domain.local`	Name of the forest root domain to which this domain tree will be added.
`/replicaOrNewDomain:domain`	A new domain will be created.
`/newDomain:tree`	The new domain will be a new domain tree.
`/newDomainDnsName:WS08DomainB.local`	FQDN of the new domain tree.
`/DomainNetbiosName:WS08DomainB`	NetBIOS name of the new domain tree.
`/databasePath:"c:\Windows\ntds"`	Database path.
`/logPath:"c:\Windows\ntds"`	Log file path.
`/sysvolpath:"c:\Windows\sysvol"`	SYSVOL path.
`/safeModeAdminPassword:Today01!`	DSRM Administrator password.

continues

TABLE 3.5 **Installing a Domain Tree by Using the Command Line Installation Parameters** (continued)

Installation Parameter	**Corresponding Action**
`/forestLevel:2`	Forest functional level will be set to Windows Server 2003.
`/domainLevel:2`	Domain functional level will be set to Windows Server 2003.
`/rebootOnCompletion:no`	Server will not be rebooted after completion.
`/userName:WS03Domain\Administrator`	The username that will be used to promote the server to a domain controller.
`/userDomain:WS03Domain`	The domain of the user account that will be used to promote the server to a domain controller.
`/password:Today01!`	The password of the user that will be used to promote the server to a domain controller.

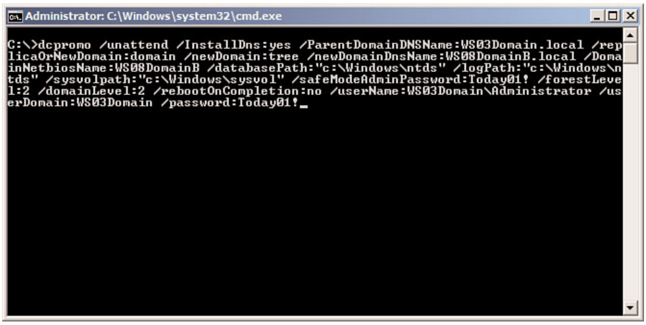
TIP For a complete list of installation options and parameters, go to http://technet.microsoft.com/en-us/library/cc733048.aspx.

To install child domain tree by using the command line, perform the following steps using an AD DS account that has membership in the following AD DS group:

- Enterprise Administrators

1. Log on to the server you want to promote to a domain controller.
2. Click Start and then click Command Prompt.
3. Type the following into the command prompt window, as shown in Figure 3.36, and then press Enter:

```
dcpromo /unattend /InstallDns:yes
/ParentDomainDNSName:WS03Domain.local
/replicaOrNewDomain:domain /newDomain:tree
/newDomainDnsName:WS08DomainB.local /DomainNetbiosName:WS08DomainB
/databasePath:"c:\Windows\ntds" /logPath:"c:\Windows\ntds"
/sysvolpath:"c:\Windows\sysvol" /safeModeAdminPassword:Today01!
/forestLevel:2 /domainLevel:2 /rebootOnCompletion:no
/userName:WS03Domain\Administrator /userDomain:WS03Domain
/password:Today01!
```



```
C:\>dcpromo /unattend /InstallDns:yes /ParentDomainDNSName:WS03Domain.local /rep
licaOrNewDomain:domain /newDomain:tree /newDomainDnsName:WS08DomainB.local /Doma
inNetbiosName:WS08DomainB /databasePath:"c:\Windows\ntds" /logPath:"c:\Windows\n
tds" /sysvolpath:"c:\Windows\sysvol" /safeModeAdminPassword:Today01! /forestLeve
l:2 /domainLevel:2 /rebootOnCompletion:no /userName:WS03Domain\Administrator /us
erDomain:WS03Domain /password:Today01!_
```

FIGURE 3.36
Installing a new domain tree using the command line.

The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.

4. After the AD DS binaries have been installed, a summary of the installation options is presented in the command prompt window; then the AD DS installation process begins.
5. The status of the AD DS installing is updated in the command prompt window.
6. When the installation process is complete, the server reboots automatically if the `/rebootOnCompletion` option was used in the command line. If the `/rebootOnCompletion` was not used in the command line, you are prompted to restart the server.
7. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
8. Open the DCPROMO.log file and analyze the results in the file.

Install a Domain Tree by Using an Answer File

Table 3.6 lists the installation parameters used in the steps that follow and the corresponding action of each parameter.

TABLE 3.6 **Installing a Domain Tree by Using Answer File Installation Parameters**

Installation Parameter	Corresponding Action
`InstallDns=yes`	DNS server will be installed.
`ParentDomainDNSName=WS03Domain.local`	Name of the forest root domain to which this domain tree will be added.
`replicaOrNewDomain=domain`	A new domain will be created.
`newDomain=tree`	The new domain will be a new domain tree.

continues

TABLE 3.6 **Installing a Domain Tree by Using Answer File Installation Parameters** (continued)

Installation Parameter	Corresponding Action
`newDomainDnsName=WS08DomainC.local`	FQDN of new domain tree.
`DomainNetbiosName=WS08DomainC`	NetBIOS name of the new domain tree.
`databasePath="c:\Windows\ntds"`	Database path.
`logPath="c:\Windows\ntds"`	Log file path.
`Sysvolpath="c:\Windows\sysvol"`	SYSVOL path.
`safeModeAdminPassword=Today01!`	DSRM Administrator password.
`forestLevel=2`	Forest functional level will be set to Windows Server 2003.
`domainLevel=2`	Domain functional level will be set to Windows Server 2003.
`rebootOnCompletion=no`	Server will not be rebooted after completion.
`userName=WS03Domain\Administrator`	The username that will be used to promote the server to a domain controller.
`userDomain=WS03Domain`	The domain of the user account that will be used to promote the server to a domain controller.
`Password=Today01!`	The password of the user that will be used to promote the server to a domain controller.

TIP For a complete list of installation options and parameters, go to http://technet.microsoft.com/en-us/library/cc733048.aspx.

To install child domain tree by using an answer file, perform the following steps using an AD DS account that has membership in the following AD DS group:

- Enterprise Administrators

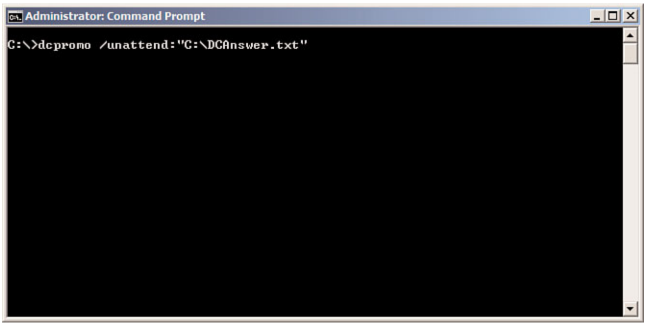
1. Log on to the server you want to promote to a domain controller.
2. Click Start, click Run, type **`notepad`**, and click OK.
3. On the first line, type **`[DCINSTALL]`**; then press ENTER.
4. Type the following entries, one entry on each line:

```
InstallDns=yes
ParentDomainDNSName=WS03Domain.local
replicaOrNewDomain=domain
newDomain=tree
newDomainDnsName=WS08DomainC.local
```

```
DomainNetbiosName=WS08DomainC
databasePath="c:\Windows\ntds"
logPath="c:\Windows\ntds"
sysvolpath="c:\Windows\sysvol"
safeModeAdminPassword=Today01!
forestLevel=2
domainLevel=2
rebootOnCompletion=no
userName=WS03Domain\Administrator
userDomain=WS03Domain
password=Today01!
```

5. Save the answer file as `C:\DCAnswer.txt`.
6. Click Start and then click Command Prompt.
7. Type the following into the command prompt window, as shown in Figure 3.37, and then press ENTER:

   ```
   dcpromo /unattend:"C:\DCAnswer.txt"
   ```



```
C:\>dcpromo /unattend:"C:\DCAnswer.txt"
```

FIGURE 3.37
Installing a domain tree using an answer file.

The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.

8. After the AD DS binaries have been installed, a summary of the installation options is presented in the command prompt window. Then the AD DS installation process begins. The status of the AD DS installing is updated in the command prompt window.
9. When the installation process is complete, the server reboots automatically if the `/rebootOnCompletion` option was used in the answer file. If the `/rebootOnCompletion` was not used in the answer file, you are prompted to restart the server.

10. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
11. Open the DCPROMO.log file and analyze the results in the file.

Install an Additional Windows Server 2008 Domain Controller

Scenario/Problem: To provide adequate fault tolerance and optimize authentication, you require a minimum of two DCs.

Solution: Installing an additional Windows Server 2008 DC consists of promoting a member server to a DC in an existing domain. The installation of an additional Windows Server 2008 DC can be performed using the Windows interface, the command line, and an answer file.

TIP If you are installing an additional Windows Server 2008 DC in an existing Windows Server 2008 forest, you do not have to prepare the forest before you begin the installation. However, if you are installing an additional Windows Server 2008 DC in an existing Windows 2000 Server or Windows Server 2003 forest, you must first prepare the forest; then you must prepare the domain in which the DC will reside. This can be done by performing the steps in Chapter 2.

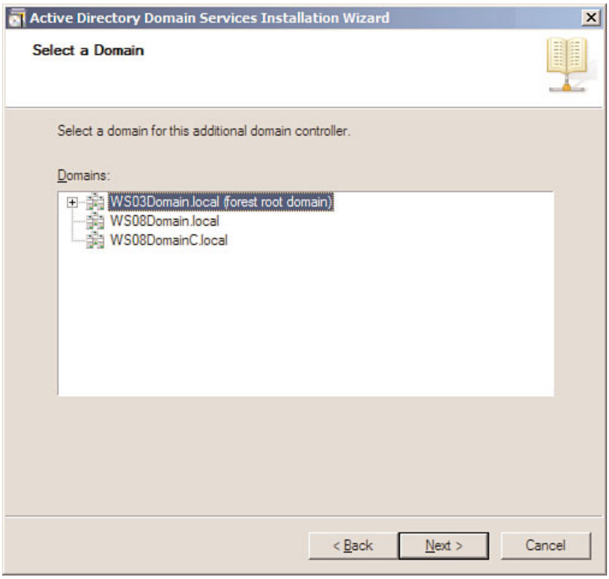
Install an Additional Domain Controller by Using the Windows Interface

To install an additional DC by using the Windows interface, perform the following steps using an AD DS account that has membership in the following AD DS group:

- Domain Admins for the domain for which you want to add a writable domain controller.

1. Log on to the server you want to promote to a domain controller.
2. Click Start, Run, type in **`dcpromo`**, and click OK.
3. The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.
4. After the dcpromo process installs the Active Directory Domain Services server role, the Welcome to the Active Directory Domain Services Installation Wizard page appears. Click Next.
5. On the Operating System Compatibility page, click Next.

6. On the Choose a Deployment Configuration page, select Existing forest, select Add a domain controller to an existing forest, and click Next.
7. On the Network Credentials page, enter the DNS name of the domain to which you want to add the domain controller. Under Specify the account credentials to use to perform the installation, click Alternate credentials, and then click Set. On the Windows Security dialog box, enter the username and password for an account that has the permission to add the domain to the forest, and then click OK. Click Next to proceed.
8. On the Select a Domain page, shown in Figure 3.38, select the domain to which you want to add the domain controller and click Next.



Active Directory Domain Services Installation Wizard

Select a Domain

Select a domain for this additional domain controller.

Domains:

WS03Domain.local (forest root domain)
WS08Domain.local
WS08DomainC.local

FIGURE 3.38
The Select a Domain page.

9. On the Select a Site page, select the site to which you want the domain controller to belong and click Next.
10. On the Additional Domain Controller Options page, select the desired additional options, such as DNS server and/or Global catalog, for the domain controller and click Next.
11. On the Location for Database, Log Files, and SYSVOL page, type the volume and folder locations for the database file, the directory service log files, and the SYSVOL files; then click Next.
12. On the Directory Services Restore Mode Administrator Password page, type and confirm the restore mode password. Then click Next.

13. On the Summary page, click Next after you review your selections.

    The Active Directory Domain Services installation process starts.

14. After the installation is complete, the Completing the Active Directory Domain Services Installation Wizard page appears. Ensure the installation was successful and click Finish.

15. When prompted to restart, click Restart Now.

16. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.

17. Open the DCPROMO.log file and analyze the results in the file.

Install an Additional Domain Controller by Using the Command Line

Table 3.7 lists the installation parameters used in the steps that follow and the corresponding action of each parameter.

TABLE 3.7 **Installing an Additional DC by Using the Command Line Installation Parameters**

Installation Parameter	Corresponding Action
`InstallDns:yes`	DNS server will be installed.
`confirmGC:yes`	Specifies the domain controller is a global catalog server.
`replicaOrNewDomain:replica`	An additional domain controller will be added to the domain.
`replicaDomainDNSName:WS03Domain.local`	The DNS name of the domain that the domain controller will be added to.
`databasePath:"c:\windows\ntds"`	Database path.
`logPath:"c:\windows\ntds"`	Log file path.
`sysvolpath:"c:\windows\sysvol"`	SYSVOL path.
`safeModeAdminPassword:Today01!`	DSRM Administrator password.
`rebootOnCompletion:no`	Server will not be rebooted after completion.
`userName:WS03Domain\Administrator`	The username that will be used to promote the server to a domain controller.
`userDomain:WS03Domain`	The domain of the user account that will be used to promote the server to a domain controller.
`password:Today01!`	The password of the user that will be used to promote the server to a domain controller.

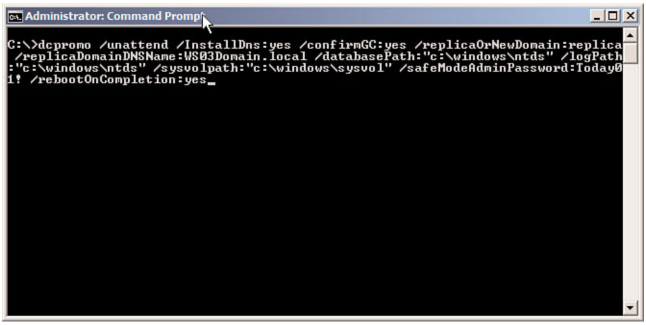
TIP For a complete list of installation options and parameters, go to http://technet.microsoft.com/en-us/library/cc733048.aspx.

To install an additional DC by using the command line, perform the following using an AD DS account that has membership in the following AD DS group:

- Domain Admins for the domain for which you want to add a writable domain controller.

1. Log on to the server you want to promote to a domain controller.
2. Click Start and then click Command Prompt.
3. Type the following into the command prompt window, as shown in Figure 3.39, and then press ENTER:

```
dcpromo /unattend /InstallDns:yes /confirmGC:yes
/replicaOrNewDomain:replica /replicaDomainDNSName:WS03Domain.local
/databasePath:"c:\windows\ntds" /logPath:"c:\windows\ntds"
/sysvolpath:"c:\windows\sysvol" /safeModeAdminPassword:Today01!
/rebootOnCompletion:yes
```



```
C:\>dcpromo /unattend /InstallDns:yes /confirmGC:yes /replicaOrNewDomain:replica
 /replicaDomainDNSName:WS03Domain.local /databasePath:"c:\windows\ntds" /logPath
:"c:\windows\ntds" /sysvolpath:"c:\windows\sysvol" /safeModeAdminPassword:Today0
1! /rebootOnCompletion:yes_
```

FIGURE 3.39
Installing an additional DC using the command line.

The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.

4. After the AD DS binaries have been installed, a summary of the installation options is presented in the command prompt window; then the AD DS installation process begins.
5. The status of the AD DS installing is updated in the command prompt window.
6. When the installation process is complete, the server reboots automatically if the `/rebootOnCompletion` option was used in the command line. If the `/rebootOnCompletion` was not used in the command line, you are prompted to restart the server.

7. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
8. Open the DCPROMO.log file and analyze the results in the file.

Install an Additional Domain Controller by Using an Answer File

Table 3.8 lists the installation parameters used in the steps that follow and the corresponding action of each parameter.

TABLE 3.8 **Installing an Additional DC by Using Answer File Installation Parameters**

Installation Parameter	Corresponding Action
`InstallDns=yes`	DNS server will be installed.
`confirmGC=yes`	Specifies the domain controller is a global catalog server.
`replicaOrNewDomain=replica`	An additional domain controller will be added to the domain.
`replicaDomainDNSName=WS03Domain.local`	The DNS name of the domain to which the domain controller will be added.
`databasePath="c:\windows\ntds"`	Database path.
`logPath="c:\windows\ntds"`	Log file path.
`sysvolpath="c:\windows\sysvol"`	SYSVOL path.
`safeModeAdminPassword=Today01!`	DSRM Administrator password.
`rebootOnCompletion=no`	Server will not be rebooted after completion.
`userName=WS03Domain\Administrator`	The username that will be used to promote the server to a domain controller.
`userDomain=WS03Domain`	The domain of the user account that will be used to promote the server to a domain controller.
`password=Today01!`	The password of the user that will be used to promote the server to a domain controller.

TIP For a complete list of installation options and parameters, go to http://technet.microsoft.com/en-us/library/cc733048.aspx.

To install an additional DC by using an answer file, perform the following using an AD DS account that has membership in the following AD DS group:

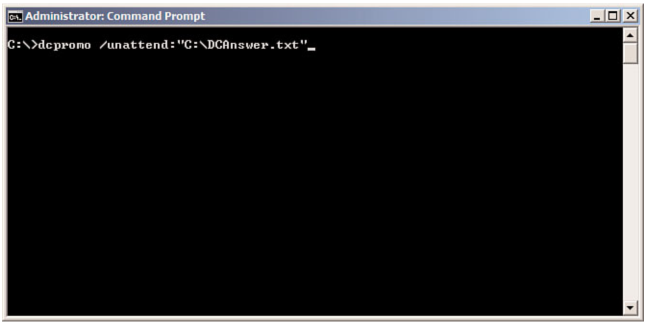
- Domain Admins for the domain for which you want to add a writable domain controller.

1. Log on to the server you want to promote to a domain controller.
2. Click Start, click Run, type **notepad**, and click OK.
3. On the first line, type **[DCINSTALL]** and then press ENTER.
4. Type the following entries, one entry on each line, as shown in Figure 3.40:

```
InstallDns=yes
confirmGC=yes
replicaOrNewDomain=replica
replicaDomainDNSName=WS03Domain.local
databasePath="c:\windows\ntds"
logPath="c:\windows\ntds"
sysvolpath="c:\windows\sysvol"
safeModeAdminPassword=Today01!
rebootOnCompletion=no
UserName=WS03Domain\Administrator
UserDomain=WS03Domain
Password=Today01!
```

5. Save the answer file as `C:\DCAnswer.txt`.
6. Click Start and then click Command Prompt.
7. Type the following into the command prompt window, as shown in Figure 3.40, and then press ENTER:

```
dcpromo /unattend:"C:\DCAnswer.txt"
```



```
C:\>dcpromo /unattend:"C:\DCAnswer.txt"_
```

FIGURE 3.40
Installing an additional DC by using an answer file.

The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.

8. After the AD DS binaries have been installed, a summary of the installation options is presented in the command prompt window; then the AD DS installation process begins. The status of the AD DS installing is updated in the command prompt window.

9. When the installation process is complete, the server reboots automatically if the `/rebootOnCompletion` option was used in the answer file. If the `/rebootOnCompletion` was not used in the answer file, you are prompted to restart the server.
10. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
11. Open the DCPROMO.log file and analyze the results in the file.

Perform a Staged Installation of a Read-Only Domain Controller

Scenario/Problem: You need to deploy a Read-only domain controllers (RODC) in a branch office. You plan to delegate the installation of AD DS on the RODCs to someone physically located in the branch office.

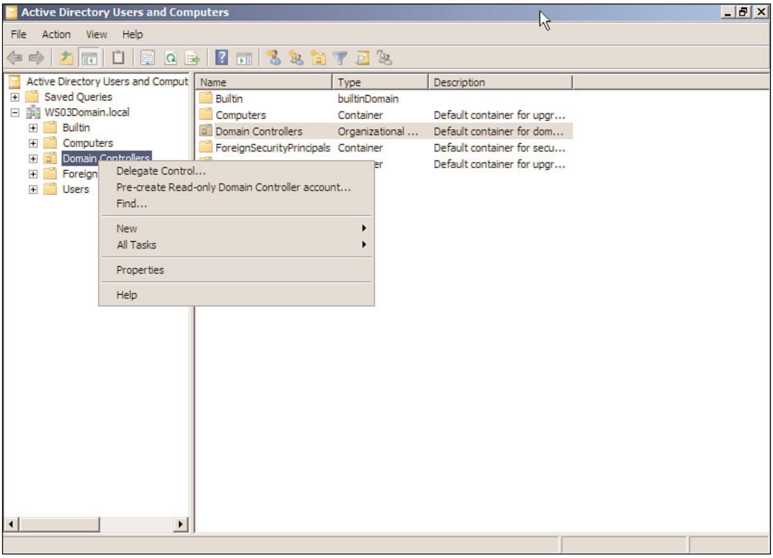
Solution: A staged installation of an RODC consists of two stages. The first stage of the installation creates an account for the RODC in AD DS. The second stage of the installation attaches the server to the account that was created in the first stage. The first stage requires elevated permissions in AD DS. However, the second stage can be performed by someone you delegate the ability to attach the server to the account.

Stage 1: Create an RODC Account in AD DS

To create an RODC account in AD DS, perform the following steps using an AD DS account that has membership in the following AD DS group:

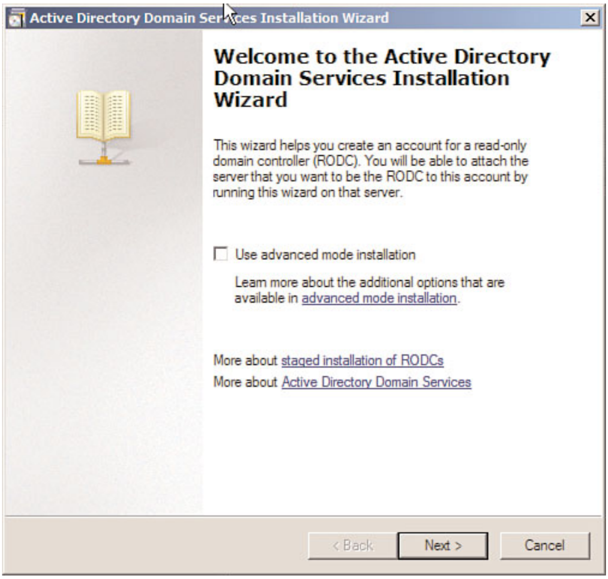
- Domain Admins for the domain for which you want to add a RODC.

1. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
2. Right-click the Domain Controllers Organizational Unit (OU) and select Pre-create Read-only Domain Controller account, as shown in Figure 3.41.
3. On the Welcome to the Active Directory Domain Services page, shown in Figure 3.42, click Next.



Name	Type	Description
Builtin	builtinDomain	
Computers	Container	Default container for upgr...
Domain Controllers	Organizational ...	Default container for dom...
ForeignSecurityPrincipals	Container	Default container for secu...
	er	Default container for upgr...

FIGURE 3.41
Selecting Pre-create Read-only Domain Controller account.



Welcome to the Active Directory Domain Services Installation Wizard

This wizard helps you create an account for a read-only domain controller (RODC). You will be able to attach the server that you want to be the RODC to this account by running this wizard on that server.

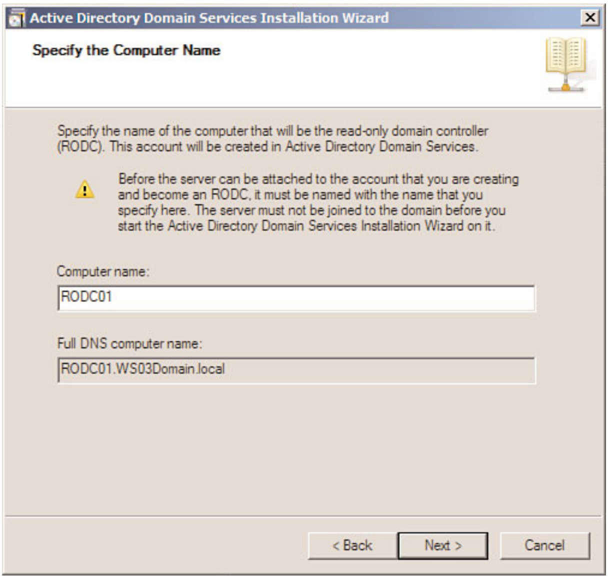
☐ Use advanced mode installation

Learn more about the additional options that are available in advanced mode installation.

More about staged installation of RODCs
More about Active Directory Domain Services

FIGURE 3.42
The Welcome to the Active Directory Domain Services page.

4. On the Operating System Compatibility page, click Next.
5. On the Network Credentials page, under Specify the account credentials to use to perform the installation, click My current logged on credentials or click Alternate credentials. If you select Alternate credentials, click Set and in the Windows Security dialog box, provide the user name and password for an account that can install the additional DC. When you are finished providing credentials, click Next.
6. On the Specify the Computer Name page, shown in Figure 3.43, enter the name of the server that will be the RODC; then click Next.



Specify the Computer Name

Specify the name of the computer that will be the read-only domain controller (RODC). This account will be created in Active Directory Domain Services.

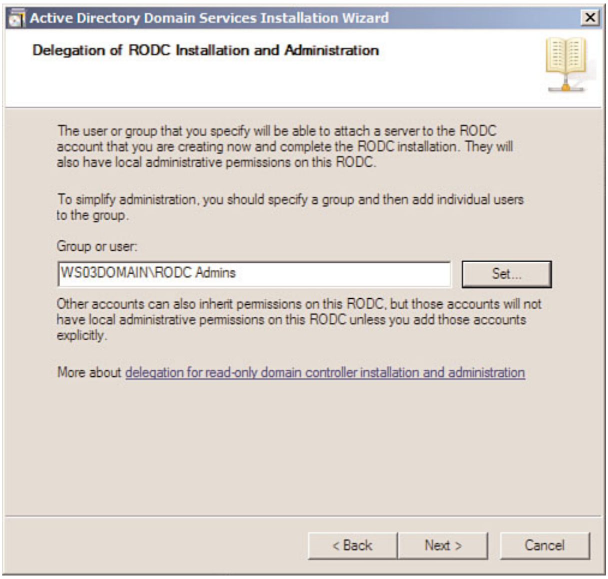
Before the server can be attached to the account that you are creating and become an RODC, it must be named with the name that you specify here. The server must not be joined to the domain before you start the Active Directory Domain Services Installation Wizard on it.

Computer name: RODC01

Full DNS computer name: RODC01.WS03Domain.local

FIGURE 3.43
The Specify the Computer Name page.

7. On the Select a Site page, select the site to which you want the domain controller to belong and click Next.
8. On the Additional Domain Controller Options page, select the desired additional options, such as DNS server and/or Global catalog, for the domain controller and click Next.
9. On the Delegation of RODC Installation and Administration page, shown in Figure 3.44, enter the group or user that can attach the server to the RODC account and click Next.



Delegation of RODC Installation and Administration

The user or group that you specify will be able to attach a server to the RODC account that you are creating now and complete the RODC installation. They will also have local administrative permissions on this RODC.

To simplify administration, you should specify a group and then add individual users to the group.

Group or user:

WS03DOMAIN\RODC Admins

Other accounts can also inherit permissions on this RODC, but those accounts will not have local administrative permissions on this RODC unless you add those accounts explicitly.

More about delegation for read-only domain controller installation and administration

FIGURE 3.44
The Delegation of RODC Installation and Administration page.

10. On the Summary page, click Next.
11. On the Completing the Active Directory Domain Services Installation Wizard page, click Finish.

Stage 2: Attach Server to RODC Account

To attach a server to an RODC account, perform the following steps using an AD DS account that has been delegated the permission to attach the server to the RODC account in stage 1, outlined previously, and with membership in the following local group:

- Administrators

1. Log on to the server you want to attach to the RODC account using an account that has been delegated the permission to attach the server to the RODC account in stage 1.
2. Click Start, click Command Prompt.
3. In the Command Prompt window, type **`dcpromo /UseExistingAccount:Attach`** and press ENTER.

   The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.

4. On the Welcome to the Active Directory Domain Services Installation Wizard page, click Next.
5. On the Network Credentials page, click Next.
6. On the Select Domain Controller Account page, confirm that the wizard has found an existing RODC account that matches the name of the server; then click Next.
7. On the Location for Database, Log Files, and SYSVOL page, type or browse to the volume and folder locations for the database file, the directory service log files, and the system volume (SYSVOL) files. Then click Next.
8. On the Directory Services Restore Mode Administrator Password page, type and confirm the restore mode password and click Next.
9. On the Summary page, click Next.
10. On the Completing the Active Directory Domain Services Installation Wizard page, click Finish.
11. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
12. Open the DCPROMO.log file and analyze the results in the file.

Install AD DS from Restored Backup Media

Scenario/Problem: You need to minimize network traffic during the installation of Active Directory Domain Services.

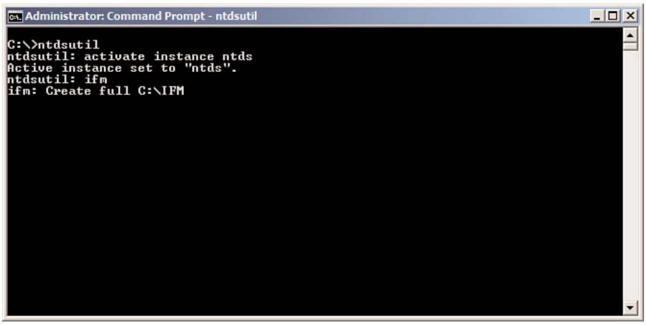
Solution: Install AD DS from restored backup media.

Create Installation Media

To create AD DS installation media, perform the following steps using an account that has the permissions to log on to a DC interactively and be able to make a backup.

1. Log on to the domain controller you will use to create the media.
2. Click Start, and click Command Prompt.
3. In the command prompt window, type **`ntdsutil`** and press ENTER.
4. At the `ntdsutil` prompt, type **`activate instance ntds`** and press ENTER.
5. At the `ntdsutil` prompt, type **`ifm`** and press ENTER.

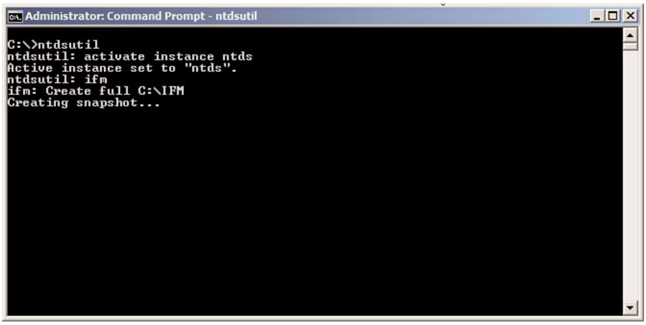
6. At the `ifm:` prompt, shown in Figure 3.45, type the command for the type of installation media that you want to create; then press ENTER. To create the media for an RODC, type **`Create rodc C:\Folder`**, where `C:\Folder` is the path to store the media. To create the media for a full (writable), type **`Create full C:\Folder`**, where `C:\Folder` is the path to store the media. Press ENTER when complete.



```
C:\>ntdsutil
ntdsutil: activate instance ntds
Active instance set to "ntds".
ntdsutil: ifm
ifm: Create full C:\IFM
```

FIGURE 3.45
IFM prompt.

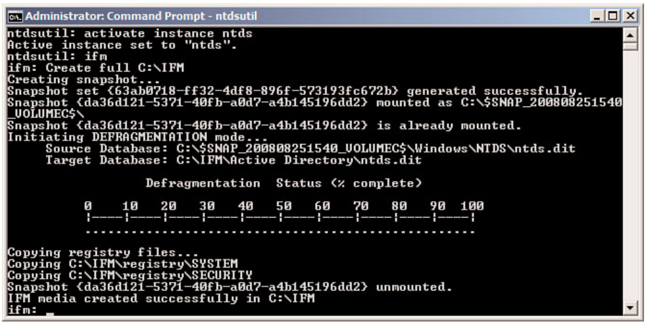
7. ntdsutil creates the installation media, as shown in Figure 3.46.



```
C:\>ntdsutil
ntdsutil: activate instance ntds
Active instance set to "ntds".
ntdsutil: ifm
ifm: Create full C:\IFM
Creating snapshot...
```

FIGURE 3.46
Create ifm installation media.

8. When the installation media has been created successfully, you are returned to the `ifm:` prompt, as shown in Figure 3.47.



```
ntdsutil: activate instance ntds
Active instance set to "ntds".
ntdsutil: ifm
ifm: Create full C:\IFM
Creating snapshot...
Snapshot set {63ab0718-ff32-4df8-896f-573193fc672b} generated successfully.
Snapshot {da36d121-5371-40fb-a0d7-a4b145196dd2} mounted as C:\$SNAP_200808251540
_VOLUMEC$\
Snapshot {da36d121-5371-40fb-a0d7-a4b145196dd2} is already mounted.
Initiating DEFRAGMENTATION mode...
     Source Database: C:\$SNAP_200808251540_VOLUMEC$\Windows\NTDS\ntds.dit
     Target Database: C:\IFM\Active Directory\ntds.dit

                  Defragmentation  Status (% complete)

          0    10   20   30   40   50   60   70   80   90  100
          |----|----|----|----|----|----|----|----|----|----|
          ...................................................

Copying registry files...
Copying C:\IFM\registry\SYSTEM
Copying C:\IFM\registry\SECURITY
Snapshot {da36d121-5371-40fb-a0d7-a4b145196dd2} unmounted.
IFM media created successfully in C:\IFM
ifm: _
```

FIGURE 3.47

The IFM created successfully.

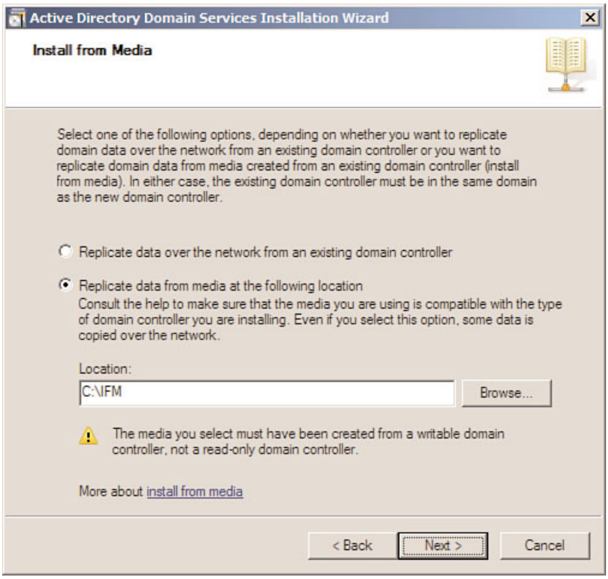
9. Type **Q** to exit the `ifm:` prompt.
10. Type **Q** to exit `ntdsutil`.
11. Close the command prompt window.

Install AD DS from Media

To install AD DS from media, perform the following steps using an account that has the permissions to log on to a DC interactively and be able to make a backup.

1. Log on to the domain controller you will install AD DS on.
2. Click Start, click Run, type **`dcpromo`**, and click OK.
3. The dcpromo process begins by determining whether the AD DS binaries are installed. If the binaries are not installed, dcpromo installs them.
4. On the Welcome to the Active Directory Domain Services Installation Wizard page, select Use advanced mode installation and click Next.
5. On the Operating System Compatibility page, click Next.
6. On the Choose a Deployment Configuration page, select Existing forest, select Add a domain controller to an existing domain, and click Next.
7. On the Network Credentials page, type the DNS name of the domain you want to join. Under Specify the account credentials to use to perform the installation, click Alternate credentials, and then click Set. On the Windows Security dialog box, enter the user name and password for an account that has the permission to add the domain to the forest; then click OK. Click Next to proceed.
8. On the Select a Domain page, select the domain to which you want to add the domain controller and click Next.

9. On the Select a Site page, select the site to which you want the domain controller to belong and click Next.
10. On the Additional Domain Controller Options page, select the desired additional options for the domain controller and click Next.
11. On the Install from Media page, shown in Figure 3.48, select Replicate data from media at the following location, type the location of the installation media that was previously created, and click Next.



Active Directory Domain Services Installation Wizard

Install from Media

Select one of the following options, depending on whether you want to replicate domain data over the network from an existing domain controller or you want to replicate domain data from media created from an existing domain controller (install from media). In either case, the existing domain controller must be in the same domain as the new domain controller.

○ Replicate data over the network from an existing domain controller

● Replicate data from media at the following location

Consult the help to make sure that the media you are using is compatible with the type of domain controller you are installing. Even if you select this option, some data is copied over the network.

Location: C:\IFM

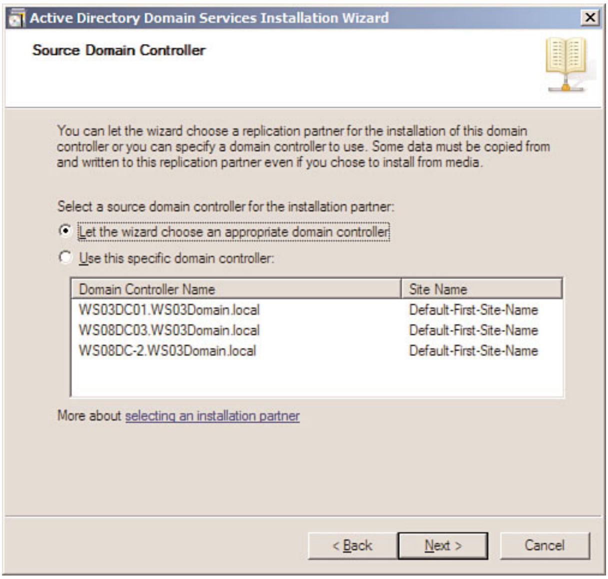
The media you select must have been created from a writable domain controller, not a read-only domain controller.

More about install from media

FIGURE 3.48
The Install from Media page.

12. On the Source Domain Controller page, shown in Figure 3.49, select a source domain controller for the installation partner or select Let the wizard choose an appropriate domain controller; then click Next.
13. On the Location for Database, Log Files, and SYSVOL page, type the volume and folder locations for the database file, the directory service log files, and the SYSVOL files; then click Next.
14. On the Directory Services Restore Mode Administrator Password page, type and confirm the restore mode password and click Next.
15. On the Summary page, click Next after you review your selections.

    The Active Directory Domain Services installation process starts.



Source Domain Controller

You can let the wizard choose a replication partner for the installation of this domain controller or you can specify a domain controller to use. Some data must be copied from and written to this replication partner even if you chose to install from media.

Select a source domain controller for the installation partner:

● Let the wizard choose an appropriate domain controller

○ Use this specific domain controller:

Domain Controller Name	Site Name
WS03DC01.WS03Domain.local	Default-First-Site-Name
WS08DC03.WS03Domain.local	Default-First-Site-Name
WS08DC-2.WS03Domain.local	Default-First-Site-Name

More about selecting an installation partner

FIGURE 3.49
The Source Domain Controller page.

16. After the installation is complete, the Completing the Active Directory Domain Services Installation Wizard page appears. Ensure the installation was successful and click Finish.
17. When prompted to restart, click Restart Now.
18. To validate the installation process, click Start, click Run, type **`C:\Windows\Debug`**, and click OK.
19. Open the DCPROMO.log file and analyze the results in the file.

Remove a Domain Controller from a Domain

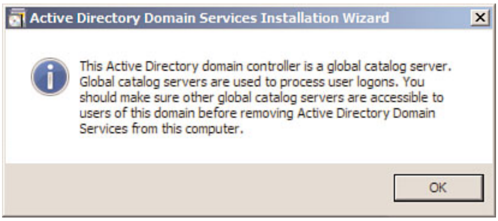
Scenario/Problem: A domain controller that is located in one of your offices is no longer required.

Solution: Remove the domain controller from the domain.

To remove a domain controller from a domain, perform the following steps using an AD DS account that has membership in the following AD DS group:

- Domain Admins

1. Log on to the domain controller you want to remove from the domain.
2. Click Start, click Run, type **`dcpromo`**, and click OK.
3. On the Welcome to the Active Directory Domain Services Installation Wizard page, click Next.
4. If the domain controller is a global catalog server, a message appears to warn you about the effect of removing a global catalog server from the environment, as shown in Figure 3.50. Click OK to continue.


Active Directory Domain Services Installation Wizard

This Active Directory domain controller is a global catalog server. Global catalog servers are used to process user logons. You should make sure other global catalog servers are accessible to users of this domain before removing Active Directory Domain Services from this computer.

FIGURE 3.50
Global catalog warning.

5. On the Delete the Domain page, make no selection if this is not the last domain controller in the domain. If you do want to delete the domain, select the option to delete the domain and click Next.
6. On the Administrator Password page, type and confirm a secure password for the local Administrator account; then click Next.
7. On the Summary page, click Next.
8. The Active Directory Domain Services Installation Wizard deletes AD DS from the server.
9. On the Completing the Active Directory Domain Services Installation Wizard page, click Finish. Then reboot the server.

Forcing the Removal of a Windows Server 2008 Domain Controller

Scenario/Problem: You are forced into a situation where you cannot gracefully uninstall Active Directory Domain Services from a DC.

Solution: In Windows Server 2008, you can forcefully remove a DC when it is started in Directory Services Restore Mode. Typically, you force the removal of a DC only if the DC has no connectivity with other DCs.

Because the DC cannot contact other DCs during the operation, the AD DS forest metadata is not automatically updated as it is when a DC is removed normally. Instead, you must manually update the forest metadata after you remove the DC.

To force the removal of a Windows Server 2008 DC, perform the following steps:

1. Log on to the server using the Directory Services Restore Mode Administrator account.
2. Click Start, click Run, type **`dcpromo /forceremoval`**, and press ENTER.
3. On the Welcome to the Active Directory Domain Services Installation Wizard page, click Next.
4. On the Force the Removal of Active Directory Domain Services page, click Next.
5. On the Administrator Password page, type and confirm a password for the local Administrator account; then click Next.
6. On the Summary page, click Next.
7. Restart the server after the removal is complete.

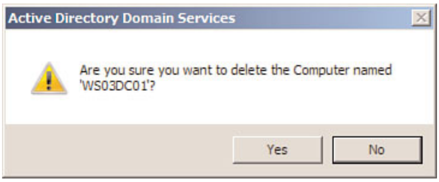
Performing Metadata Cleanup

Scenario/Problem: You forced the removal of a DC, but data is lingering in AD DS. You need to remove this lingering data.

Solution: To remove lingering objects from AD DS after a forceful removal of a DC, you must perform metadata cleanup.

To perform a metadata cleanup, perform the following steps:

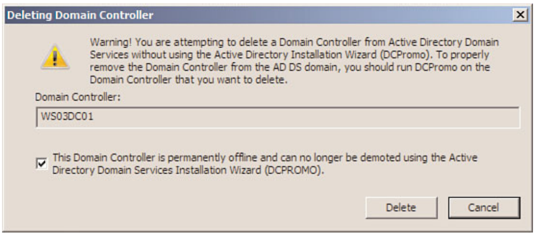
1. Log on to a writable domain controller.
2. Click Start, click Administrative Tools, and click Active Directory Users and Computers.
3. In the Active Directory Users and Computers console, select the Domain Controllers Organizational Unit (OU).
4. Right-click the domain controller you want to remove from the metadata, and select Delete.
5. On the dialog box to confirm the computer object deletion, shown in Figure 3.51, click Yes.



Are you sure you want to delete the Computer named 'WS03DC01'?

FIGURE 3.51
Confirming computer deletion.

6. On the Deleting Domain Controller dialog box, shown in Figure 3.55, select the option This Domain Controller is permanently offline and can no longer be demoted using the Active Directory Domain Services Installation Wizard (DCPROMO). Then click Delete.



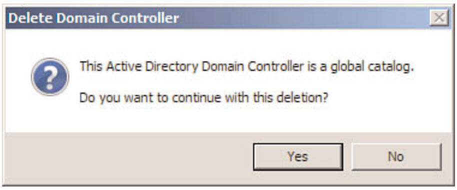
Warning! You are attempting to delete a Domain Controller from Active Directory Domain Services without using the Active Directory Installation Wizard (DCPromo). To properly remove the Domain Controller from the AD DS domain, you should run DCPromo on the Domain Controller that you want to delete.

Domain Controller: WS03DC01

☑ This Domain Controller is permanently offline and can no longer be demoted using the Active Directory Domain Services Installation Wizard (DCPROMO).

FIGURE 3.55
The Deleting Domain Controller dialog box.

7. If the domain controller was also a global catalog server, you receive an additional prompt asking whether you want to continue, as shown in Figure 3.56; click Yes.



This Active Directory Domain Controller is a global catalog.

Do you want to continue with this deletion?

FIGURE 3.56
Global catalog deletion confirmation.

8. If the domain controller holds any operations master roles, an additional prompt displays. Click OK to move the roles to the server(s) DCPROMO recommends, or click Cancel and move the roles manually.

9. The Active Directory Domain Users and Computers console cleans all metadata for the DC.

Rename a Domain Controller

Scenario/Problem: The name of a DC is taken from the name of the member server during the installation of AD DS. In some cases, you might need to change the name of the DC after AD DS has been installed.

Solution: The netdom command-line tool can be used to rename a Windows Server 2008 DC.

To rename a domain controller, perform the following steps using an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins
- Enterprise Admins

1. Log on to the domain controller you want to rename.
2. Click Start and click Command Prompt.
3. In the Command Prompt window, type **`netdom computername CurrentComputerName /add:NewComputerName`**, where `CurrentComputerName` is the current FQDN name and NewComputerName is the new FQDN name. Then press ENTER.
4. Ensure the computer account updates and DNS registrations are completed. In the Command Prompt window, type **`netdom computername CurrentComputerName /makeprimary:NewComputerName`**, where `CurrentComputerName` is the current FQDN name and `NewComputerName` is the new FQDN name. Then press ENTER.
5. In the Command Prompt window, type **`netdom computername NewComputerName /remove:OldComputerName`**, where `CurrentComputerName` is the current FQDN name and `NewComputerName` is the new FQDN name. Then press ENTER.

CHAPTER 4

Manage Trusts and Functional Levels

IN THIS CHAPTER

- Create Forest Trusts
- Create External Trusts
- Create Realm Trusts
- Create Shortcut Trusts
- Change the Routing Status of a Name Suffix
- Enable or Disable an Existing Name Suffix from Routing
- Exclude Name Suffixes from Routing to a Local Forest
- Configure Authentication Scope for a Trust
- Validate Trusts
- Remove Trusts
- Add a User Principal Name to a Forest
- Remove a User Principal Name from a Forest
- Configure Domain Functional Levels
- Configure Forest Functional Levels

The security boundaries of Active Directory Domain Services (AD DS) domains and forests can be extended by using *trusts*. Trust relationships enable you to establish a communication path so a computer in one domain or forest can communicate with a computer in another domain or forest. Through these trust relationships, users in the trusted domain or forest can access resources in the trusting domain or forest. Trust relationships can also be used to make authentication more efficient.

Domain and forest functional levels control which advanced features in the domain or forest are available. Domain and forest functional levels are dependent on the operating system installed on domain controllers in your environment.

This chapter describes the steps required to manage trusts and functional levels.

Create Forest Trusts

Scenario/Problem: By default, AD DS authentication is limited to the domains within a forest. You might need to provide users in your forest with the ability to access resources in another AD DS forest. Additionally, users in another forest might need to access resources in your forest.

Solution: Forest trusts are used to provide users access to resources in another forest. Forest trusts can be two-way or one-way. A *two-way* trust allows users from either forest to access resources in the other forest. Furthermore, domains in each forest trust domains in the other forest implicitly. A *one-way* trust allows users in the trusted forest to access resources in the trusting forest.

The steps to create forest trusts differ depending on the direction of the trust being created. The sections that follow detail the steps to create forest trusts.

Create a Two-way Forest Trust

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To create a two-way forest trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab, as shown in Figure 4.1.

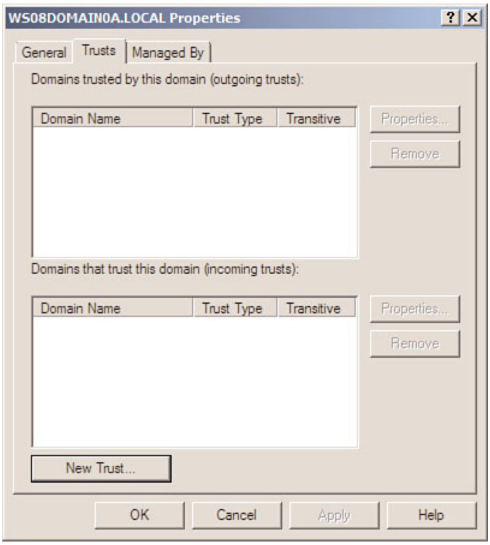
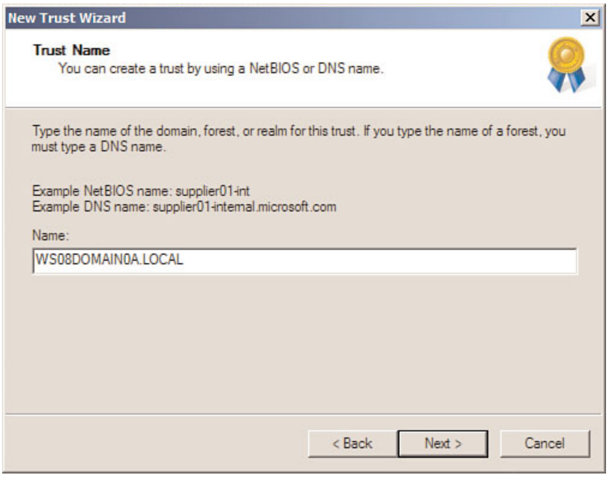


FIGURE 4.1
Trusts Tab.

5. Click New Trust.
6. On the Welcome to the New Trust Wizard page, click Next.
7. On the Trust Name page, as shown in Figure 4.2, type the DNS name of the other forest; then click Next.



You can create a trust by using a NetBIOS or DNS name.

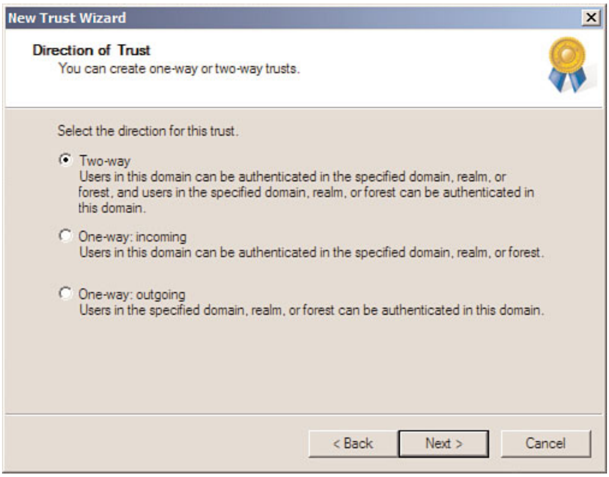
Type the name of the domain, forest, or realm for this trust. If you type the name of a forest, you must type a DNS name.

Example NetBIOS name: supplier01-int
Example DNS name: supplier01-internal.microsoft.com

Name:
WS08DOMAIN0A.LOCAL

FIGURE 4.2
Trust Name page.

8. On the Trust Type page, select Forest Trust, and click Next.
9. On the Direction of Trust page, as shown in Figure 4.3, select Two-way, and click Next.



Direction of Trust
You can create one-way or two-way trusts.

Select the direction for this trust.

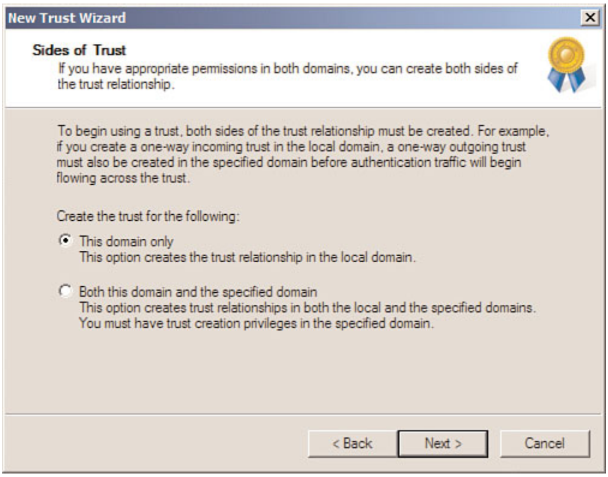
● Two-way
Users in this domain can be authenticated in the specified domain, realm, or forest, and users in the specified domain, realm, or forest can be authenticated in this domain.

○ One-way: incoming
Users in this domain can be authenticated in the specified domain, realm, or forest.

○ One-way: outgoing
Users in the specified domain, realm, or forest can be authenticated in this domain.

FIGURE 4.3
Direction of Trust page.

10. On the Sides of Trust page, as shown in Figure 4.4, select This domain only or Both this domain and the specified domain. Then click Next (see Figure 4.4).



Sides of Trust
If you have appropriate permissions in both domains, you can create both sides of the trust relationship.

To begin using a trust, both sides of the trust relationship must be created. For example, if you create a one-way incoming trust in the local domain, a one-way outgoing trust must also be created in the specified domain before authentication traffic will begin flowing across the trust.

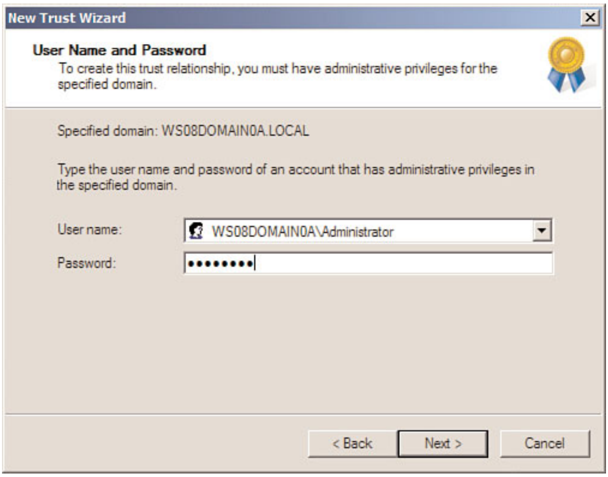
Create the trust for the following:

● This domain only
This option creates the trust relationship in the local domain.

○ Both this domain and the specified domain
This option creates trust relationships in both the local and the specified domains. You must have trust creation privileges in the specified domain.

FIGURE 4.4
Sides of Trust page.

11. If you selected Both this domain and the specified domain in Step 10, the User Name and Password page displays. Enter a user name and password for an account in the other forest that has the necessary permissions to create the forest trust and then click Next, as shown in Figure 4.5.



New Trust Wizard

User Name and Password

To create this trust relationship, you must have administrative privileges for the specified domain.

Specified domain: WS08DOMAIN0A.LOCAL

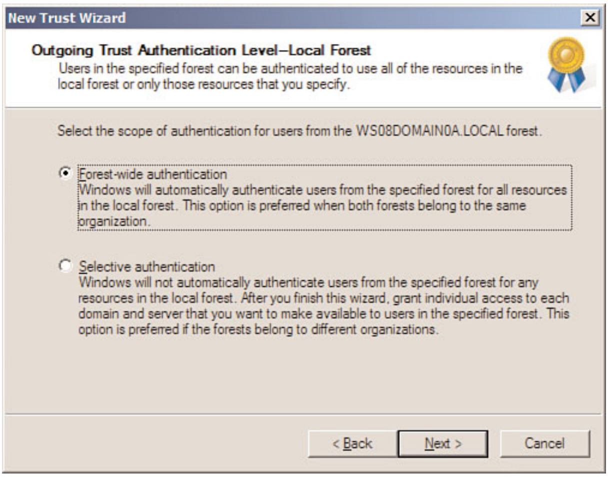
Type the user name and password of an account that has administrative privileges in the specified domain.

User name: WS08DOMAIN0A\Administrator

Password: ••••••••

FIGURE 4.5
User Name and Password page.

12. If you selected Both this domain and the specified domain in Step 10, the Outgoing Trust Authentication Level—Local Forest page displays. On the Outgoing Trust Authentication Level—Local Forest page, shown in Figure 4.6, select Forest-wide authentication or Selective authentication. Then click Next.



New Trust Wizard

Outgoing Trust Authentication Level–Local Forest

Users in the specified forest can be authenticated to use all of the resources in the local forest or only those resources that you specify.

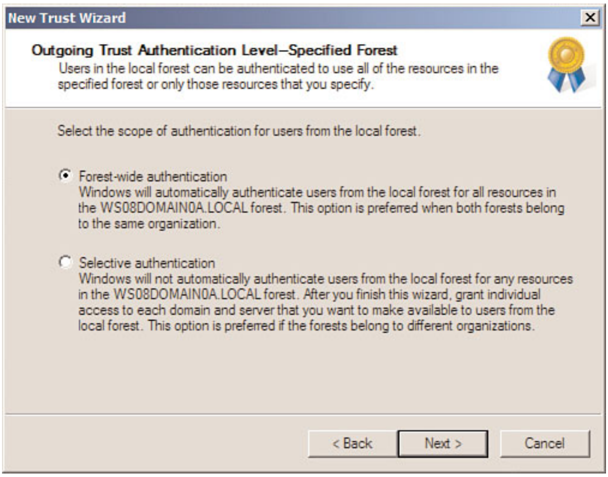
Select the scope of authentication for users from the WS08DOMAIN0A.LOCAL forest.

● Forest-wide authentication
Windows will automatically authenticate users from the specified forest for all resources in the local forest. This option is preferred when both forests belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the specified forest for any resources in the local forest. After you finish this wizard, grant individual access to each domain and server that you want to make available to users in the specified forest. This option is preferred if the forests belong to different organizations.

FIGURE 4.6
Outgoing Trust Authentication Level—Local Forest page.

13. If you selected Both this domain and the specified domain in Step 10, the Outgoing Trust Authentication Level—Specified Forest page displays. On the Outgoing Trust Authentication Level—Specified Forest page, shown in Figure 4.7, select Forest-wide authentication or Selective authentication. Then click Next.


New Trust Wizard

Outgoing Trust Authentication Level–Specified Forest

Users in the local forest can be authenticated to use all of the resources in the specified forest or only those resources that you specify.

Select the scope of authentication for users from the local forest.

● Forest-wide authentication
Windows will automatically authenticate users from the local forest for all resources in the WS08DOMAIN0A.LOCAL forest. This option is preferred when both forests belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the local forest for any resources in the WS08DOMAIN0A.LOCAL forest. After you finish this wizard, grant individual access to each domain and server that you want to make available to users from the local forest. This option is preferred if the forests belong to different organizations.

FIGURE 4.7
Outgoing Trust Authentication Level—Specified Forest page.

14. On the Trust Selections Complete page, click Next.
15. If you are presented with the Confirm Outgoing Trust page, click No, do not confirm the outgoing trust, and then click Next.
16. If you are presented with the Confirm Incoming Trust page, click No, do not confirm the incoming trust, and then click Next.
17. On the New Trust Wizard page, click Finish.

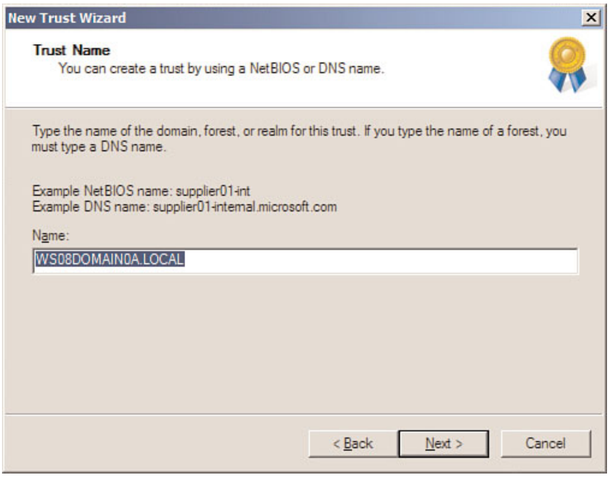
Create a One-way Incoming Forest Trust

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To create a one-way incoming forest trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Click New Trust.
6. On the Welcome to the New Trust Wizard page, click Next.
7. On the Trust Name page, shown in Figure 4.8, type the DNS name of the other forest and then click Next.



New Trust Wizard

Trust Name

You can create a trust by using a NetBIOS or DNS name.

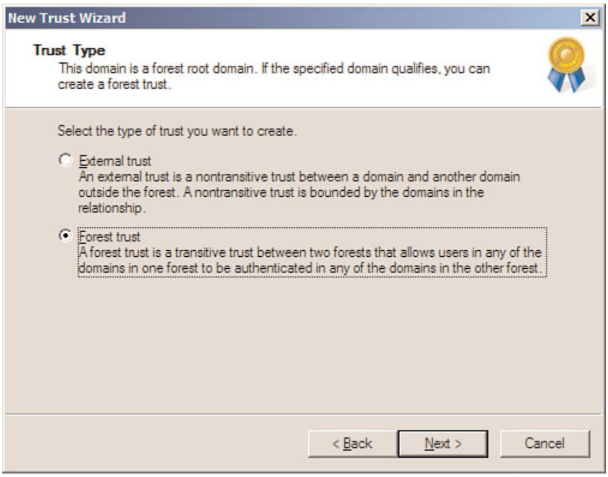
Type the name of the domain, forest, or realm for this trust. If you type the name of a forest, you must type a DNS name.

Example NetBIOS name: supplier01-int
Example DNS name: supplier01-internal.microsoft.com

Name: WS08DOMAIN0A.LOCAL

FIGURE 4.8
Trust Name page.

8. On the Trust Type page, select Forest Trust and click Next.
9. On the Direction of Trust page, shown in Figure 4.10, select One-way: shown in Figure 4.9, incoming and click Next.



New Trust Wizard

Trust Type

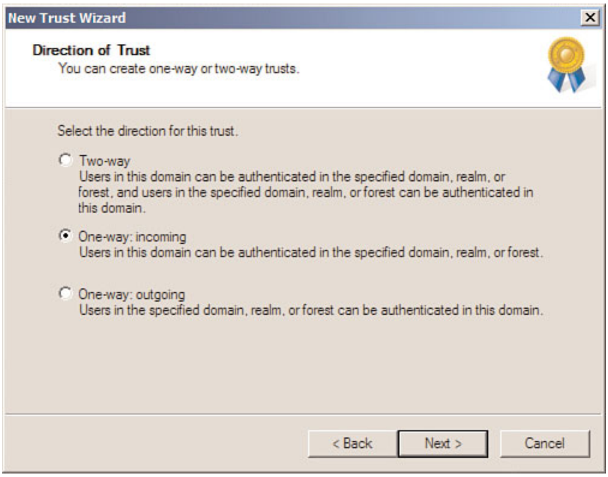
This domain is a forest root domain. If the specified domain qualifies, you can create a forest trust.

Select the type of trust you want to create.

○ External trust
An external trust is a nontransitive trust between a domain and another domain outside the forest. A nontransitive trust is bounded by the domains in the relationship.

● Forest trust
A forest trust is a transitive trust between two forests that allows users in any of the domains in one forest to be authenticated in any of the domains in the other forest.

FIGURE 4.9
Trust Type page.



New Trust Wizard

Direction of Trust

You can create one-way or two-way trusts.

Select the direction for this trust.

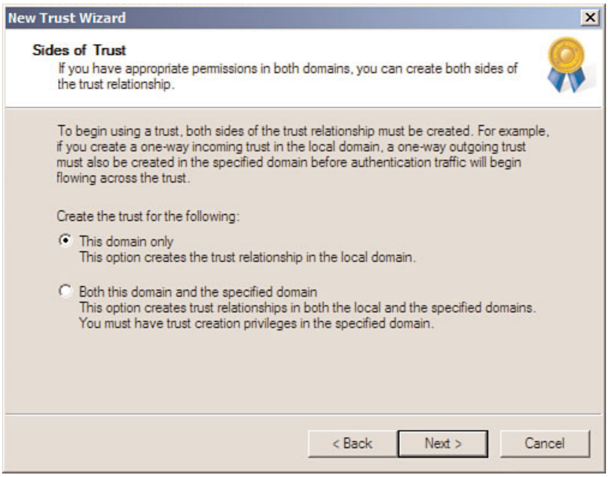
○ Two-way
Users in this domain can be authenticated in the specified domain, realm, or forest, and users in the specified domain, realm, or forest can be authenticated in this domain.

● One-way: incoming
Users in this domain can be authenticated in the specified domain, realm, or forest.

○ One-way: outgoing
Users in the specified domain, realm, or forest can be authenticated in this domain.

FIGURE 4.10
Direction of Trust page.

10. On the Sides of Trust page, shown in Figure 4.11, select This domain only or Both this domain and the specified domain; then click Next.


New Trust Wizard

Sides of Trust

If you have appropriate permissions in both domains, you can create both sides of the trust relationship.

To begin using a trust, both sides of the trust relationship must be created. For example, if you create a one-way incoming trust in the local domain, a one-way outgoing trust must also be created in the specified domain before authentication traffic will begin flowing across the trust.

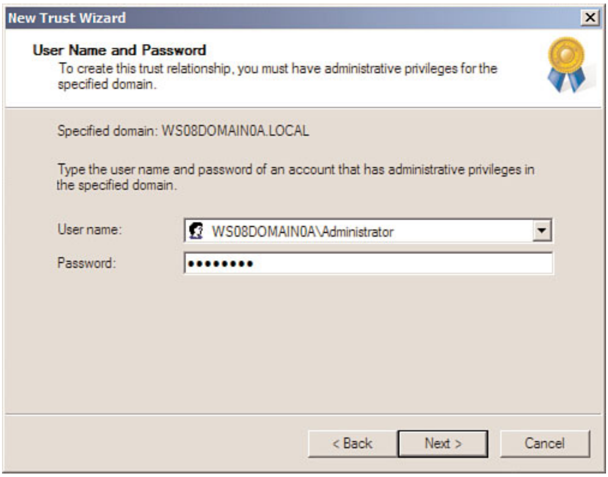
Create the trust for the following:

● This domain only
This option creates the trust relationship in the local domain.

○ Both this domain and the specified domain
This option creates trust relationships in both the local and the specified domains. You must have trust creation privileges in the specified domain.

FIGURE 4.11
Sides of Trust page.

11. If you selected Both this domain and the specified domain in Step 10, the User Name and Password page displays, as shown in Figure 4.12. Enter a user name and password for an account in the other forest that has the necessary permissions to create the forest trust. Then click Next.


New Trust Wizard

User Name and Password

To create this trust relationship, you must have administrative privileges for the specified domain.

Specified domain: WS08DOMAIN0A.LOCAL

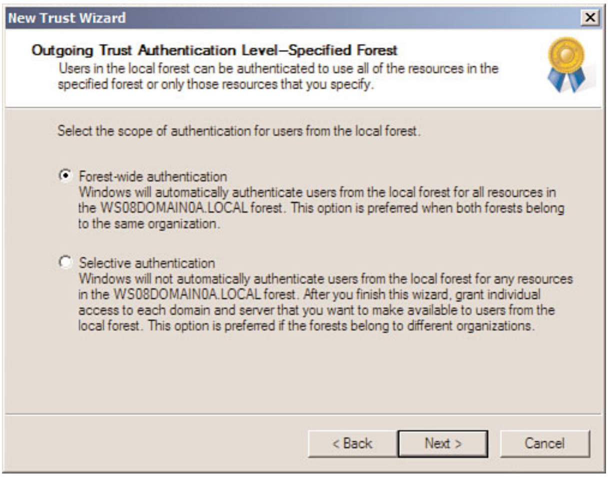
Type the user name and password of an account that has administrative privileges in the specified domain.

User name: WS08DOMAIN0A\Administrator

Password: ●●●●●●●●●

FIGURE 4.12
User Name and Password page.

12. If you selected Both this domain and the specified domain in Step 10, the Outgoing Trust Authentication Level—Specified Forest page displays, as shown in Figure 4.13. On the Outgoing Trust Authentication Level—Specified Forest page, select Forest-wide authentication or Selective authentication, and click Next.



Outgoing Trust Authentication Level–Specified Forest

Users in the local forest can be authenticated to use all of the resources in the specified forest or only those resources that you specify.

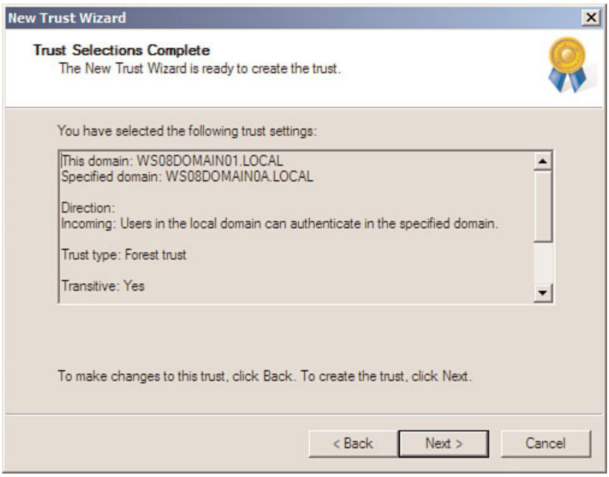
Select the scope of authentication for users from the local forest.

● Forest-wide authentication
Windows will automatically authenticate users from the local forest for all resources in the WS08DOMAIN0A.LOCAL forest. This option is preferred when both forests belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the local forest for any resources in the WS08DOMAIN0A.LOCAL forest. After you finish this wizard, grant individual access to each domain and server that you want to make available to users from the local forest. This option is preferred if the forests belong to different organizations.

FIGURE 4.13
Outgoing Trust Authentication Level—Specified Forest page.

13. On the Trust Selections Complete page, click Next, as shown in Figure 4.14.



Trust Selections Complete

The New Trust Wizard is ready to create the trust.

You have selected the following trust settings:

This domain: WS08DOMAIN01.LOCAL
Specified domain: WS08DOMAIN0A.LOCAL

Direction:
Incoming: Users in the local domain can authenticate in the specified domain.

Trust type: Forest trust

Transitive: Yes

To make changes to this trust, click Back. To create the trust, click Next.

FIGURE 4.14
Trust Selections Complete page.

14. If you are presented with the Confirm Outgoing Trust page, click No, do not confirm the outgoing trust, and then click Next.

15. If you are presented with the Confirm Incoming Trust page, click No, do not confirm the incoming trust, and then click Next.
16. On the New Trust Wizard page, click Finish.

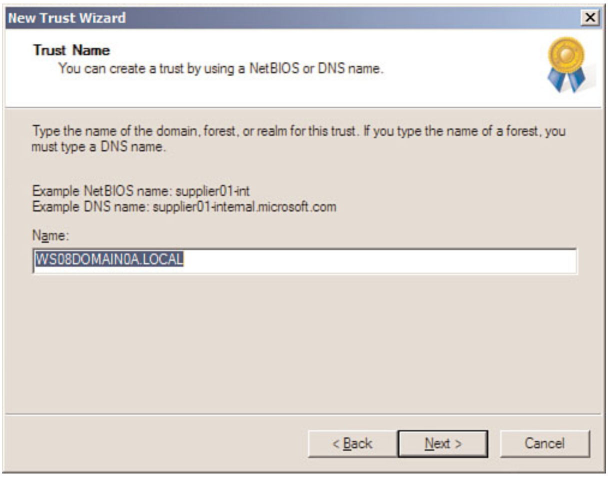
Create a One-Way Outgoing Forest Trust

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To create a one-way outgoing forest trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Click New Trust.
6. On the Welcome to the New Trust Wizard page, click Next.
7. On the Trust Name page, type the DNS name of the other forest, and then click Next, as shown in Figure 4.15.


New Trust Wizard

Trust Name
You can create a trust by using a NetBIOS or DNS name.

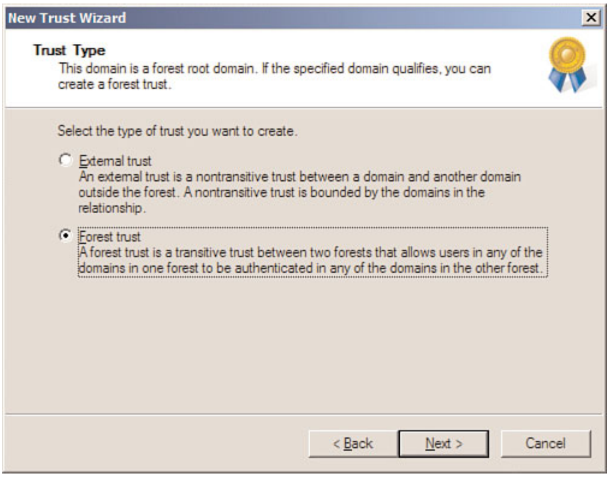
Type the name of the domain, forest, or realm for this trust. If you type the name of a forest, you must type a DNS name.

Example NetBIOS name: supplier01-int
Example DNS name: supplier01-internal.microsoft.com

Name: WS08DOMAIN0A.LOCAL

FIGURE 4.15
Trust Name page.

8. On the Trust Type page, select Forest trust shown in Figure 4.16, and click Next.



New Trust Wizard

Trust Type

This domain is a forest root domain. If the specified domain qualifies, you can create a forest trust.

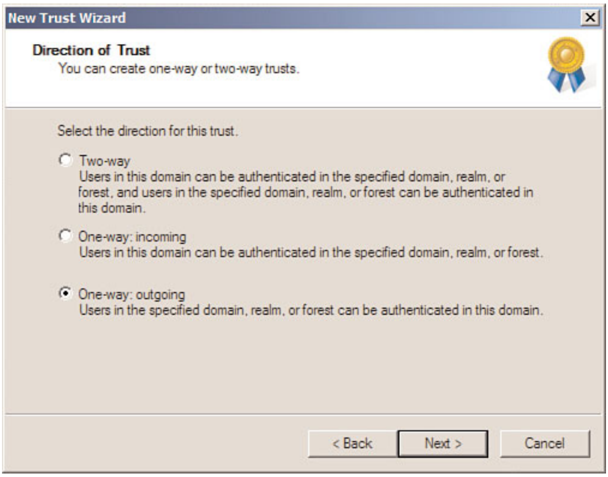
Select the type of trust you want to create.

○ External trust
An external trust is a nontransitive trust between a domain and another domain outside the forest. A nontransitive trust is bounded by the domains in the relationship.

● Forest trust
A forest trust is a transitive trust between two forests that allows users in any of the domains in one forest to be authenticated in any of the domains in the other forest.

FIGURE 4.16
Trust Type page.

9. On the Direction of Trust page, select One-way: outgoing and click Next, as shown in Figure 4.17.



New Trust Wizard

Direction of Trust

You can create one-way or two-way trusts.

Select the direction for this trust.

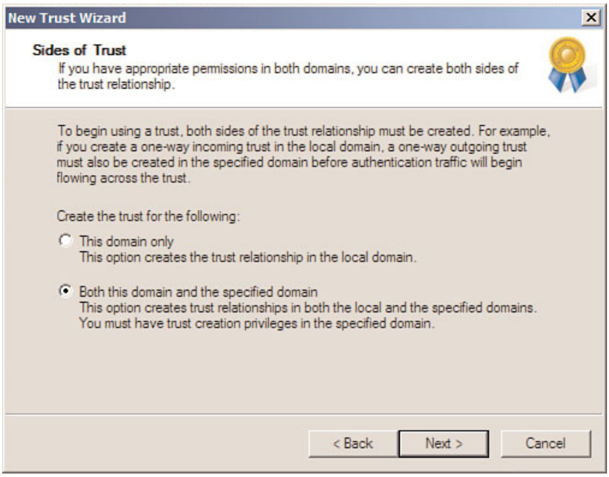
○ Two-way
Users in this domain can be authenticated in the specified domain, realm, or forest, and users in the specified domain, realm, or forest can be authenticated in this domain.

○ One-way: incoming
Users in this domain can be authenticated in the specified domain, realm, or forest.

● One-way: outgoing
Users in the specified domain, realm, or forest can be authenticated in this domain.

FIGURE 4.17
Direction of Trust page.

10. On the Sides of Trust page, shown in Figure 4.18, select This domain only or Both this domain and the specified domain; then click Next.



Sides of Trust

If you have appropriate permissions in both domains, you can create both sides of the trust relationship.

To begin using a trust, both sides of the trust relationship must be created. For example, if you create a one-way incoming trust in the local domain, a one-way outgoing trust must also be created in the specified domain before authentication traffic will begin flowing across the trust.

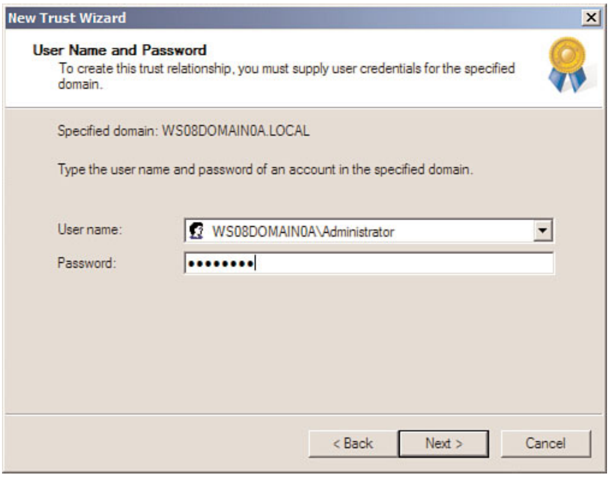
Create the trust for the following:

○ This domain only
This option creates the trust relationship in the local domain.

● Both this domain and the specified domain
This option creates trust relationships in both the local and the specified domains. You must have trust creation privileges in the specified domain.

FIGURE 4.18
Sides of Trust page.

11. If you selected Both this domain and the specified domain in Step 10, the User Name and Password page displays, as shown in Figure 4.19. Enter a user name and password for an account in the other forest that has the necessary permissions to create the forest trust, and click Next.



User Name and Password

To create this trust relationship, you must supply user credentials for the specified domain.

Specified domain: WS08DOMAIN0A.LOCAL

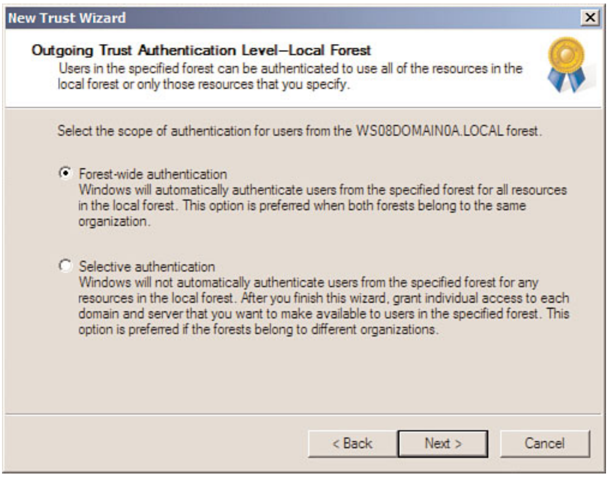
Type the user name and password of an account in the specified domain.

User name: WS08DOMAIN0A\Administrator

Password: ••••••••

FIGURE 4.19
User Name and Password page.

12. If you selected Both this domain and the specified domain in Step 10, the Outgoing Trust Authentication Level—Local Forest page displays, as shown in Figure 4.20. On the Outgoing Trust Authentication Level—Local Forest page, select Forest-wide authentication or Selective authentication and click Next.


New Trust Wizard

Outgoing Trust Authentication Level–Local Forest

Users in the specified forest can be authenticated to use all of the resources in the local forest or only those resources that you specify.

Select the scope of authentication for users from the WS08DOMAIN0A.LOCAL forest.

● Forest-wide authentication
Windows will automatically authenticate users from the specified forest for all resources in the local forest. This option is preferred when both forests belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the specified forest for any resources in the local forest. After you finish this wizard, grant individual access to each domain and server that you want to make available to users in the specified forest. This option is preferred if the forests belong to different organizations.

FIGURE 4.20
Outgoing Trust Authentication Level—Local Forest page.

13. On the Trust Selections Complete page, click Next.
14. If you are presented with the Confirm Outgoing Trust page, click No, do not confirm the outgoing trust, and then click Next.
15. If you are presented with the Confirm Incoming Trust page, click No, do not confirm the incoming trust, and then click Next.
16. On the New Trust Wizard page, click Finish.

Create External Trusts

Scenario/Problem: Forest trusts are forest-wide, which provides users in all the domains in one forest with the capability to access resources in all the domains in the other forest. In some cases, you might need to provide users in one domain in your forest with the capability to access resources in a domain in another forest.

Solution: External trusts are used to provide users in one domain in a forest access to resources in one domain in another forest. Domain trusts can be two-way or one-way. A two-way trust allows users from either domain to access resources in the other domain. A one-way trust allows users in the trusted domain to access resources in the trusting domain.

The steps to create external trusts differ depending on the direction of the trust being created. The sections that follow detail the steps to create external trusts.

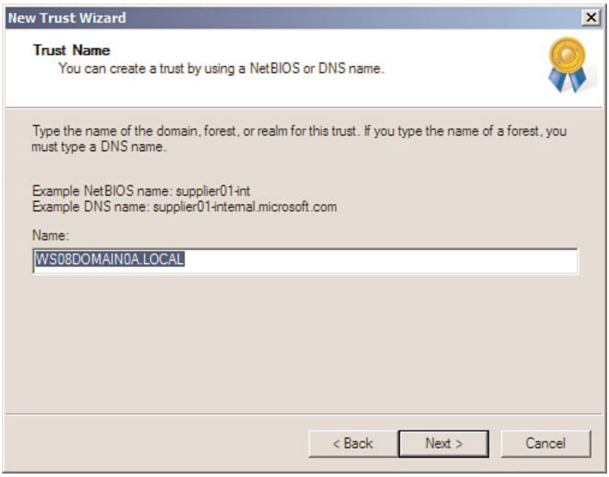
Create a Two-Way External Trust

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To create a two-way external trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Click New Trust.
6. On the Welcome to the New Trust Wizard page, click Next.
7. On the Trust Name page, type the DNS name of the other forest and click Next, as shown in Figure 4.21.



New Trust Wizard

Trust Name

You can create a trust by using a NetBIOS or DNS name.

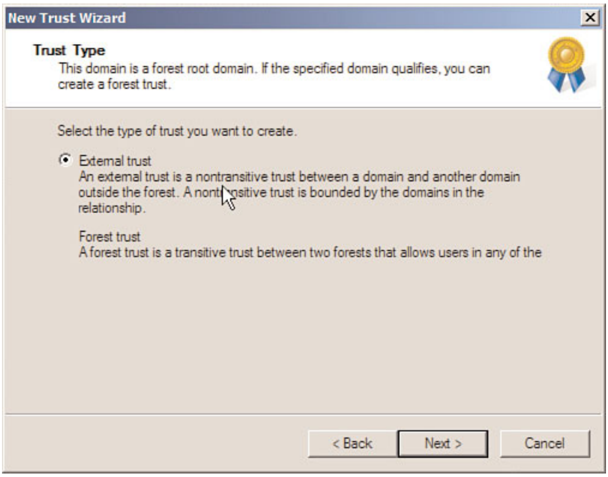
Type the name of the domain, forest, or realm for this trust. If you type the name of a forest, you must type a DNS name.

Example NetBIOS name: supplier01-int
Example DNS name: supplier01-internal.microsoft.com

Name: WS08DOMAIN0A.LOCAL

FIGURE 4.21
Trust Name page.

8. On the Trust Type page, select External Trust and click Next.



Trust Type
This domain is a forest root domain. If the specified domain qualifies, you can create a forest trust.

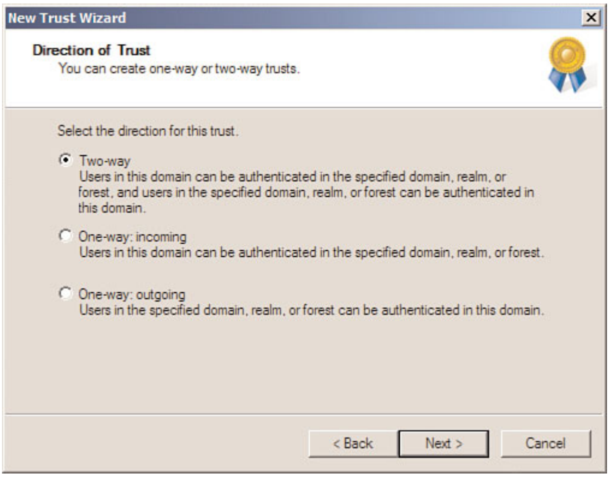
Select the type of trust you want to create.

● External trust
An external trust is a nontransitive trust between a domain and another domain outside the forest. A nontransitive trust is bounded by the domains in the relationship.

Forest trust
A forest trust is a transitive trust between two forests that allows users in any of the

FIGURE 4.22
Trust Type page.

9. On the Direction of Trust page, shown in Figure 4.23, select Two-way and click Next.



Direction of Trust
You can create one-way or two-way trusts.

Select the direction for this trust.

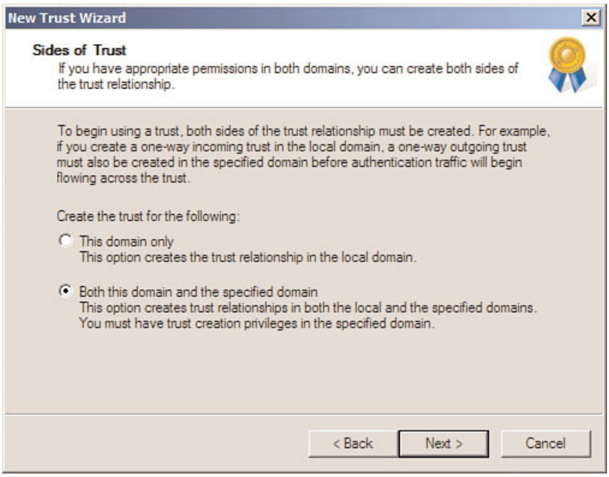
● Two-way
Users in this domain can be authenticated in the specified domain, realm, or forest, and users in the specified domain, realm, or forest can be authenticated in this domain.

○ One-way: incoming
Users in this domain can be authenticated in the specified domain, realm, or forest.

○ One-way: outgoing
Users in the specified domain, realm, or forest can be authenticated in this domain.

FIGURE 4.23
Direction of Trust page.

10. On the Sides of Trust page, shown in Figure 4.24, select This domain only or Both this domain and the specified domain; then click Next.



Sides of Trust

If you have appropriate permissions in both domains, you can create both sides of the trust relationship.

To begin using a trust, both sides of the trust relationship must be created. For example, if you create a one-way incoming trust in the local domain, a one-way outgoing trust must also be created in the specified domain before authentication traffic will begin flowing across the trust.

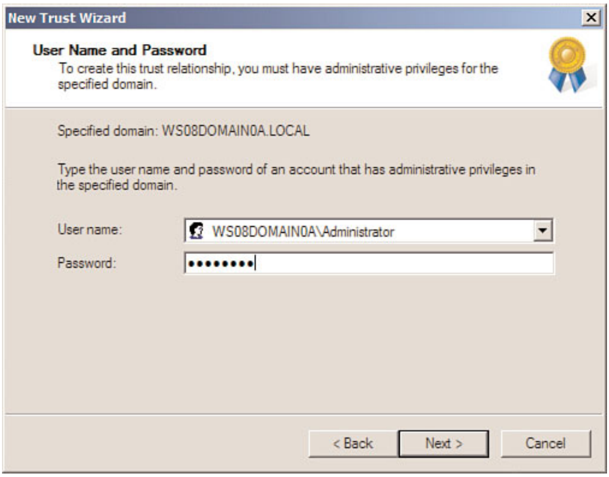
Create the trust for the following:

○ This domain only
This option creates the trust relationship in the local domain.

● Both this domain and the specified domain
This option creates trust relationships in both the local and the specified domains. You must have trust creation privileges in the specified domain.

FIGURE 4.24
Sides of Trust page.

11. If you selected Both this domain and the specified domain in Step 10, the User Name and Password page displays, as shown in Figure 4.25. Enter a user name and password for an account in the other forest that has the necessary permissions to create the forest trust, and click Next.



User Name and Password

To create this trust relationship, you must have administrative privileges for the specified domain.

Specified domain: WS08DOMAIN0A.LOCAL

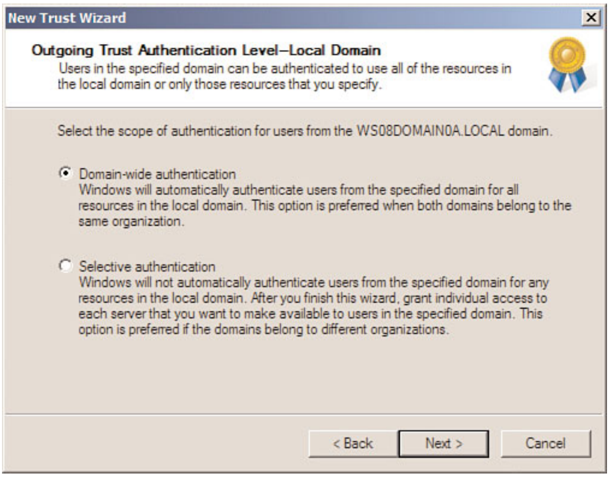
Type the user name and password of an account that has administrative privileges in the specified domain.

User name: WS08DOMAIN0A\Administrator

Password: ••••••••

FIGURE 4.25
User Name and Password page.

12. If you selected Both this domain and the specified domain in Step 10, the Outgoing Trust Authentication Level—Local Domain page displays, as shown in Figure 4.26. On the Outgoing Trust Authentication Level—Local Domain page, select Domain-wide authentication or Selective authentication and click Next.



Outgoing Trust Authentication Level–Local Domain
Users in the specified domain can be authenticated to use all of the resources in the local domain or only those resources that you specify.

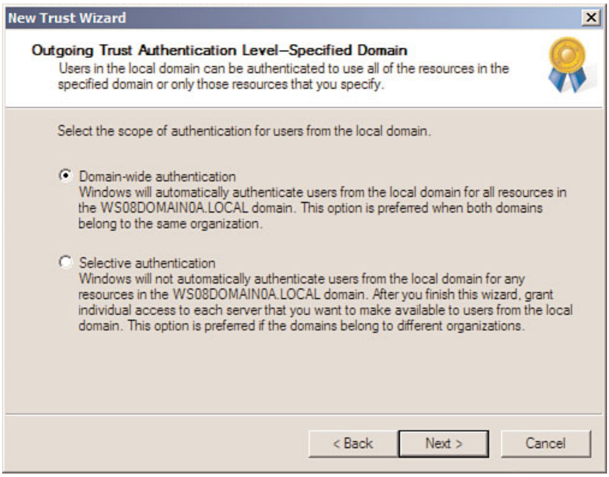
Select the scope of authentication for users from the WS08DOMAIN0A.LOCAL domain.

● Domain-wide authentication
Windows will automatically authenticate users from the specified domain for all resources in the local domain. This option is preferred when both domains belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the specified domain for any resources in the local domain. After you finish this wizard, grant individual access to each server that you want to make available to users in the specified domain. This option is preferred if the domains belong to different organizations.

FIGURE 4.26
Outgoing Trust Authentication Level—Local Domain page.

13. If you selected Both this domain and the specified domain in step 10, the Outgoing Trust Authentication Level—Specified Domain page displays, as shown in Figure 4.27. On the Outgoing Trust Authentication Level—Specified Domain page, select Domain-wide authentication or Selective authentication and click Next.



Outgoing Trust Authentication Level–Specified Domain
Users in the local domain can be authenticated to use all of the resources in the specified domain or only those resources that you specify.

Select the scope of authentication for users from the local domain.

● Domain-wide authentication
Windows will automatically authenticate users from the local domain for all resources in the WS08DOMAIN0A.LOCAL domain. This option is preferred when both domains belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the local domain for any resources in the WS08DOMAIN0A.LOCAL domain. After you finish this wizard, grant individual access to each server that you want to make available to users from the local domain. This option is preferred if the domains belong to different organizations.

FIGURE 4.27
Outgoing Trust Authentication Level—Specified Domain page.

14. On the Trust Selections Complete page, click Next.
15. If you are presented with the Confirm Outgoing Trust page, click No, do not confirm the outgoing trust, and then click Next.
16. If you are presented with the Confirm Incoming Trust page, click No, do not confirm the incoming trust, and then click Next.
17. On the New Trust Wizard page, click Finish.

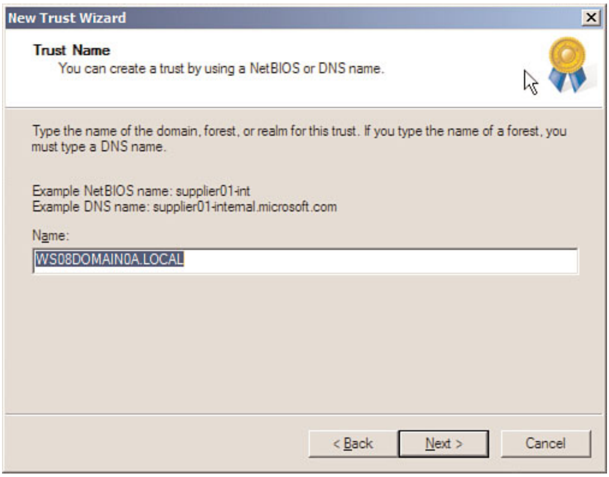
Create a One-Way Incoming Forest Trust

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To create a one-way incoming forest trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Click New Trust.
6. On the Welcome to the New Trust Wizard page, click Next.
7. On the Trust Name page, shown in Figure 4.28, type the DNS name of the other forest and then click Next.
8. On the Trust Type page, shown in Figure 4.29, select External Trust and click Next.



New Trust Wizard

Trust Name

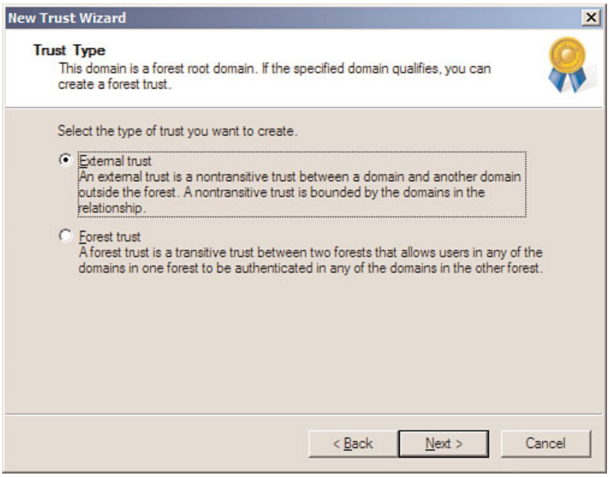
You can create a trust by using a NetBIOS or DNS name.

Type the name of the domain, forest, or realm for this trust. If you type the name of a forest, you must type a DNS name.

Example NetBIOS name: supplier01-int
Example DNS name: supplier01-internal.microsoft.com

Name: WS08DOMAIN0A.LOCAL

FIGURE 4.28
Trust Name page.



New Trust Wizard

Trust Type

This domain is a forest root domain. If the specified domain qualifies, you can create a forest trust.

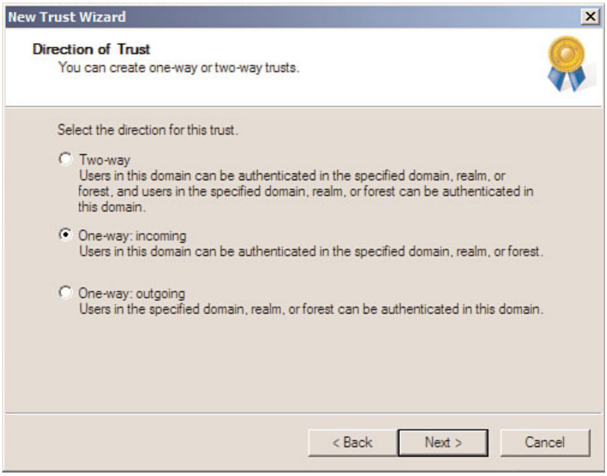
Select the type of trust you want to create.

● External trust
An external trust is a nontransitive trust between a domain and another domain outside the forest. A nontransitive trust is bounded by the domains in the relationship.

○ Forest trust
A forest trust is a transitive trust between two forests that allows users in any of the domains in one forest to be authenticated in any of the domains in the other forest.

FIGURE 4.29
Trust Type page.

9. On the Direction of Trust page, select One-way: incoming and click Next, as shown in Figure 4.30.



Direction of Trust
You can create one-way or two-way trusts.

Select the direction for this trust.

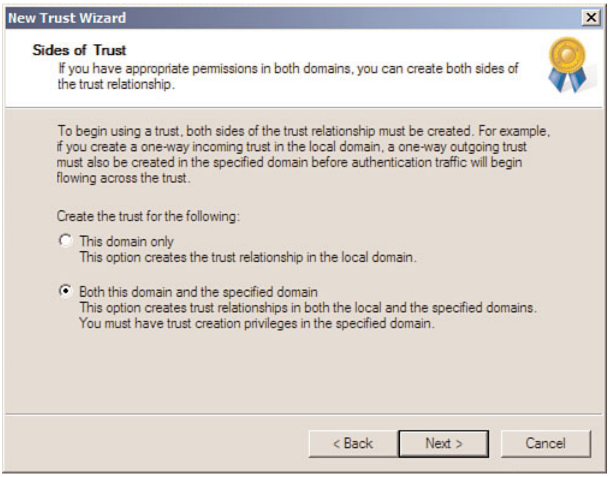
○ Two-way
Users in this domain can be authenticated in the specified domain, realm, or forest, and users in the specified domain, realm, or forest can be authenticated in this domain.

● One-way: incoming
Users in this domain can be authenticated in the specified domain, realm, or forest.

○ One-way: outgoing
Users in the specified domain, realm, or forest can be authenticated in this domain.

FIGURE 4.30
Direction of Trust page.

10. On the Sides of Trust page, shown in Figure 4.31, select This domain only or Both this domain and the specified domain and click Next.



Sides of Trust
If you have appropriate permissions in both domains, you can create both sides of the trust relationship.

To begin using a trust, both sides of the trust relationship must be created. For example, if you create a one-way incoming trust in the local domain, a one-way outgoing trust must also be created in the specified domain before authentication traffic will begin flowing across the trust.

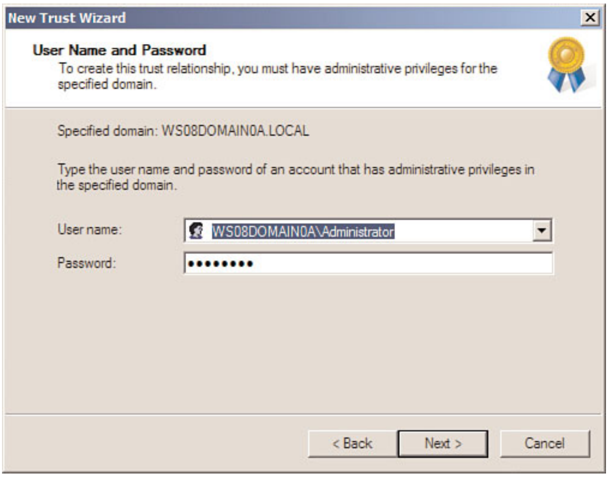
Create the trust for the following:

○ This domain only
This option creates the trust relationship in the local domain.

● Both this domain and the specified domain
This option creates trust relationships in both the local and the specified domains. You must have trust creation privileges in the specified domain.

FIGURE 4.31
Sides of Trust page.

11. If you selected Both this domain and the specified domain in Step 10, the User Name and Password page displays, as shown in Figure 4.32. Enter a user name and password for an account in the other forest that has the necessary permissions to create the forest trust and click Next.



User Name and Password

To create this trust relationship, you must have administrative privileges for the specified domain.

Specified domain: WS08DOMAIN0A.LOCAL

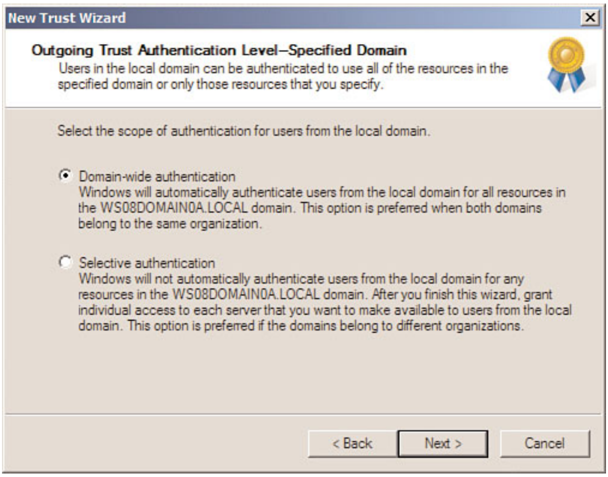
Type the user name and password of an account that has administrative privileges in the specified domain.

User name: WS08DOMAIN0A\Administrator

Password: ••••••••

FIGURE 4.32
User Name and Password page.

12. If you selected Both this domain and the specified domain in Step 10, the Outgoing Trust Authentication Level—Specified Domain page displays, as shown in Figure 4.33. On the Outgoing Trust Authentication Level—Specified Domain page, select Domain-wide authentication or Selective authentication and click Next.



Outgoing Trust Authentication Level–Specified Domain

Users in the local domain can be authenticated to use all of the resources in the specified domain or only those resources that you specify.

Select the scope of authentication for users from the local domain.

● Domain-wide authentication
Windows will automatically authenticate users from the local domain for all resources in the WS08DOMAIN0A.LOCAL domain. This option is preferred when both domains belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the local domain for any resources in the WS08DOMAIN0A.LOCAL domain. After you finish this wizard, grant individual access to each server that you want to make available to users from the local domain. This option is preferred if the domains belong to different organizations.

FIGURE 4.33
Outgoing Trust Authentication Level—Specified Domain page.

13. On the Trust Selections Complete page, click Next.

14. If you are presented with the Confirm Outgoing Trust page, click No, do not confirm the outgoing trust, and then click Next.

15. If you are presented with the Confirm Incoming Trust page, click No, do not confirm the incoming trust, and then click Next.
16. On the New Trust Wizard page, click Finish.

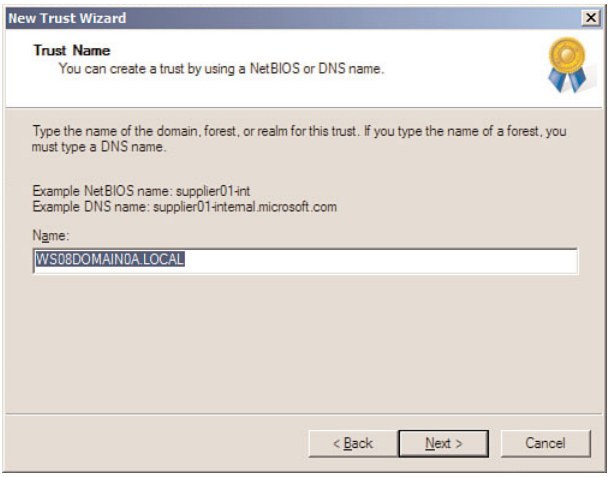
Create a One-Way Outgoing Forest Trust

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To create a one-way outgoing forest trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Click New Trust.
6. On the Welcome to the New Trust Wizard page, click Next.
7. On the Trust Name page, shown in Figure 4.34, type the DNS name of the other forest and then click Next.


New Trust Wizard

Trust Name

You can create a trust by using a NetBIOS or DNS name.

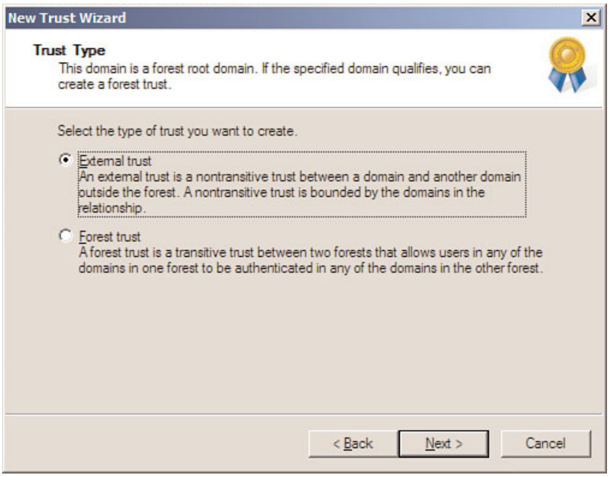
Type the name of the domain, forest, or realm for this trust. If you type the name of a forest, you must type a DNS name.

Example NetBIOS name: supplier01-int
Example DNS name: supplier01-internal.microsoft.com

Name:
WS08DOMAIN0A.LOCAL

FIGURE 4.34
Trust Name page.

8. On the Trust Type page, select External Trust and click Next, as shown in Figure 4.35.



New Trust Wizard

Trust Type
This domain is a forest root domain. If the specified domain qualifies, you can create a forest trust.

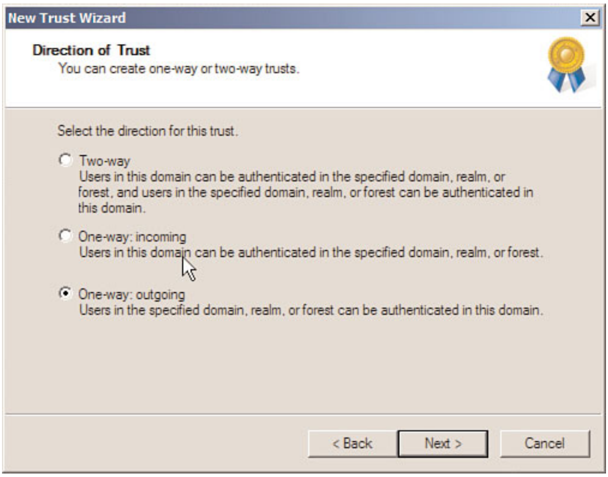
Select the type of trust you want to create.

● External trust
An external trust is a nontransitive trust between a domain and another domain outside the forest. A nontransitive trust is bounded by the domains in the relationship.

○ Forest trust
A forest trust is a transitive trust between two forests that allows users in any of the domains in one forest to be authenticated in any of the domains in the other forest.

FIGURE 4.35
Trust Type page.

9. On the Direction of Trust page, shown in Figure 4.36, select One-way: outgoing and click Next.



New Trust Wizard

Direction of Trust
You can create one-way or two-way trusts.

Select the direction for this trust.

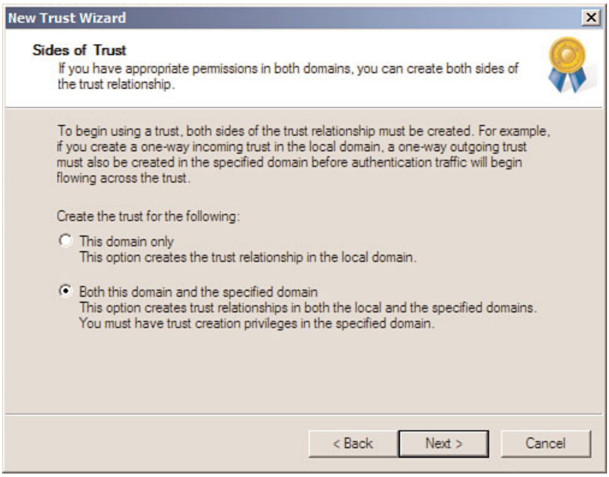
○ Two-way
Users in this domain can be authenticated in the specified domain, realm, or forest, and users in the specified domain, realm, or forest can be authenticated in this domain.

○ One-way: incoming
Users in this domain can be authenticated in the specified domain, realm, or forest.

● One-way: outgoing
Users in the specified domain, realm, or forest can be authenticated in this domain.

FIGURE 4.36
Direction of Trust page.

10. On the Sides of Trust page, shown in Figure 4.37, select This domain only or Both this domain and the specified domain and click Next.



Sides of Trust

If you have appropriate permissions in both domains, you can create both sides of the trust relationship.

To begin using a trust, both sides of the trust relationship must be created. For example, if you create a one-way incoming trust in the local domain, a one-way outgoing trust must also be created in the specified domain before authentication traffic will begin flowing across the trust.

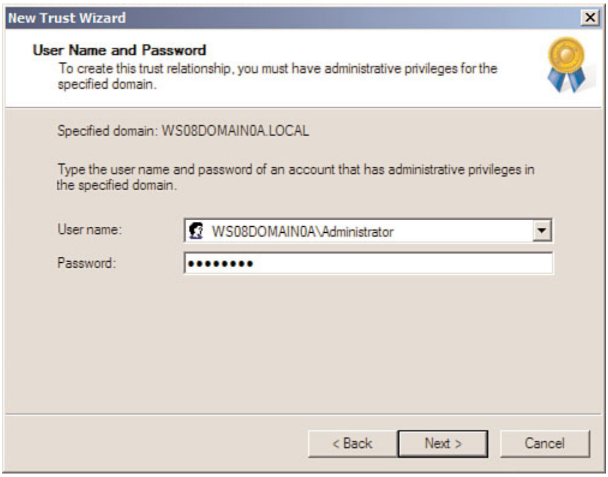
Create the trust for the following:

○ This domain only
This option creates the trust relationship in the local domain.

● Both this domain and the specified domain
This option creates trust relationships in both the local and the specified domains. You must have trust creation privileges in the specified domain.

FIGURE 4.37
Sides of Trust page.

11. If you selected Both this domain and the specified domain in Step 10, the User Name and Password page displays, as shown in Figure 4.38. Enter a user name and password for an account in the other forest that has the necessary permissions to create the forest trust and click Next.



User Name and Password

To create this trust relationship, you must have administrative privileges for the specified domain.

Specified domain: WS08DOMAIN0A.LOCAL

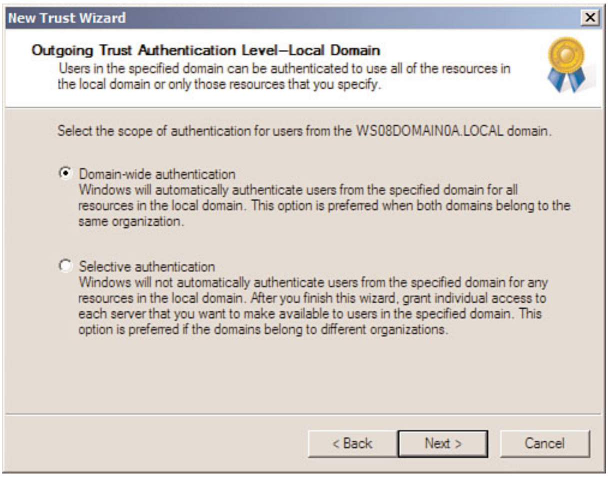
Type the user name and password of an account that has administrative privileges in the specified domain.

User name: WS08DOMAIN0A\Administrator

Password: ••••••••

FIGURE 4.38
User Name and Password page.

12. If you selected Both this domain and the specified domain in Step 10, the Outgoing Trust Authentication Level—Local Domain page displays, as shown in Figure 4.39. On the Outgoing Trust Authentication Level—Local Domain page, select Domain-wide authentication or Selective authentication and click Next.



Outgoing Trust Authentication Level—Local Domain

Users in the specified domain can be authenticated to use all of the resources in the local domain or only those resources that you specify.

Select the scope of authentication for users from the WS08DOMAIN0A.LOCAL domain.

● Domain-wide authentication
Windows will automatically authenticate users from the specified domain for all resources in the local domain. This option is preferred when both domains belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the specified domain for any resources in the local domain. After you finish this wizard, grant individual access to each server that you want to make available to users in the specified domain. This option is preferred if the domains belong to different organizations.

FIGURE 4.39
Outgoing Trust Authentication Level—Local Domain page.

13. On the Trust Selections Complete page, click Next.
14. If you are presented with the Confirm Outgoing Trust page, click No, do not confirm the outgoing trust, and then click Next.
15. If you are presented with the Confirm Incoming Trust page, click No, do not confirm the incoming trust, and then click Next.
16. On the New Trust Wizard page, click Finish.

Create Realm Trusts

Scenario/Problem: You might need to provide users from a domain in your forest with the capability to access resources in a non-Windows Kerberos version 5 (V5) realm. You might also need to provide users from a non-Windows Kerberos version 5 (V5) realm with the capability to access resources in a domain in your forest.

Solution: *Realm* trusts are used to provide cross-platform interoperability with security services that are based on other versions of the Kerberos V5 protocol. Realm trusts can be two-way or one-way. A two-way realm trust allows users in the domain in your forest and the realm to access resources in either domain or realm. A one-way realm trust allows users in your domain to access resources in the realm, or users in the realm to access resources in your domain.

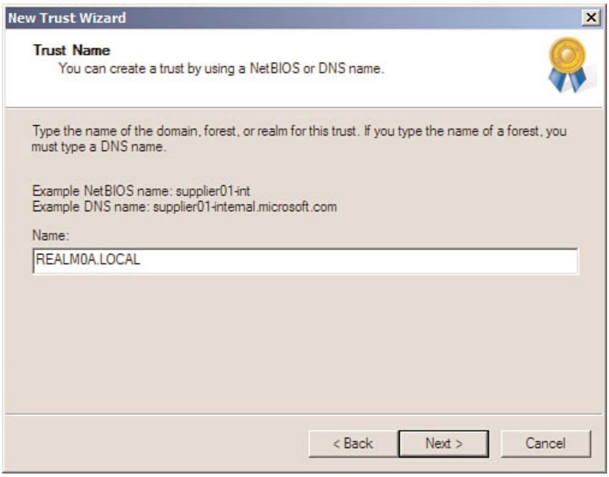
The steps to create realm trusts differ depending on the direction of the trust being created. The sections that follow detail the steps to create realm trusts.

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To create a realm trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Click New Trust.
6. On the Welcome to the New Trust Wizard page, click Next.
7. On the Trust Name page, shown in Figure 4.40, type the DNS name of the other forest and then click Next.
8. On the Trust Type page, select Realm trust and click Next, as shown in Figure 4.41.



Trust Name

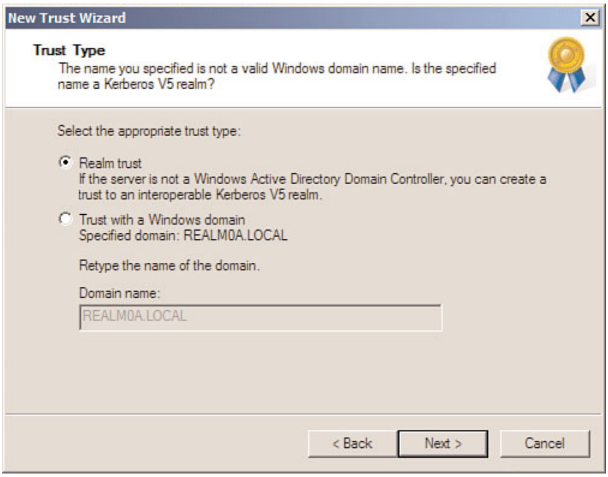
You can create a trust by using a NetBIOS or DNS name.

Type the name of the domain, forest, or realm for this trust. If you type the name of a forest, you must type a DNS name.

Example NetBIOS name: supplier01-int
Example DNS name: supplier01-internal.microsoft.com

Name:
REALM0A.LOCAL

FIGURE 4.40
Trust Name page.



Trust Type

The name you specified is not a valid Windows domain name. Is the specified name a Kerberos V5 realm?

Select the appropriate trust type:

● Realm trust
If the server is not a Windows Active Directory Domain Controller, you can create a trust to an interoperable Kerberos V5 realm.

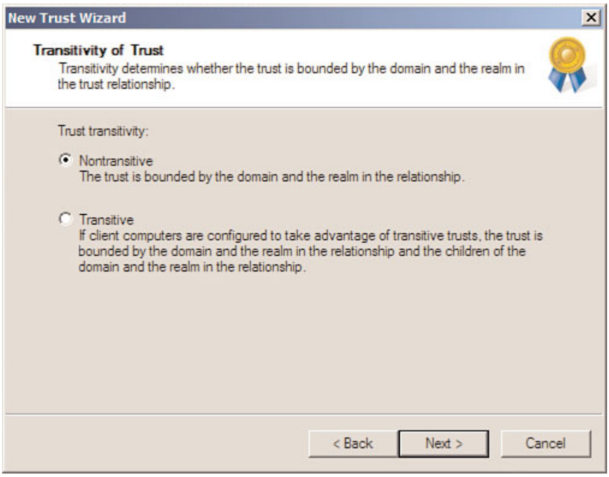
○ Trust with a Windows domain
Specified domain: REALM0A.LOCAL

Retype the name of the domain.

Domain name:
REALM0A.LOCAL

FIGURE 4.41
Trust Type page.

9. On the Transitivity of Trust page, shown in Figure 4.42, select Nontransitive or Transitive and click Next.



Transitivity of Trust

Transitivity determines whether the trust is bounded by the domain and the realm in the trust relationship.

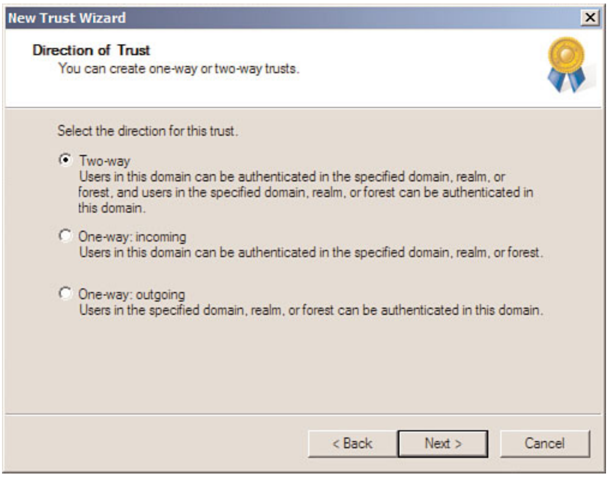
Trust transitivity:

● Nontransitive
The trust is bounded by the domain and the realm in the relationship.

○ Transitive
If client computers are configured to take advantage of transitive trusts, the trust is bounded by the domain and the realm in the relationship and the children of the domain and the realm in the relationship.

FIGURE 4.42
Transitivity of Trust page.

10. On the Direction of Trust page, shown in Figure 4.43, select Two-way, One-way: incoming, or One-way: outgoing, and click Next.



Direction of Trust

You can create one-way or two-way trusts.

Select the direction for this trust.

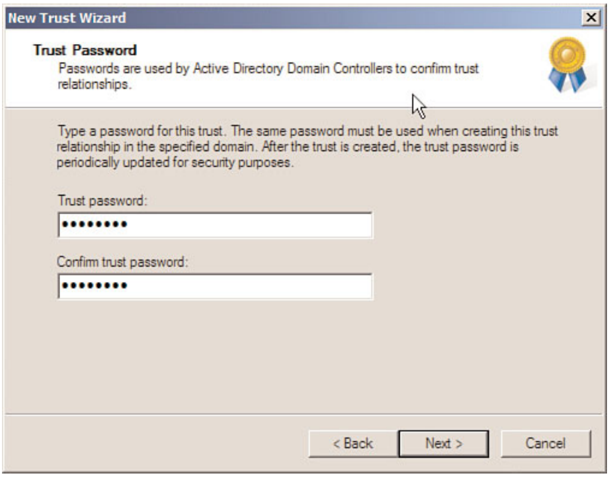
● Two-way
Users in this domain can be authenticated in the specified domain, realm, or forest, and users in the specified domain, realm, or forest can be authenticated in this domain.

○ One-way: incoming
Users in this domain can be authenticated in the specified domain, realm, or forest.

○ One-way: outgoing
Users in the specified domain, realm, or forest can be authenticated in this domain.

FIGURE 4.43
Direction of Trust page.

11. On the Trust Password page, shown in Figure 4.44, enter and confirm a password to be used for the creation of the trust; then click Next.


New Trust Wizard

Trust Password

Passwords are used by Active Directory Domain Controllers to confirm trust relationships.

Type a password for this trust. The same password must be used when creating this trust relationship in the specified domain. After the trust is created, the trust password is periodically updated for security purposes.

Trust password: ●●●●●●●●

Confirm trust password: ●●●●●●●●

FIGURE 4.44
Trust Password page.

12. On the Trust Selections Complete page, click Next.
13. On the New Trust Wizard page, click Finish.

Create Shortcut Trusts

Scenario/Problem: When your Active Directory Domain Services forest consists of multiple domain trees, authentication requests must first travel a trust path between domain trees for users in one domain tree to access resources in another domain tree. In a large AD DS environment, this can take time. This can be a burden if many users in a domain regularly log onto other domains in a forest.

Solution: *Shortcut* trusts are used to make the authentication process more efficient when authentication requests cross different domain trees. Shortcut trusts can be two-way or one-way and are always transitive. A one-way shortcut trust improves the time it takes to authenticate across domain trees, but only in one direction. A two-way shortcut trust improves authentication across domain trees, and it does so in both directions.

The steps to create shortcut trusts differ depending on the direction of the trust being created. The sections that follow detail the steps to create shortcut trusts.

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To create a shortcut trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Click New Trust.
6. On the Welcome to the New Trust Wizard page, click Next.
7. On the Trust Name page, type the DNS name or NetBIOS name of the domain with which you want to create a shortcut trust; then click Next.
8. On the Direction of Trust page, select Two-way, One-way: incoming, or One-way: outgoing. Then click Next.
9. On the Trust Selections Complete page, click Next.
10. If you are presented with the Confirm Outgoing Trust page, click No, do not confirm the outgoing trust, and then click Next.
11. If you are presented with the Confirm Incoming Trust page, click No, do not confirm the incoming trust, and then click Next.
12. On the New Trust Wizard page, click Finish.

Change the Routing Status of a Name Suffix

Scenario/Problem: Name suffixes include user principal name (UPN) suffixes, service principal name (SPN) suffixes, and Domain Name System (DNS) forest or domain tree names. When you create a forest trust, all unique name suffixes are routed by default. In some cases, you might want to control authentication requests over a forest trust.

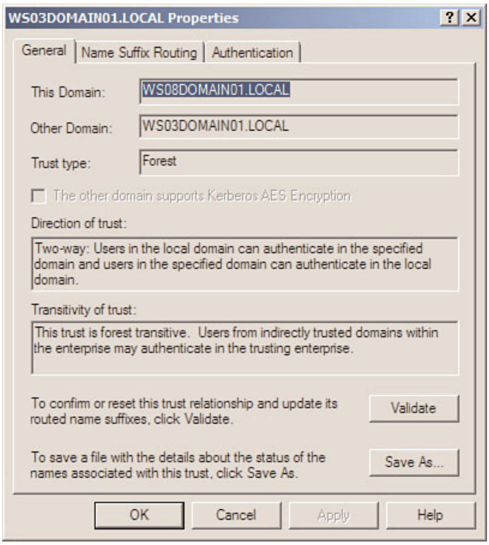
Solution: *Name suffix routing* allows you to control authentication requests that take place between forests that are joined by a forest trust. By using the Active Directory Domains and Trusts console, you can change the routing status of a name suffix.

To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Domain Admins

To change the routing status of a name suffix, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Select an outgoing or incoming trust and click Properties. The properties page for forest trust is shown in Figure 4.45.


WS03DOMAIN01.LOCAL Properties

This Domain: WS08DOMAIN01.LOCAL

Other Domain: WS03DOMAIN01.LOCAL

Trust type: Forest

□ The other domain supports Kerberos AES Encryption

Direction of trust:

Two-way: Users in the local domain can authenticate in the specified domain and users in the specified domain can authenticate in the local domain.

Transitivity of trust:

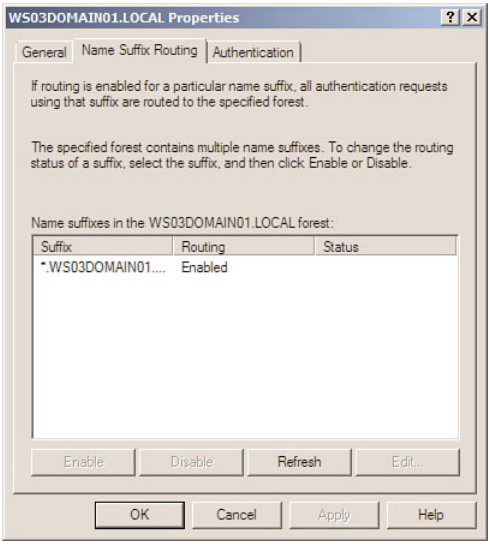
This trust is forest transitive. Users from indirectly trusted domains within the enterprise may authenticate in the trusting enterprise.

To confirm or reset this trust relationship and update its routed name suffixes, click Validate.

To save a file with the details about the status of the names associated with this trust, click Save As.

FIGURE 4.45
The Trust Properties General tab.

6. On the Trust Properties page, click the Name Suffix Routing tab, as shown in Figure 4.46.
7. Click the name suffix you want to modify, and select Edit.
8. On the Edit Name Suffix page, click the suffix you want to modify and click Enable or Disable.



If routing is enabled for a particular name suffix, all authentication requests using that suffix are routed to the specified forest.

The specified forest contains multiple name suffixes. To change the routing status of a suffix, select the suffix, and then click Enable or Disable.

Name suffixes in the WS03DOMAIN01.LOCAL forest:

Suffix	Routing	Status
*.WS03DOMAIN01....	Enabled	

FIGURE 4.46
The Name Suffix Routing tab.

Enable or Disable an Existing Name Suffix from Routing

Scenario/Problem: Name suffixes include UPN suffixes, SPN suffixes, and DNS forest or domain tree names. When you create a forest trust, all unique name suffixes are routed by default. In some cases, you might want to control authentication requests over a forest trust.

Solution: Name suffix routing allows you to control authentication requests that take place between forests joined by a forest trust. By using the Active Directory Domains and Trusts console, you can enable or disable an existing name suffix from routing.

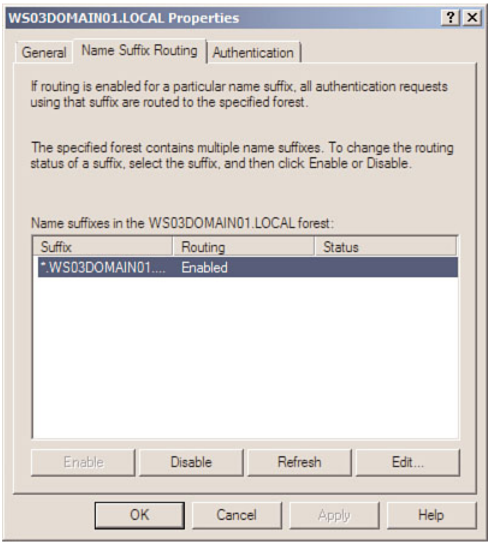
To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Domain Admins

To Enable or Disable an Existing Name Suffix from Routing, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.

3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Select an outgoing or incoming trust and click Properties.
6. On the Trust Properties page, click the Name Suffix Routing tab.
7. To enable a name suffix, click the suffix you want to enable as shown in Figure 4.47, and click Enable. To disable a name suffix, click the suffix you want to disable and click Disable.



If routing is enabled for a particular name suffix, all authentication requests using that suffix are routed to the specified forest.

The specified forest contains multiple name suffixes. To change the routing status of a suffix, select the suffix, and then click Enable or Disable.

Name suffixes in the WS03DOMAIN01.LOCAL forest:

Suffix	Routing	Status
*.WS03DOMAIN01....	Enabled	

FIGURE 4.47
Enabling or disabling name suffixes.

TIP If the Enable button appears dimmed, the name suffix is already enabled. If the Disable button appears dimmed, the name suffix is already disabled.

Exclude Name Suffixes from Routing to a Local Forest

Scenario/Problem: Name suffixes include UPN suffixes, SPN suffixes, and DNS forest or domain tree names. When you create a forest trust, all unique name suffixes are routed by default. In some cases, you might want to control authentication requests over a forest trust.

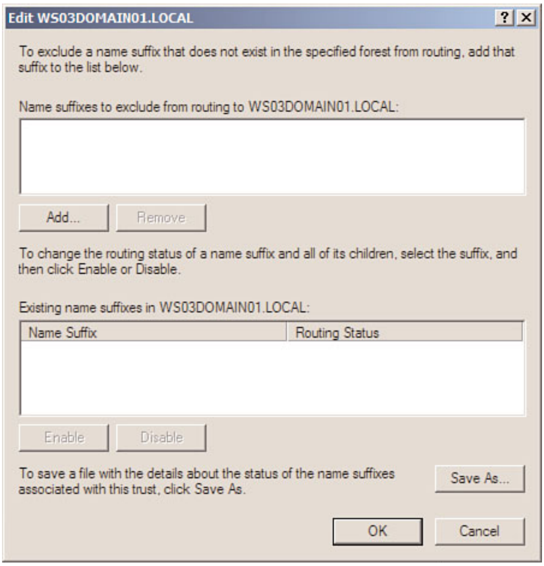
Solution: Name suffix routing allows you to control authentication requests that take place between forests joined by a forest trust. By using the Active Directory Domains and Trusts console, you can exclude name suffixes from routing to a local forest.

To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Domain Admins

To exclude name suffixes from routing to a local forest, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Select an outgoing or incoming trust, and click Properties.
6. On the Trust Properties page, click the Name Suffix Routing tab.
7. Click the name suffix you want to modify, as shown in Figure 4.48, and select Edit.



Edit WS03DOMAIN01.LOCAL

To exclude a name suffix that does not exist in the specified forest from routing, add that suffix to the list below.

Name suffixes to exclude from routing to WS03DOMAIN01.LOCAL:

To change the routing status of a name suffix and all of its children, select the suffix, and then click Enable or Disable.

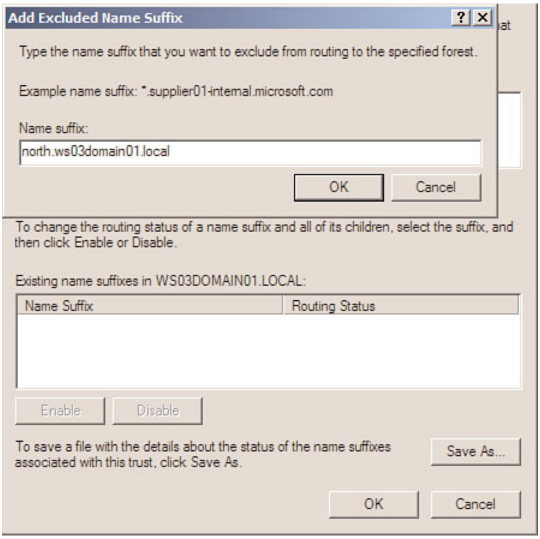
Existing name suffixes in WS03DOMAIN01.LOCAL:

Name Suffix	Routing Status

To save a file with the details about the status of the name suffixes associated with this trust, click Save As.

FIGURE 4.48
Excluding name suffixes from routing to a local forest.

8. In Name Suffixes to Exclude from Routing to page, click Add.
9. On the Add Excluded Name Suffix page, shown in Figure 4.49, type a DNS name suffix that is subordinate to the unique name suffix; then click OK.


Add Excluded Name Suffix

Type the name suffix that you want to exclude from routing to the specified forest.

Example name suffix: *.supplier01-internal.microsoft.com

Name suffix:
north.ws03domain01.local

To change the routing status of a name suffix and all of its children, select the suffix, and then click Enable or Disable.

Existing name suffixes in WS03DOMAIN01.LOCAL:

Name Suffix	Routing Status

To save a file with the details about the status of the name suffixes associated with this trust, click Save As.

FIGURE 4.49
Add Excluded Name Suffix page.

Configure Authentication Scope for a Trust

Scenario/Problem: Authentication across forest trusts and external trusts might be required for a subset of your users or all users in your domain or forest.

Solution: The scope of authentication can be configured on a forest trust and on an external trust to provide domain-wide/forest-wide authentication or selective authentication.

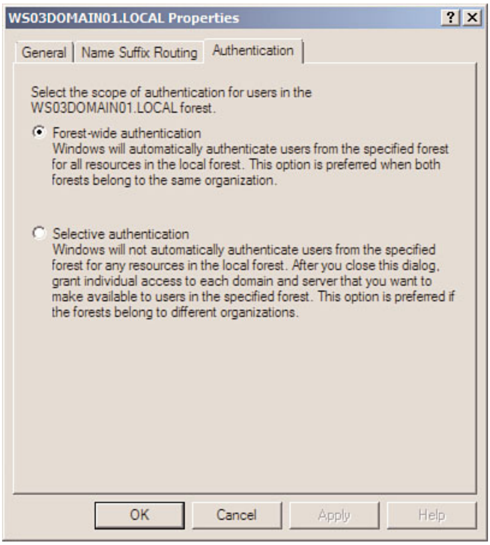
To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Domain Admins

To configure authentication scope for a trust, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.

2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Select an outgoing or incoming trust, and click Properties.
6. On the Trust Properties page, click the Authentication tab, shown in Figure 4.50.



Select the scope of authentication for users in the WS03DOMAIN01.LOCAL forest.

● Forest-wide authentication
Windows will automatically authenticate users from the specified forest for all resources in the local forest. This option is preferred when both forests belong to the same organization.

○ Selective authentication
Windows will not automatically authenticate users from the specified forest for any resources in the local forest. After you close this dialog, grant individual access to each domain and server that you want to make available to users in the specified forest. This option is preferred if the forests belong to different organizations.

FIGURE 4.50
The Trust Properties Authentication tab.

7. If the trust is a forest trust, select Forest-wide authentication or Selective authentication. If the trust is an external trust, select Domain-wide authentication or Selective authentication.

Validate Trusts

Scenario/Problem: Trust relationships simply provide a means for users to access resources. Additional steps are required to ensure the users have the appropriate permissions on these resources. In some cases, you might need to ensure the trust relationship is still functioning.

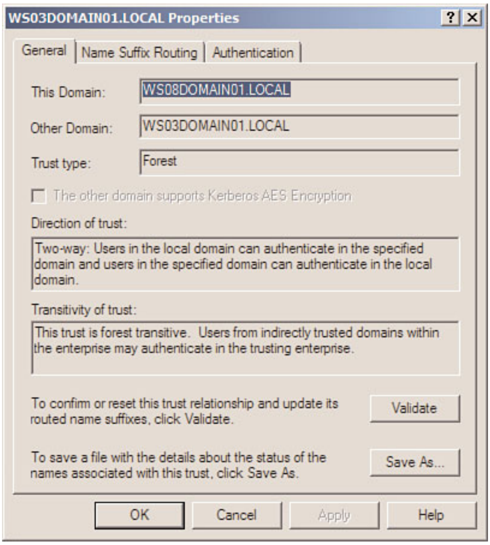
Solution: Trust validation allows you to test whether the trust relationship is still functional.

To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Domain Admins

To validate trusts, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Select an outgoing or incoming trust and click Properties. The properties page for a two-way forest trust is shown in Figure 4.51.


WS03DOMAIN01.LOCAL Properties

This Domain: WS08DOMAIN01.LOCAL

Other Domain: WS03DOMAIN01.LOCAL

Trust type: Forest

□ The other domain supports Kerberos AES Encryption

Direction of trust:

Two-way: Users in the local domain can authenticate in the specified domain and users in the specified domain can authenticate in the local domain.

Transitivity of trust:

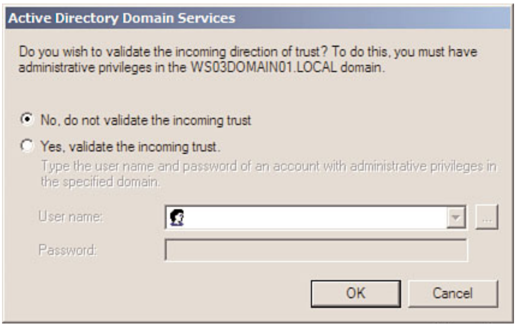
This trust is forest transitive. Users from indirectly trusted domains within the enterprise may authenticate in the trusting enterprise.

To confirm or reset this trust relationship and update its routed name suffixes, click Validate.

To save a file with the details about the status of the names associated with this trust, click Save As.

FIGURE 4.51
The Trust Properties General tab.

6. On the Trust Properties page, click Validate.
7. If the trust is a two-way trust, you will be prompted to validate the opposite side of the trust. Select No, do not validate the incoming trust or Yes, validate the incoming trust. If you choose to validate the opposite side of the trust, you must enter the credentials of a user account in the specified domain that has administrative credentials. The prompt for Active Directory Domain Services credentials is shown in Figure 4.52.



Active Directory Domain Services

Do you wish to validate the incoming direction of trust? To do this, you must have administrative privileges in the WS03DOMAIN01.LOCAL domain.

● No, do not validate the incoming trust

○ Yes, validate the incoming trust.
Type the user name and password of an account with administrative privileges in the specified domain.

User name:

Password:

FIGURE 4.52
Validating both sides of a trust.

Remove Trusts

Scenario/Problem: Access requirements are not static. At some point, a trust relationship will no longer be required. This is truest when trust relationships are created for short-term tasks, such as migrations.

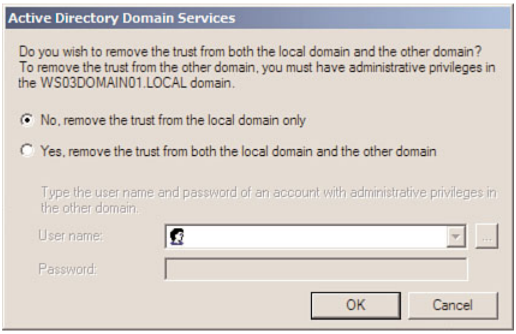
Solution: You can remove a trust by using the Active Directory Domains and Trusts console.

To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Domain Admins

To remove trusts, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Properties.
4. Click the Trusts tab.
5. Select an outgoing or incoming trust and click Remove.
6. When prompted to remove the trust from the local domain and the other domain, select No, remove the trust from the local domain only or Yes, remove the trust from both the local domain and the other domain, as shown in Figure 4.53. If you select to remove the trust from both domains, you will need to enter the credentials of a user account in the specified domain that has administrative credentials.



Active Directory Domain Services

Do you wish to remove the trust from both the local domain and the other domain? To remove the trust from the other domain, you must have administrative privileges in the WS03DOMAIN01.LOCAL domain.

● No, remove the trust from the local domain only

○ Yes, remove the trust from both the local domain and the other domain

Type the user name and password of an account with administrative privileges in the other domain.

User name:

Password:

FIGURE 4.53
The Remove Trust Prompt.

Add a User Principal Name to a Forest

Scenario/Problem: Each domain has a default UPN suffix, which uses the DNS name of the domain. In some cases, you might need to provide your users with the use of a different UPN suffix for logon.

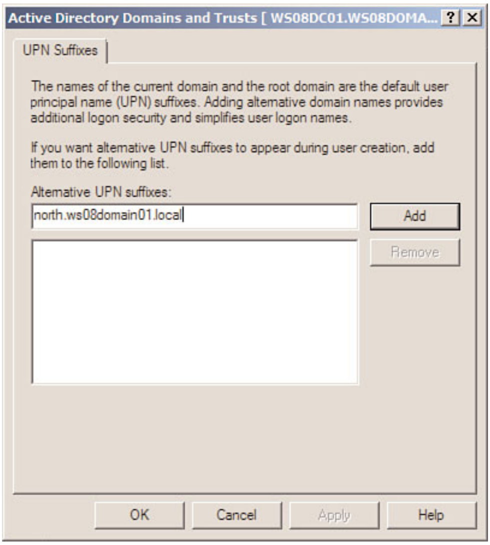
Solution: You can use the Active Directory Domains and Trusts console to add a UPN to a forest.

To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Enterprise Admins

To add a user principal name to a forest, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the Active Directory Domains and Trusts node and then click Properties.
4. On the UPN Suffixes tab, shown in Figure 4.54, type the new UPN suffix you want to add to the forest in the Alternative UPN suffixes field; then click Add.



The names of the current domain and the root domain are the default user principal name (UPN) suffixes. Adding alternative domain names provides additional logon security and simplifies user logon names.

If you want alternative UPN suffixes to appear during user creation, add them to the following list.

Alternative UPN suffixes: north.ws08domain01.local

FIGURE 4.54
The UPN Suffixes tab.

Remove a User Principal Name from a Forest

Scenario/Problem: If you have previously added an alternative UPN suffix to your forest, you might need to remove it when it becomes obsolete.

Solution: You can remove a UPN suffix from a forest by using the Active Directory Domains and Trusts console.

To complete this task, you must use an AD DS account that has membership in the following AD DS group:

- Enterprise Admins

To remove a user principal name from a forest, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the Active Directory Domains and Trusts node; then click Properties.
4. On the UPN Suffixes tab, select the UPN suffix you want to remove from the forest in the Alternative UPN suffixes field and click Remove.

Configure Domain Functional Levels

Scenario/Problem: *Domain functional levels* control the advanced features that are available in an Active Directory Domain Services domain. In addition, domain functional levels also control the operating systems that can be installed on domain controllers that are added to the domain.

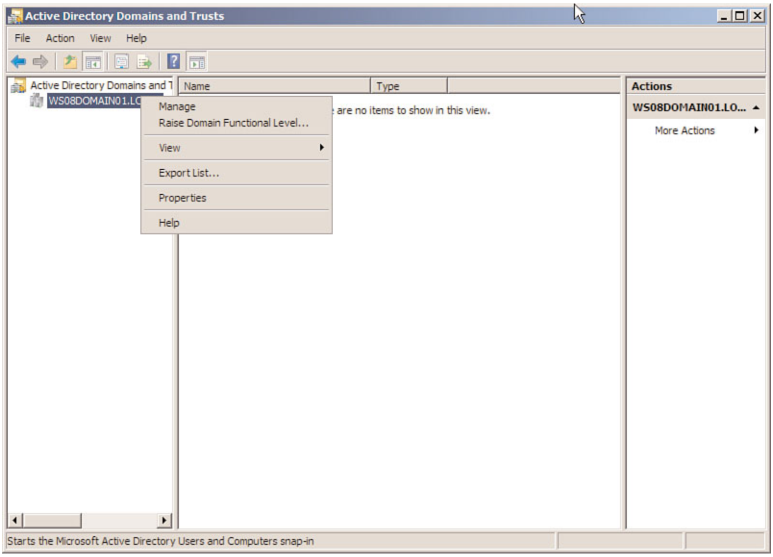
Solution: You can raise the domain functional level of a domain by using the Active Directory Domains and Trusts console.

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To configure domain functional levels, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the domain node for the forest root domain; then click Raise Domain Functional Level, as shown in Figure 4.55.



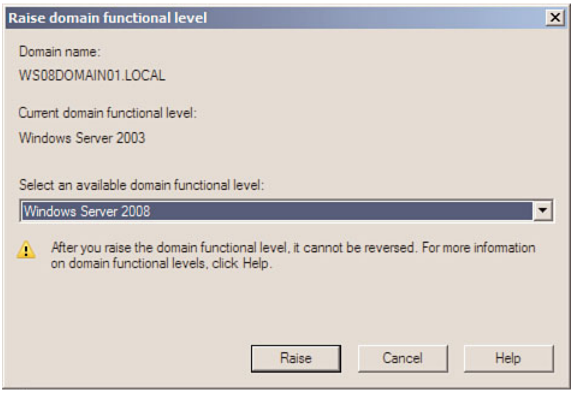
: are no items to show in this view.

Starts the Microsoft Active Directory Users and Computers snap-in

FIGURE 4.55

Selecting Raise Domain Functional Level.

4. On the Raise Domain Functional Level page, select the desired domain functional level from the available list and click Raise, as shown in Figure 4.56.



Raise domain functional level

Domain name:
WS08DOMAIN01.LOCAL

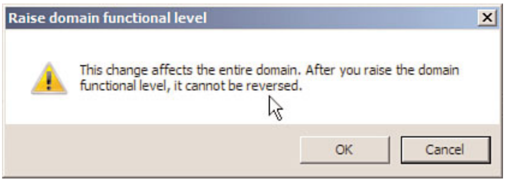
Current domain functional level:
Windows Server 2003

Select an available domain functional level:
Windows Server 2008

After you raise the domain functional level, it cannot be reversed. For more information on domain functional levels, click Help.

FIGURE 4.56
The Raise Domain Functional Level page.

5. In the Raise Domain Functional Level warning box, click OK, as shown in Figure 4.57.



Raise domain functional level

This change affects the entire domain. After you raise the domain functional level, it cannot be reversed.

FIGURE 4.57
The Raise Domain Functional Level warning box.

Configure Forest Functional Levels

Scenario/Problem: *Forest functional levels* control the advanced features that are available in an Active Directory Domain Services forest. In addition, forest functional levels also control the domain functional levels that are permitted in a forest.

Solution: You can raise the forest functional level of a forest by using the Active Directory Domains and Trusts console.

To complete this task, you must use an AD DS account that has membership in one of the following AD DS groups:

- Domain Admins in the forest root domain
- Enterprise Admins

To configure forest functional levels, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click Active Directory Domains and Trusts.
3. In the console tree, right-click the Active Directory Domains and Trusts node and then select Raise Forest Functional Level, as shown in Figure 4.58.

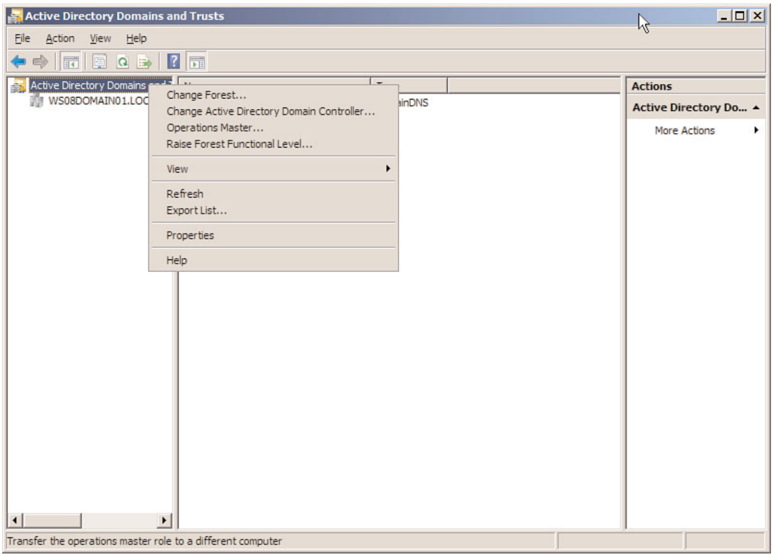
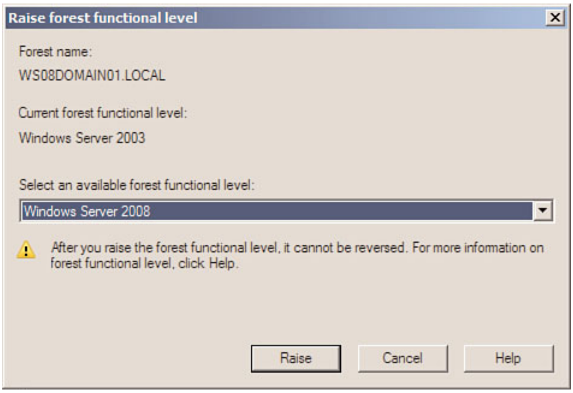

Active Directory Domains and Trusts
File
Action
View
Help
Active Directory Domains and
WS08DOMAIN01.LOC
Change Forest...
Change Active Directory Domain Controller...
Operations Master...
Raise Forest Functional Level...
View
Refresh
Export List...
Properties
Help
ainDNS
Actions
Active Directory Do...
More Actions
Transfer the operations master role to a different computer

FIGURE 4.58
Selecting Raise Forest Functional Level.

4. On the Raise Forest Functional Level page, shown in Figure 4.59, select the desired forest functional level from the available list and click Raise.


Raise forest functional level

Forest name:
WS08DOMAIN01.LOCAL

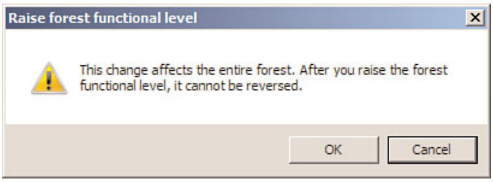
Current forest functional level:
Windows Server 2003

Select an available forest functional level:
Windows Server 2008

After you raise the forest functional level, it cannot be reversed. For more information on forest functional level, click Help.

FIGURE 4.59
The Raise Forest Functional Level page.

5. In the Raise Forest Functional Level warning box, shown in Figure 4.60, click OK.



Raise forest functional level

This change affects the entire forest. After you raise the forest functional level, it cannot be reversed.

FIGURE 4.60
The Raise Forest Functional Level warning box.

This page intentionally left blank

CHAPTER 5

Manage Operations Master Roles and Global Catalog Servers

IN THIS CHAPTER

- Enable the Global Catalog Role
- Disable the Global Catalog Role
- Verify Global Catalog Server Readiness
- Verify Global Catalog DNS Registrations
- Determine Global Catalog Servers
- Identify Operations Master Role Holders
- Validate Domain Controller Advertising
- Transfer the Schema Master Role
- Transfer the Domain Naming Master Role
- Transfer the RID Master Role
- Transfer the PDC Emulator Role
- Transfer the Infrastructure Master Role
- Seize the Schema Master Role
- Seize the Domain Naming Master Role
- Seize the RID Master Role
- Seize the PDC Emulator Role
- Seize the Infrastructure Master Role

In every Active Directory Domain Services forest, at least five operations master roles are assigned to one or more domain controllers (DCs). Forest-wide operations master roles, schema master and domain naming master, exist once in the forest. Domain-wide operations master roles, PDC Emulator, RID master, and infrastructure master, exist in each domain in the forest.

Global catalog servers contain the read-only global catalog partition, which contains a subset of the attributes for every object in the forest.

This chapter describes the steps required to manage operations master roles and global catalog servers.

Enable the Global Catalog Role

Scenario/Problem: Each domain controller contains a writable copy of the domain partition for the domain to which the domain controller belongs. In a multiple domain forest, domain controllers are often queried for information pertaining to objects from multiple domains. You might need to configure domain controllers so they also contain a partial list of attributes for objects from all domains in the forest.

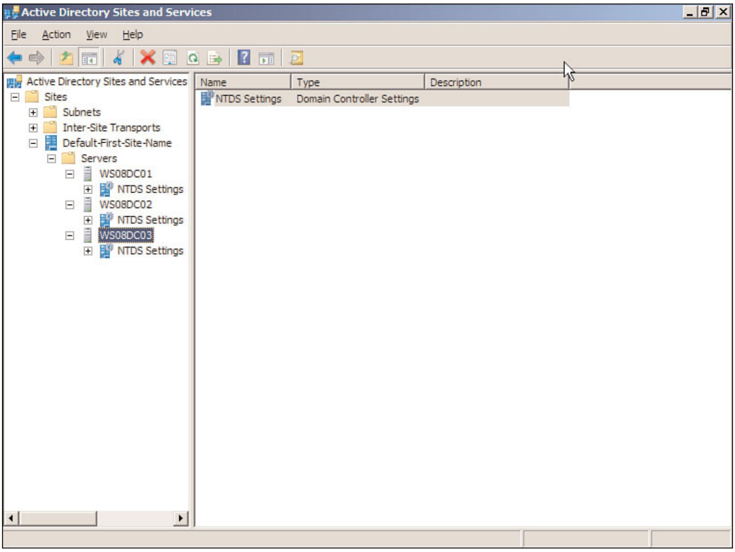
Solution: You can enable the global catalog role on a domain controller so that it hosts the global catalog directory partition. The global catalog role can be enabled by using the Windows interface and using the command line.

Enable the Global Catalog Role by Using the Windows Interface

To enable the global catalog role by using the windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, as shown in Figure 5.1, select the domain controller where you want to enable the global catalog role.

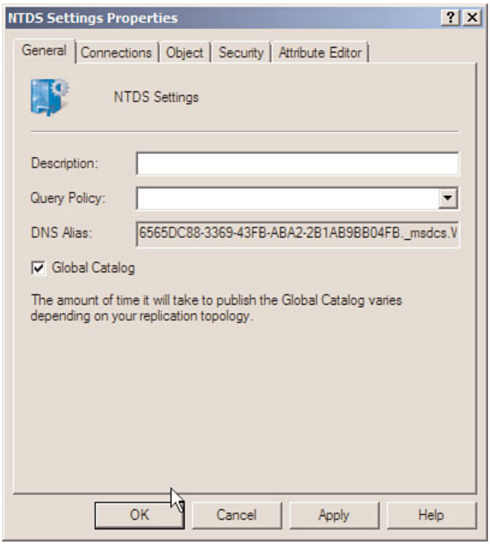
TIP You can search for a global catalog by right-clicking Sites in the console tree and selecting Find from the menu.



Name	Type	Description
NTDS Settings	Domain Controller Settings	

FIGURE 5.1
Active Directory Sites and Services console.

4. In the details pane, right-click NTDS Settings and select Properties.
5. On the NTDS Settings Properties page, shown in Figure 5.2, select the Global Catalog check box and click OK.



NTDS Settings

Description:

Query Policy:

DNS Alias: 6565DC88-3369-43FB-ABA2-2B1AB9BB04FB._msdcs.V

☑ Global Catalog

The amount of time it will take to publish the Global Catalog varies depending on your replication topology.

FIGURE 5.2
Enable the global catalog role by using the Windows interface.

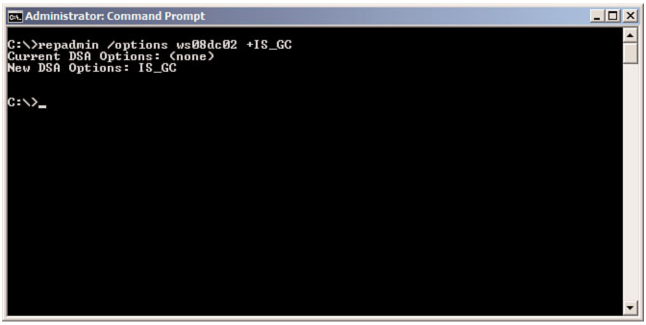
Enable the Global Catalog Role by Using the Command Line

To enable the global catalog role by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. In the Command Prompt window, type the following command:

   `repadmin /options` ***`servername`*** **`+IS_GC`**

   (where *`servername`* is the domain controller on which you want to enable the global catalog role).
4. Verify that the results show `New DSA Options: IS_GC`, as shown in Figure 5.3.



```
C:\>repadmin /options ws08dc02 +IS_GC
Current DSA Options: (none)
New DSA Options: IS_GC

C:\>_
```

FIGURE 5.3
Enable the global catalog role by using the command line.

Disable the Global Catalog Role

Scenario/Problem: You might need to remove a server from the read-only global catalog partition.

Solution: You can disable the global catalog role on a domain controller so that it no longer hosts the global catalog directory partition. The global catalog role can be disabled by using the Windows interface and by using the command line.

Disable the Global Catalog Role by Using the Windows Interface

To disable the global catalog role by using the windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.

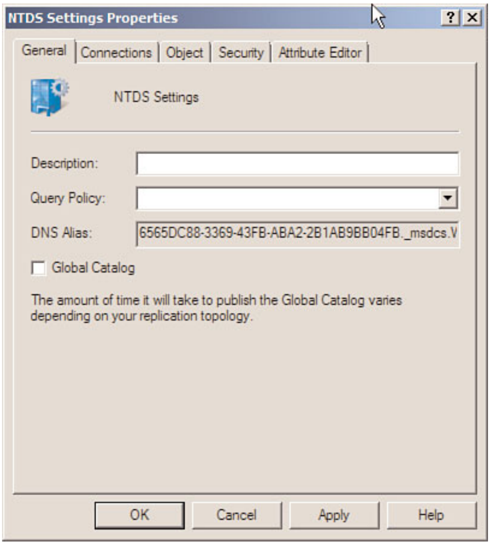
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, select the domain controller where you want to disable the global catalog role.

TIP You can search for a global catalog by right-clicking Sites in the console tree and selecting Find from the menu.

4. In the details pane, right-click NTDS Settings and select Properties. The NTDS Properties page is shown in Figure 5.4.
5. On the NTDS Settings Properties page, clear the Global Catalog check box and then click OK.

NOTE If this domain controller is the last domain controller in the forest, you will be presented with a confirmation to proceed. You can click Yes on the confirmation to continue with the removal of the global catalog role or No to abort.

TIP In a forest that consists of multiple domains, the global catalog role should reside on one or more domain controllers. Furthermore, each domain should also contain one or more global catalog servers. The global catalog role is important for authentication and for Active Directory-aware applications, such as Microsoft Exchange Server.



Description:

Query Policy:

DNS Alias: 6565DC88-3369-43FB-ABA2-2B1AB9BB04FB._msdcs.V

□ Global Catalog

The amount of time it will take to publish the Global Catalog varies depending on your replication topology.

FIGURE 5.4
Disable the global catalog role by using the Windows interface.

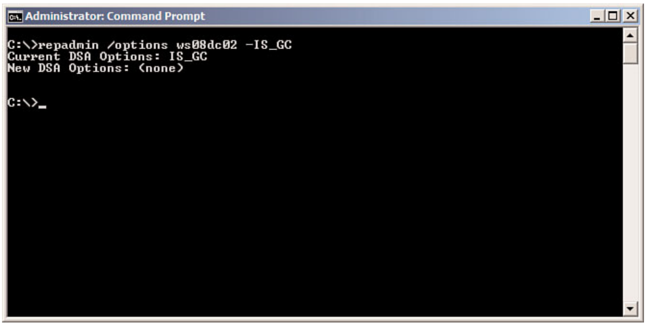
Disable the Global Catalog Role by Using the Command Line

To disable the global catalog role by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command:

   ```
   repadmin /options servername -IS_GC
   ```

   (where *servername* is the domain controller on which you want to disable the global catalog role).
4. Verify that the results show `New DSA Options: (none)`, as shown in Figure 5.5.



```
C:\>repadmin /options ws08dc02 -IS_GC
Current DSA Options: IS_GC
New DSA Options: (none)

C:\>_
```

FIGURE 5.5
Disable the global catalog role by using the command line.

Verify Global Catalog Server Readiness

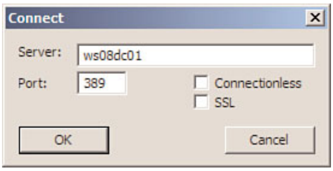
Scenario/Problem: After you have enabled the global catalog role on a domains controller, you might want to ensure that it is properly functioning as a global catalog server before clients and services start querying the global catalog partition on this server.

Solution: Global catalog server readiness can be verified by using LDP and by using Nltest.

Verify Global Catalog Server Readiness by Using LDP

To verify global catalog server readiness by using LDP, perform the following steps:

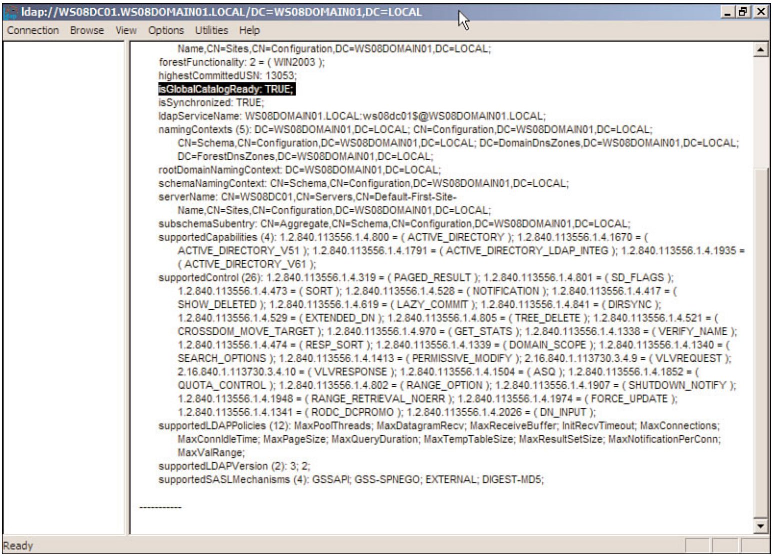
1. Log on to a domain controller.
2. Click Start, click Run, type **`LDP`**, and click OK.
3. On the Connection menu, select Connect.
4. In the Connect box, type the name of the server whose global catalog readiness you want to verify, as shown in Figure 5.6.



Server: ws08dc01
Port: 389
□ Connectionless
□ SSL

FIGURE 5.6
The LDP Connect screen.

5. In the Port box, if `389` is not showing, type **`389`**.
6. If the Connectionless box is selected, clear it and then click OK.
7. In the details pane, verify that the `isGlobalCatalogReady` attribute has a value of `TRUE`, as shown in Figure 5.7.



```
    Name,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL;
forestFunctionality: 2 = ( WIN2003 );
highestCommittedUSN: 13053;
isGlobalCatalogReady: TRUE;
isSynchronized: TRUE;
ldapServiceName: WS08DOMAIN01.LOCAL:ws08dc01$@WS08DOMAIN01.LOCAL;
namingContexts (5): DC=WS08DOMAIN01,DC=LOCAL; CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL;
    CN=Schema,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL; DC=DomainDnsZones,DC=WS08DOMAIN01,DC=LOCAL;
    DC=ForestDnsZones,DC=WS08DOMAIN01,DC=LOCAL;
rootDomainNamingContext: DC=WS08DOMAIN01,DC=LOCAL;
schemaNamingContext: CN=Schema,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL;
serverName: CN=WS08DC01,CN=Servers,CN=Default-First-Site-
    Name,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL;
subschemaSubentry: CN=Aggregate,CN=Schema,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL;
supportedCapabilities (4): 1.2.840.113556.1.4.800 = ( ACTIVE_DIRECTORY ); 1.2.840.113556.1.4.1670 = (
    ACTIVE_DIRECTORY_V51 ); 1.2.840.113556.1.4.1791 = ( ACTIVE_DIRECTORY_LDAP_INTEG ); 1.2.840.113556.1.4.1935 =
    ( ACTIVE_DIRECTORY_V61 );
supportedControl (26): 1.2.840.113556.1.4.319 = ( PAGED_RESULT ); 1.2.840.113556.1.4.801 = ( SD_FLAGS );
    1.2.840.113556.1.4.473 = ( SORT ); 1.2.840.113556.1.4.528 = ( NOTIFICATION ); 1.2.840.113556.1.4.417 = (
    SHOW_DELETED ); 1.2.840.113556.1.4.619 = ( LAZY_COMMIT ); 1.2.840.113556.1.4.841 = ( DIRSYNC );
    1.2.840.113556.1.4.529 = ( EXTENDED_DN ); 1.2.840.113556.1.4.805 = ( TREE_DELETE ); 1.2.840.113556.1.4.521 = (
    CROSSDOM_MOVE_TARGET ); 1.2.840.113556.1.4.970 = ( GET_STATS ); 1.2.840.113556.1.4.1338 = ( VERIFY_NAME );
    1.2.840.113556.1.4.474 = ( RESP_SORT ); 1.2.840.113556.1.4.1339 = ( DOMAIN_SCOPE ); 1.2.840.113556.1.4.1340 = (
    SEARCH_OPTIONS ); 1.2.840.113556.1.4.1413 = ( PERMISSIVE_MODIFY ); 2.16.840.1.113730.3.4.9 = ( VLVREQUEST );
    2.16.840.1.113730.3.4.10 = ( VLVRESPONSE ); 1.2.840.113556.1.4.1504 = ( ASQ ); 1.2.840.113556.1.4.1852 = (
    QUOTA_CONTROL ); 1.2.840.113556.1.4.802 = ( RANGE_OPTION ); 1.2.840.113556.1.4.1907 = ( SHUTDOWN_NOTIFY );
    1.2.840.113556.1.4.1948 = ( RANGE_RETRIEVAL_NOERR ); 1.2.840.113556.1.4.1974 = ( FORCE_UPDATE );
    1.2.840.113556.1.4.1341 = ( RODC_DCPROMO ); 1.2.840.113556.1.4.2026 = ( DN_INPUT );
supportedLDAPPolicies (12): MaxPoolThreads; MaxDatagramRecv; MaxReceiveBuffer; InitRecvTimeout; MaxConnections;
    MaxConnIdleTime; MaxPageSize; MaxQueryDuration; MaxTempTableSize; MaxResultSetSize; MaxNotificationPerConn;
    MaxValRange;
supportedLDAPVersion (2): 3; 2;
supportedSASLMechanisms (4): GSSAPI; GSS-SPNEGO; EXTERNAL; DIGEST-MD5;

-----------
```

FIGURE 5.7
Verify global catalog server readiness by using LDP.

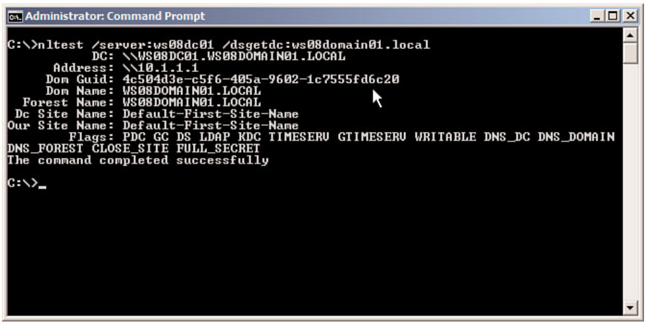
Verify Global Catalog Server Readiness by Using NLTest

To verify global catalog server readiness by using NLTest, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command:

   `nltest /server:`*`servername`*` /dsgetdc:`*`domainname`*

   (where *`servername`* is the domain controller you want to validate global catalog readiness and *`domainname`* is the name of the domain to which the domain controller belongs).
4. Verify that GC is listed under the `Flags` section of the results, as shown in Figure 5.8.



```
C:\>nltest /server:ws08dc01 /dsgetdc:ws08domain01.local
           DC: \\WS08DC01.WS08DOMAIN01.LOCAL
      Address: \\10.1.1.1
     Dom Guid: 4c504d3e-c5f6-405a-9602-1c7555fd6c20
     Dom Name: WS08DOMAIN01.LOCAL
  Forest Name: WS08DOMAIN01.LOCAL
 Dc Site Name: Default-First-Site-Name
Our Site Name: Default-First-Site-Name
        Flags: PDC GC DS LDAP KDC TIMESERV GTIMESERV WRITABLE DNS_DC DNS_DOMAIN
DNS_FOREST CLOSE_SITE FULL_SECRET
The command completed successfully

C:\>_
```

FIGURE 5.8
Verify global catalog server readiness by using Nltest.

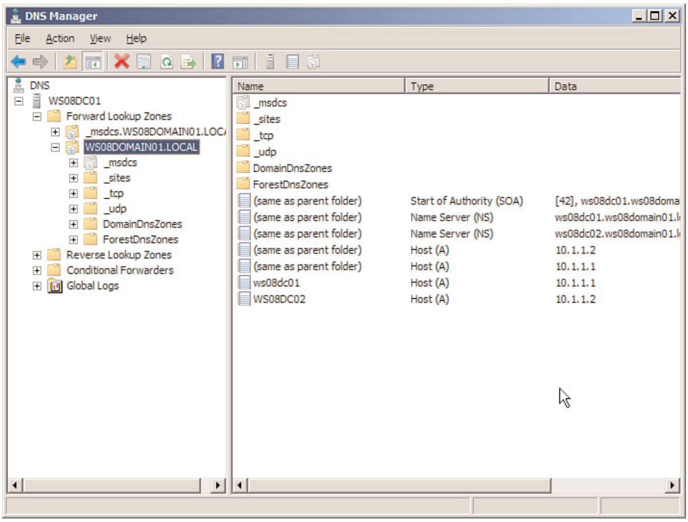
Verify Global Catalog DNS Registrations

Scenario/Problem: Service query DNS for information on global catalog servers. After you have enabled the global catalog role on a domain controller, you might need to verify that the appropriate DNS registrations exist.

Solution: You can verify global catalog DNS registrations by using the DNS console.

To verify global catalog DNS registrations, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools installed.
2. Click Start, click Administrative Tools, and then click DNS.
3. In the console tree, expand the server name, expand Forward Lookup Zones, and then expand the forest root domain, as shown in Figure 5.9.



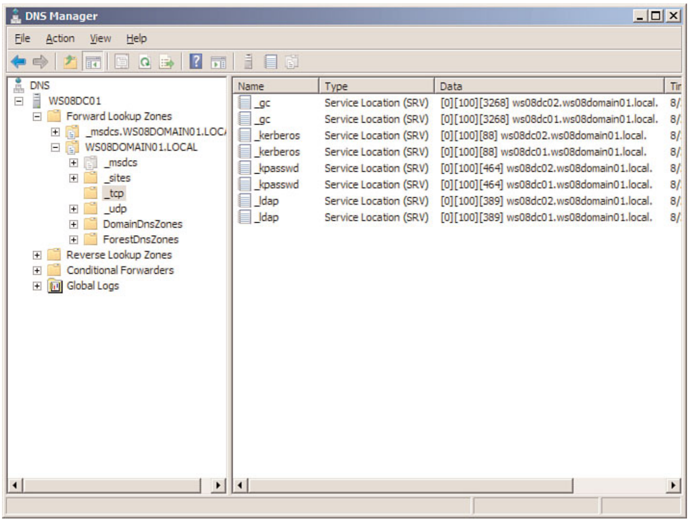
- DNS
  - WS08DC01
    - Forward Lookup Zones
      - _msdcs.WS08DOMAIN01.LOCA
      - WS08DOMAIN01.LOCAL
        - _msdcs
        - _sites
        - _tcp
        - _udp
        - DomainDnsZones
        - ForestDnsZones
    - Reverse Lookup Zones
    - Conditional Forwarders
    - Global Logs

Name	Type	Data
_msdcs		
_sites		
_tcp		
_udp		
DomainDnsZones		
ForestDnsZones		
(same as parent folder)	Start of Authority (SOA)	[42], ws08dc01.ws08doma
(same as parent folder)	Name Server (NS)	ws08dc01.ws08domain01.l
(same as parent folder)	Name Server (NS)	ws08dc02.ws08domain01.l
(same as parent folder)	Host (A)	10.1.1.2
(same as parent folder)	Host (A)	10.1.1.1
ws08dc01	Host (A)	10.1.1.1
WS08DC02	Host (A)	10.1.1.2

FIGURE 5.9
The forest root DNS zone.

4. In the console tree, click the `_tcp` container.
5. In the details pane, look in the Name column for `_gc` and in the Data column for the name of the server, as shown in Figure 5.10.

NOTE One DNS record per global catalog server will exist in DNS. In the case of Figure 5.10, there are two global catalog servers, which each have a DNS record.



Name	Type	Data	Tir
_gc	Service Location (SRV)	[0][100][3268] ws08dc02.ws08domain01.local.	8/
_gc	Service Location (SRV)	[0][100][3268] ws08dc01.ws08domain01.local.	8/
_kerberos	Service Location (SRV)	[0][100][88] ws08dc02.ws08domain01.local.	8/
_kerberos	Service Location (SRV)	[0][100][88] ws08dc01.ws08domain01.local.	8/
_kpasswd	Service Location (SRV)	[0][100][464] ws08dc02.ws08domain01.local.	8/
_kpasswd	Service Location (SRV)	[0][100][464] ws08dc01.ws08domain01.local.	8/
_ldap	Service Location (SRV)	[0][100][389] ws08dc02.ws08domain01.local.	8/
_ldap	Service Location (SRV)	[0][100][389] ws08dc01.ws08domain01.local.	8/

FIGURE 5.10
Global catalog DNS registrations.

Determine Global Catalog Servers

Scenario/Problem: In complex environments, it is not uncommon to have a large number of global catalog servers. You might need to produce a list of all global catalog servers or identify whether a particular domain controller is a global catalog server.

Solution: You can identify all global catalog servers in the forest or identify all global catalog servers in a domain by using the `dsquery` command-line tool.

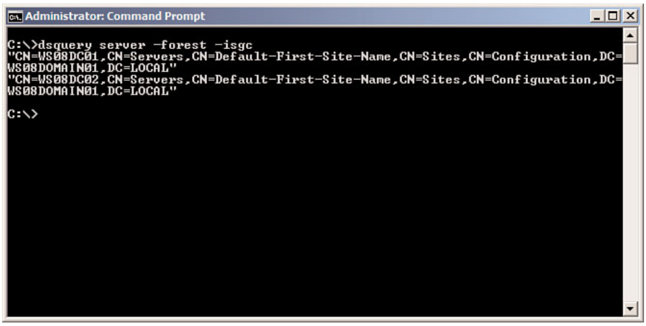
Identify All Global Catalog Servers in the Forest

To identify all global catalog servers in the forest, perform the following steps:

1. Log on to a domain controller.
2. Click Start and click Command Prompt.
3. In the Command Prompt window, enter the following command and press Enter.

```
dsquery server -forest -isgc
```

NOTE The distinguished name of each global catalog server in the forest is returned, as shown in Figure 5.11.



```
C:\>dsquery server -forest -isgc
"CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=
WS08DOMAIN01,DC=LOCAL"
"CN=WS08DC02,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=
WS08DOMAIN01,DC=LOCAL"

C:\>
```

FIGURE 5.11
Use `dsquery` to identify all global catalog servers in the forest.

Identify All Global Catalog Servers in a Domain

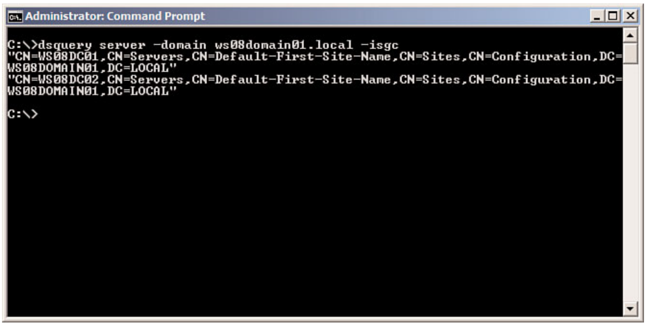
To identify all global catalog servers in a domain, perform the following steps:

1. Log on to a domain controller.
2. Click Start and click Command Prompt.
3. In the Command Prompt window, enter the following command and press Enter.

   `dsquery server -domain` ***`domainname`*** **`-isgc`**

   (where *`domainname`* is the name of the domain you want to query for global catalog servers).

NOTE The distinguished name of each global catalog server in the forest is returned, as shown in Figure 5.12.



```
C:\>dsquery server -domain ws08domain01.local -isgc
"CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=
WS08DOMAIN01,DC=LOCAL"
"CN=WS08DC02,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=
WS08DOMAIN01,DC=LOCAL"

C:\>
```

FIGURE 5.12
Use `dsquery` to identify all global catalog servers in the domain.

Identify Operations Master Role Holders

Scenario/Problem: Certain domain controllers, referred to as *operations master role holders*, have special roles installed. These roles are used for various tasks that require a single server to be authoritative for the given task.

Solution: You can use the dsquery and netdom command-line tools to identify operations master role holders.

Identify Operations Master Role Holders by Using Dsquery

To identify operations master role holders by using Dsquery, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, enter the following command and press Enter:

   ```
   dsquery server -hasfsmo rolename
   ```

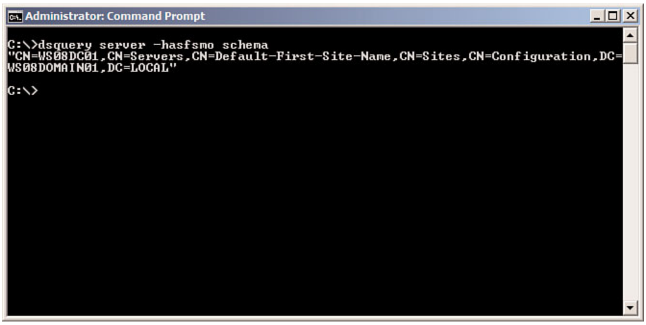
   (where `rolename` is the name of the role you want to query for).

Table 5.1 lists the role names used by `dsquery`.

Table 5.1 **Operations Master Role Names Used by** `dsquery`

Role Name	Operations Master Role
Schema	Schema Master
Name	Domain Naming Master
Infr	Infrastructure Master
PDC	PDC Emulator
RID	RID Master

NOTE The distinguished name of the operations master role holder is returned, as shown in Figure 5.13.



```
C:\>dsquery server -hasfsmo schema
"CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=
WS08DOMAIN01,DC=LOCAL"

C:\>
```

FIGURE 5.13
Using `dsquery` to identify operations master role holders.

Identify Operations Master Role Holders by Using Netdom

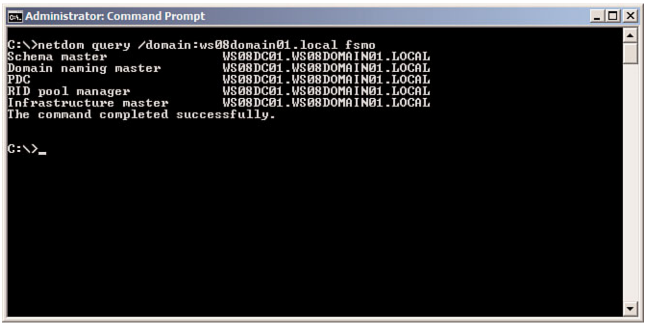
To identify operations master role holders by using the netdom, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, enter the following command and press Enter:

   `netdom query /domain:`*`domainname`*`.local fsmo`

   (where *`domainname`* is the name of the domain in which you want to query operations master role holders).

NOTE The names of the operations master role holders are returned, as shown in Figure 5.14.



```
C:\>netdom query /domain:ws08domain01.local fsmo
Schema master               WS08DC01.WS08DOMAIN01.LOCAL
Domain naming master        WS08DC01.WS08DOMAIN01.LOCAL
PDC                         WS08DC01.WS08DOMAIN01.LOCAL
RID pool manager            WS08DC01.WS08DOMAIN01.LOCAL
Infrastructure master       WS08DC01.WS08DOMAIN01.LOCAL
The command completed successfully.

C:\>_
```

FIGURE 5.14
Using Netdom to identify operations master role holders.

Validate Domain Controller Advertising

Scenario/Problem: Domain controllers provide a number of services. During troubleshooting, you might need to determine whether a domain controller is providing all the required services.

Solution: You can validate domain controller advertising by using the `dcdiag` command-line tool.

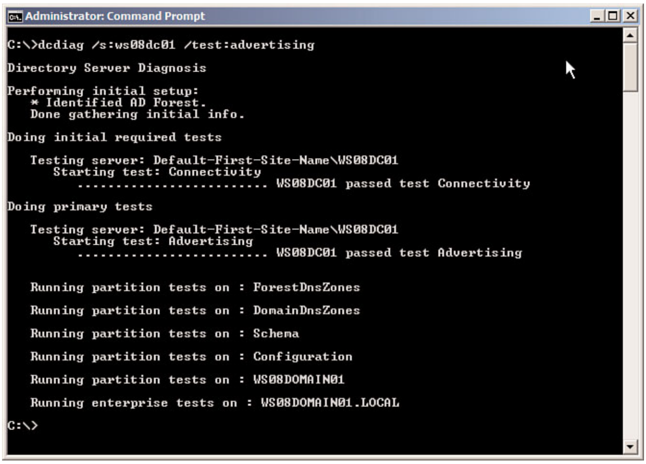
To validate domain controller advertising, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, enter the following command and press Enter:

   `dcdiag /s:`*`servername`*` /test:advertising`

   (where *`servername`* is the name of the server you want to test for advertising).

NOTE The results of the Advertising test are returned, as shown in Figure 5.15.



```
C:\>dcdiag /s:ws08dc01 /test:advertising

Directory Server Diagnosis

Performing initial setup:
   * Identified AD Forest.
   Done gathering initial info.

Doing initial required tests

   Testing server: Default-First-Site-Name\WS08DC01
      Starting test: Connectivity
         ......................... WS08DC01 passed test Connectivity

Doing primary tests

   Testing server: Default-First-Site-Name\WS08DC01
      Starting test: Advertising
         ......................... WS08DC01 passed test Advertising


   Running partition tests on : ForestDnsZones

   Running partition tests on : DomainDnsZones

   Running partition tests on : Schema

   Running partition tests on : Configuration

   Running partition tests on : WS08DOMAIN01

   Running enterprise tests on : WS08DOMAIN01.LOCAL
C:\>
```

FIGURE 5.15
Using `dcdiag` to test domain controller advertising.

Transfer the Schema Master Role

Scenario/Problem: Each Active Directory Domain Services forest has a single domain controller that is authoritative for the schema. This domain controller is called the *schema master* and is responsible for performing updates to the directory schema. This role can be enabled on only a single domain controller in the forest root domain. When you first install AD DS, the first domain controller you introduce into the forest holds this role. You might need to transfer this role from one domain controller to another.

Solution: The schema master operations master role can be transferred by using the Windows interface or the command line.

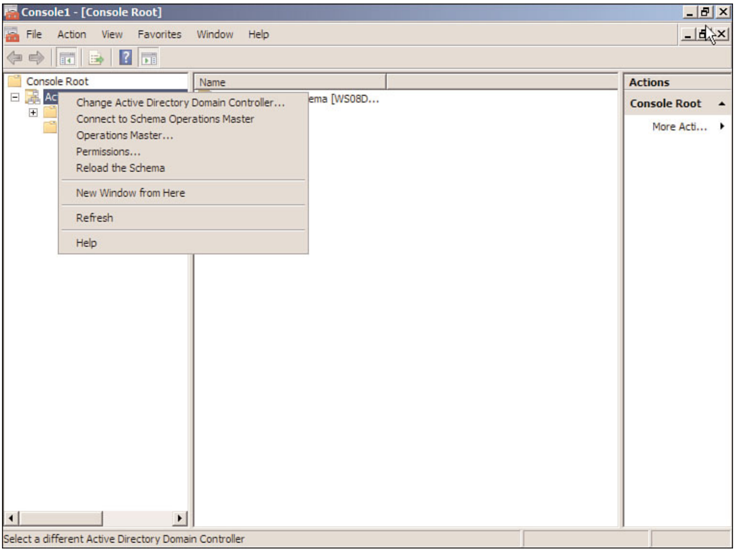
Transfer the Schema Master Role by Using the Windows Interface

To transfer the schema master role by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Schema.

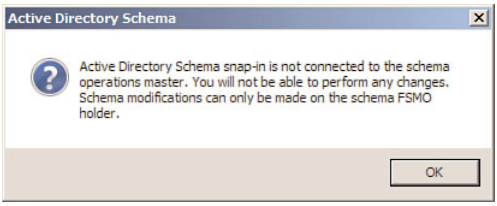
TIP The Active Directory Schema Snap-in is not installed by default. You must perform the steps in Chapter 7 to install the snap-in before you can use it.

3. Right-click the Active Directory Schema node in the console tree and select Change Active Directory Domain Controller, as shown in Figure 5.16.
4. On the Change Directory Server page, select the domain controller to which you want to transfer the schema master role; then click OK.
5. A warning displays stating that the snap-in is not connected to the schema master, as shown in Figure 5.17. Click OK.
6. Right-click the Active Directory Schema node in the console tree and select Operations Master.
7. On the Change Schema Master window, ensure the domain controller you selected in Step 4 is listed as the targeted server, as shown in Figure 5.18; then click Change.



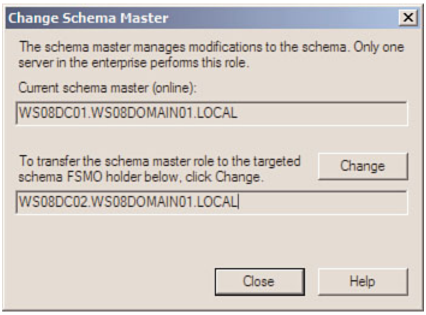
Select a different Active Directory Domain Controller

FIGURE 5.16
The Active Directory Schema Snap-In.



Active Directory Schema snap-in is not connected to the schema operations master. You will not be able to perform any changes. Schema modifications can only be made on the schema FSMO holder.

FIGURE 5.17
Active Directory Schema Snap-In warning.



The schema master manages modifications to the schema. Only one server in the enterprise performs this role.

Current schema master (online):

WS08DC01.WS08DOMAIN01.LOCAL

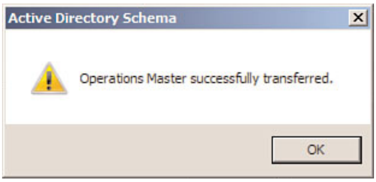
To transfer the schema master role to the targeted schema FSMO holder below, click Change.

WS08DC02.WS08DOMAIN01.LOCAL

FIGURE 5.18
The Change Schema Master window.

8. In the confirmation box, click Yes.

9. A message that indicates the operation completed successfully displays, as shown in Figure 5.19.



Operations Master successfully transferred.

FIGURE 5.19
Active Directory Schema Transfer confirmation screen.

Transfer the Schema Master Role by Using the Command Line

To transfer the schema master role by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.
5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.
6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *DomainController* is the domain controller you want to transfer the role to; then press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`transfer schema master`** and press Enter.

Transfer the Domain Naming Master Role

Scenario/Problem: Each Active Directory Domain Services forest has a single domain controller that is authoritative for domain naming. This domain controller is called the *domain naming master* and is responsible for making changes to the forest-wide domain name space of the directory. This role can be enabled on only a single domain controller in the forest root domain. When you first install AD DS, the first domain controller you introduce into the forest holds this role. You might need to transfer this role from one domain controller to another.

Solution: The domain naming master operations master role can be transferred by using the Windows interface or the command line.

Transfer the Domain Naming Master Role by Using the Windows Interface

To transfer the domain naming master role by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Domains and Trusts.
3. Right-click the Active Directory Domains and Trusts node in the console tree; then select Change Active Directory Domain Controller, as shown in Figure 5.20.

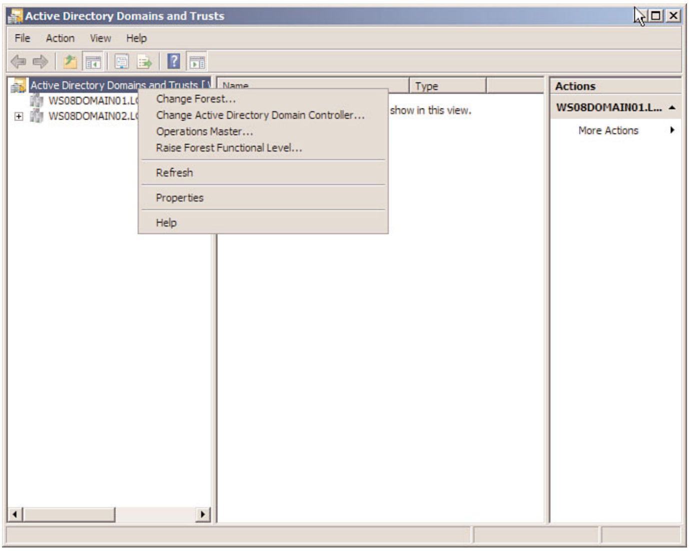
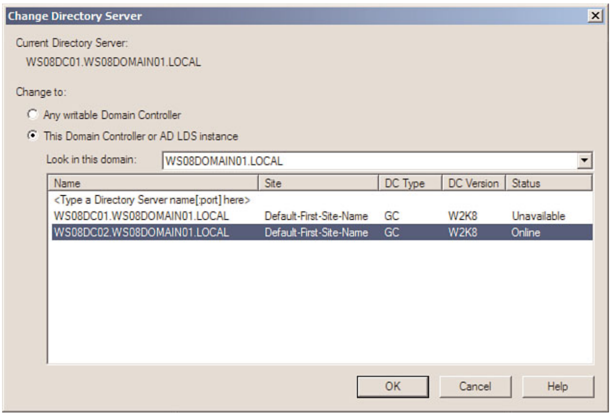


FIGURE 5.20
Active Directory Domains and Trusts console.

4. On the Change Directory Server page, shown in Figure 5.21, select the domain controller to which you want to transfer the domain naming master role; then click OK.
5. Right-click the Active Directory Domains and Trust node in the console tree and select Operations Master.
6. On the Operations Master window, ensure the domain controller you selected in Step 4 is listed as the targeted server, as shown in Figure 5.22, and click Change.


Change Directory Server

Current Directory Server:
WS08DC01.WS08DOMAIN01.LOCAL

Change to:

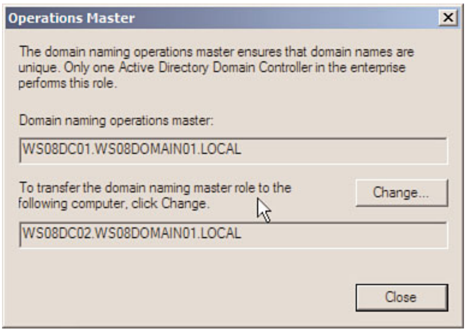
○ Any writable Domain Controller

● This Domain Controller or AD LDS instance

Look in this domain: WS08DOMAIN01.LOCAL

Name	Site	DC Type	DC Version	Status
<Type a Directory Server name[:port] here>				
WS08DC01.WS08DOMAIN01.LOCAL	Default-First-Site-Name	GC	W2K8	Unavailable
WS08DC02.WS08DOMAIN01.LOCAL	Default-First-Site-Name	GC	W2K8	Online

FIGURE 5.21
Change Directory Server page.


Operations Master

The domain naming operations master ensures that domain names are unique. Only one Active Directory Domain Controller in the enterprise performs this role.

Domain naming operations master:
WS08DC01.WS08DOMAIN01.LOCAL

To transfer the domain naming master role to the following computer, click Change.
WS08DC02.WS08DOMAIN01.LOCAL

FIGURE 5.22
The Operations Master Window.

7. On the confirmation screen, click Yes.
8. A message displays that indicates the operation completed successfully.

Transfer the Domain Naming Master Role by Using the Command Line

To transfer the domain naming master role by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.
5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.

6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *DomainController* is the domain controller you want to transfer the role to, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`transfer naming master`** and press Enter.

Transfer the RID Master Role

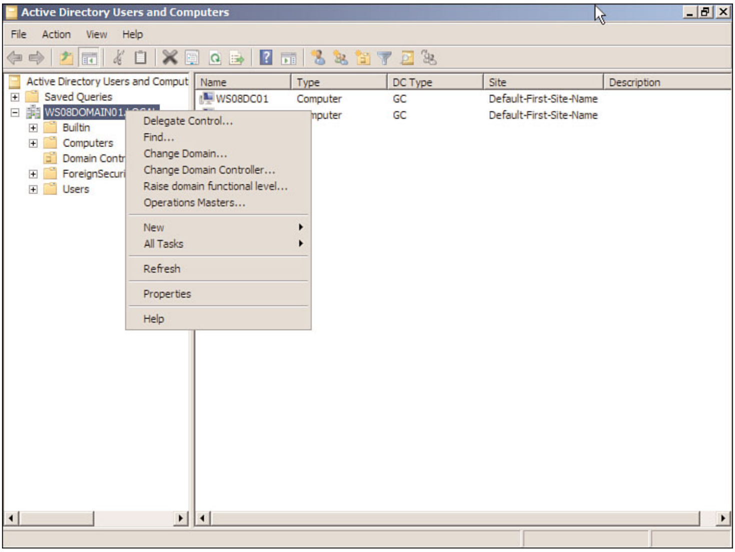
Scenario/Problem: Each Active Directory Domain Services domain has a single domain controller that is authoritative for processing RID Pool requests from all DCs within a given domain. This domain controller is called the *RID master*. Each domain in a forest has a domain controller configured as the RID master for that given domain. By default, this role is enabled on the first domain controller you add to a domain.

Solution: The RID master operations master role can be transferred by using the Windows interface or the command line.

Transfer the RID Master Role by Using the Windows Interface

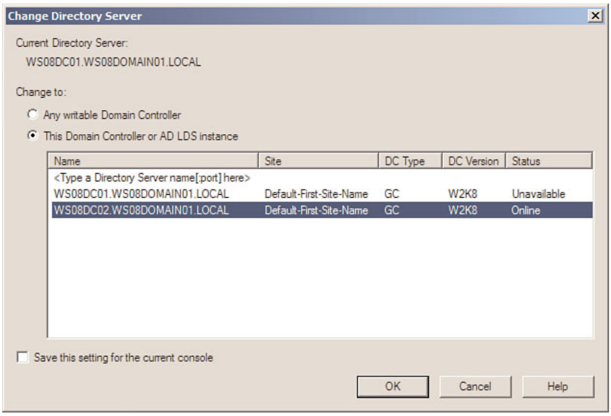
To transfer the RID master role by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Users and Computers.
3. Right-click the domain node in the console tree and select Change Domain Controller, as shown in Figure 5.23.
4. On the Change Directory Server page, shown in Figure 5.24, select the domain controller to which you want to transfer the RID master role; then click OK.



Name	Type	DC Type	Site	Description
WS08DC01	Computer	GC	Default-First-Site-Name	
	mputer	GC	Default-First-Site-Name	

FIGURE 5.23
Active Directory Users and Computers console.



Current Directory Server:
WS08DC01.WS08DOMAIN01.LOCAL

Change to:

○ Any writable Domain Controller

● This Domain Controller or AD LDS instance

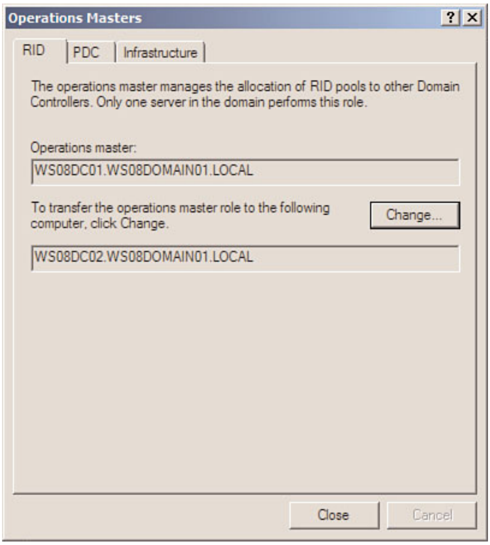
Name	Site	DC Type	DC Version	Status
<Type a Directory Server name[:port] here>				
WS08DC01.WS08DOMAIN01.LOCAL	Default-First-Site-Name	GC	W2K8	Unavailable
WS08DC02.WS08DOMAIN01.LOCAL	Default-First-Site-Name	GC	W2K8	Online

□ Save this setting for the current console

FIGURE 5.24
Change Directory Server page.

5. Right-click the domain node in the console tree and select Operations Masters.

6. On the Operations Masters page, select the RID tab, shown in Figure 5.25.



The operations master manages the allocation of RID pools to other Domain Controllers. Only one server in the domain performs this role.

Operations master:
WS08DC01.WS08DOMAIN01.LOCAL

To transfer the operations master role to the following computer, click Change.

WS08DC02.WS08DOMAIN01.LOCAL

FIGURE 5.25
Operations Masters RID tab.

7. Ensure the domain controller you selected in Step 4 is listed as the targeted server and click Change.
8. On the confirmation page, click Yes.
9. A message displays that indicates the operation completed successfully.

Transfer the RID Master Role by Using the Command Line

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.
5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.
6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *DomainController* is the domain controller to which you want to transfer the role, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`transfer RID master`** and press Enter.
9. On the Role Transfer Confirmation page, click Yes to confirm the transfer.

Transfer the PDC Emulator Role

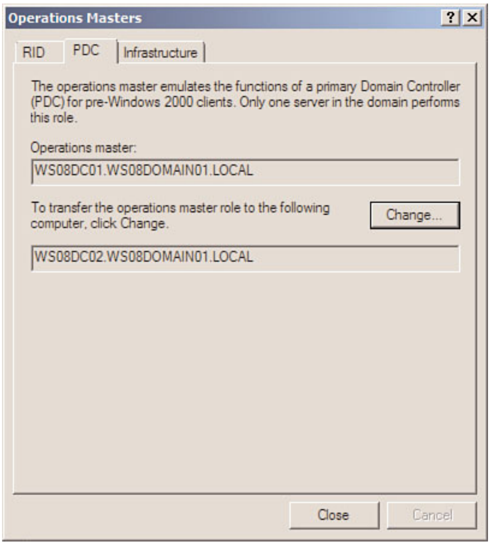
Scenario/Problem: Each Active Directory Domain Services domain has a single domain controller that is configured as the PDC emulator. The PDC emulator is ultimately responsible for password changes, validating authentication failures, account lockouts, and synchronizing the time. By default, this role is enabled on the first domain controller you add to a domain.

Solution: The PDC emulator operations master role can be transferred by using the Windows interface or the command line.

Transfer the PDC Emulator Role by Using the Windows Interface

To transfer the PDC master role by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Users and Computers.
3. Right-click the domain node in the console tree and select Change Domain Controller.
4. On the Change Directory Server page, select the domain controller to which you want to transfer the PDC master role, and click OK.
5. Right-click the domain node in the console tree and select Operations Masters.
6. On the Operations Masters page, select the PDC tab, shown in Figure 5.26.



The operations master emulates the functions of a primary Domain Controller (PDC) for pre-Windows 2000 clients. Only one server in the domain performs this role.

Operations master:
WS08DC01.WS08DOMAIN01.LOCAL

To transfer the operations master role to the following computer, click Change.

WS08DC02.WS08DOMAIN01.LOCAL

FIGURE 5.26
Operations Masters PDC tab.

7. Ensure the domain controller you selected in Step 4 is listed as the targeted server and click Change.
8. On the confirmation page, click Yes.
9. A message displays that indicates the operation completed successfully.

Transfer the PDC Emulator Role by Using the Command Line

To transfer the PDC master role by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.
5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.
6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *DomainController* is the domain controller to which you want to transfer the role, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`transfer PDC`** and press Enter.
9. On the Role Transfer Confirmation page, click Yes to confirm the transfer.

Transfer the Infrastructure Master Role

Scenario/Problem: Each Active Directory Domain Services domain has a single domain controller that is responsible for updating an object's SID and distinguished name in a cross-domain object reference. By default, this role is enabled on the first domain controller you add to a domain.

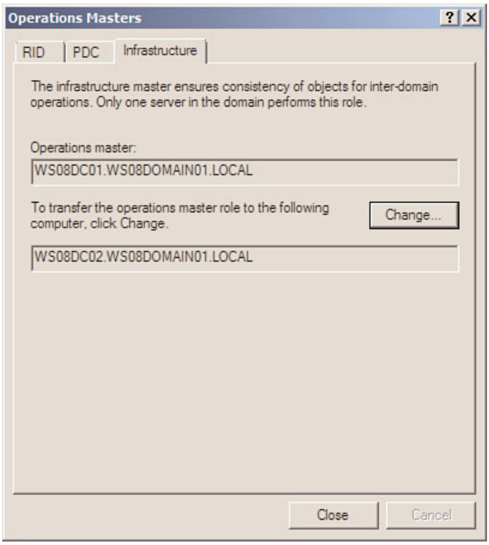
Solution: The infrastructure master operations master role can be transferred by using the Windows interface or the command line.

Transfer the Infrastructure Master Role by Using the Windows Interface

To transfer the infrastructure master role by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.

2. Click Start, click Administrative Tools, and click Active Directory Users and Computers.
3. Right-click the domain node in the console tree and select Change Domain Controller.
4. On the Change Directory Server page, select the domain controller to which you want to transfer the infrastructure master role, and click OK.
5. Right-click the domain node in the console tree and select Operations Masters.
6. On the Operations Masters page, select the Infrastructure tab, shown in Figure 5.27.



The infrastructure master ensures consistency of objects for inter-domain operations. Only one server in the domain performs this role.

Operations master:
WS08DC01.WS08DOMAIN01.LOCAL

To transfer the operations master role to the following computer, click Change.
WS08DC02.WS08DOMAIN01.LOCAL

FIGURE 5.27
Operations Masters Infrastructure tab.

7. Ensure the domain controller you selected in Step 4 is listed as the targeted server and click Change.
8. On the confirmation page, click Yes.
9. A message displays that indicates the operation completed successfully.

Transfer the Infrastructure Master Role by Using the Command Line

To transfer the infrastructure master role by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.

3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.
5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.
6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *`DomainController`* is the domain controller to which you want to transfer the role, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`transfer infrastructure master`** and press Enter.

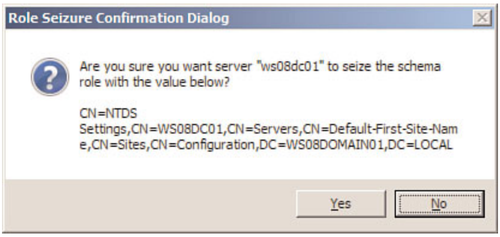
Seize the Schema Master Role

Scenario/Problem: If the current schema master role holder becomes unavailable and cannot be recovered, you will need to move that role to another domain controller.

Solution: When the current schema master has failed, you need to seize the role and move it to another domain controller. It is important that, after the role has been seized, the original role holder is not brought back online.

To seize the schema master role, perform the following steps:

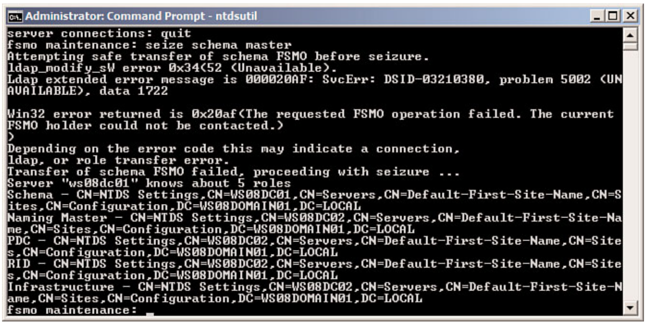
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.
5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.
6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *`DomainController`* is the domain controller you want to assign the new operations master role, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`seize schema master`** and press Enter.
9. In the Role Seizure Confirmation Dialog screen, click Yes, as shown in Figure 5.28.
10. Ntdsutil first attempts to safe transfer the role before seizing the role. If a safe transfer fails, ntdsutil proceeds with the role seizure, as shown in Figure 5.29.



Are you sure you want server "ws08dc01" to seize the schema role with the value below?

CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL

FIGURE 5.28
The Role Seizure Confirmation Dialog screen.



```
server connections: quit
fsmo maintenance: seize schema master
Attempting safe transfer of schema FSMO before seizure.
ldap_modify_sW error 0x34(52 (Unavailable).
Ldap extended error message is 000020AF: SvcErr: DSID-03210380, problem 5002 (UN
AVAILABLE), data 1722

Win32 error returned is 0x20af(The requested FSMO operation failed. The current
FSMO holder could not be contacted.)
)
Depending on the error code this may indicate a connection,
ldap, or role transfer error.
Transfer of schema FSMO failed, proceeding with seizure ...
Server "ws08dc01" knows about 5 roles
Schema - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=S
ites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Naming Master - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-Na
me,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
PDC - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
RID - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Infrastructure - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-N
ame,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
fsmo maintenance: _
```

FIGURE 5.29
Seizing the schema master role.

Seize the Domain Naming Master Role

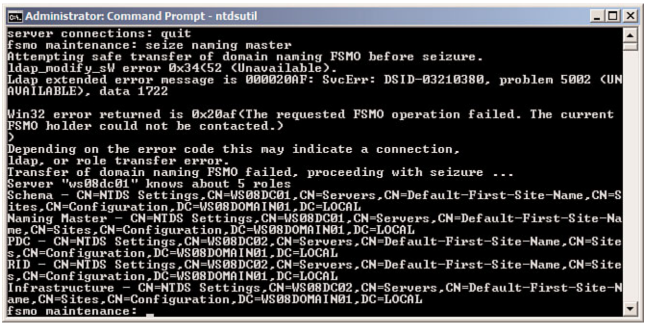
Scenario/Problem: If the current domain naming master role holder becomes unavailable and cannot be recovered, you need to move that role to another domain controller.

Solution: When the current domain naming master has failed, you need to seize the role and move it to another domain controller. It is important that, after the role has been seized, the original role holder is not brought back online.

To seize the domain naming master role, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.
5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.

6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *`DomainController`* is the domain controller you want to assign the new operations master role, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`seize naming master`** and press Enter.
9. In the Role Seizure Confirmation Dialog screen, click Yes.
10. Ntdsutil first attempts to safe transfer the role before seizing the role. If a safe transfer fails, ntdsutil proceeds with the role seizure, as shown in Figure 5.30.



```
server connections: quit
fsmo maintenance: seize naming master
Attempting safe transfer of domain naming FSMO before seizure.
ldap_modify_sW error 0x34(52 (Unavailable).
Ldap extended error message is 000020AF: SvcErr: DSID-03210380, problem 5002 (UN
AVAILABLE), data 1722

Win32 error returned is 0x20af(The requested FSMO operation failed. The current
FSMO holder could not be contacted.)
)
Depending on the error code this may indicate a connection,
ldap, or role transfer error.
Transfer of domain naming FSMO failed, proceeding with seizure ...
Server "ws08dc01" knows about 5 roles
Schema - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=S
ites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Naming Master - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Na
me,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
PDC - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
RID - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Infrastructure - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-N
ame,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
fsmo maintenance: _
```

FIGURE 5.30

Seizing the domain naming master role.

Seize the RID Master Role

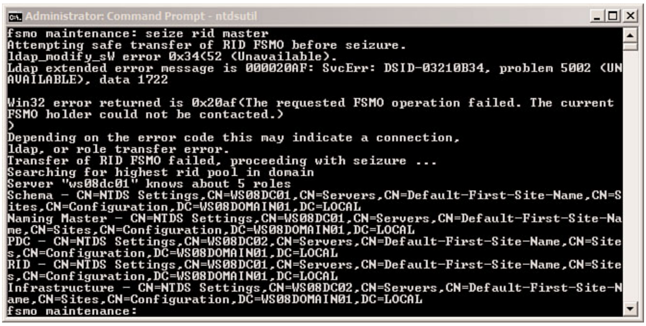
Scenario/Problem: If the current RID master role holder becomes unavailable and cannot be recovered, you must move that role to another domain controller.

Solution: When the current RID master has failed, you need to seize the role and move it to another domain controller. It is important that, after the role has been seized, the original role holder is not brought back online.

To seize the RID master role, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.
5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.

6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *`DomainController`* is the domain controller you want to assign the new operations master role, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`seize RID master`** and press Enter.
9. In the Role Seizure Confirmation Dialog screen, click Yes.
10. Ntdsutil first attempts to safe transfer the role before seizing the role. If a safe transfer fails, ntdsutil proceeds with the role seizure, as shown in Figure 5.31.



```
fsmo maintenance: seize rid master
Attempting safe transfer of RID FSMO before seizure.
ldap_modify_sW error 0x34(52 (Unavailable).
Ldap extended error message is 000020AF: SvcErr: DSID-03210B34, problem 5002 (UN
AVAILABLE), data 1722

Win32 error returned is 0x20af(The requested FSMO operation failed. The current
FSMO holder could not be contacted.)
)
Depending on the error code this may indicate a connection,
ldap, or role transfer error.
Transfer of RID FSMO failed, proceeding with seizure ...
Searching for highest rid pool in domain
Server "ws08dc01" knows about 5 roles
Schema - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=S
ites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Naming Master - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Na
me,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
PDC - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
RID - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Infrastructure - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-N
ame,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
fsmo maintenance:
```

FIGURE 5.31
Seizing the RID master role.

Seize the PDC Emulator Role

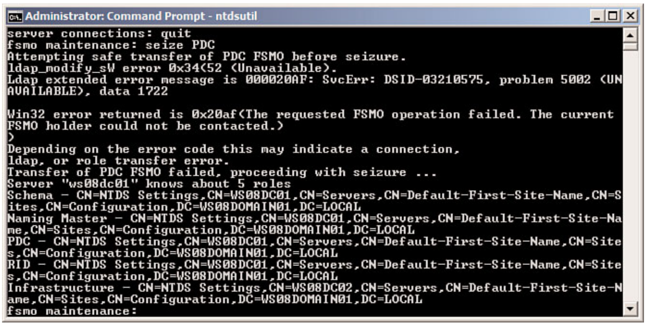
Scenario/Problem: If the current PDC emulator role holder becomes unavailable and cannot be recovered, you need to move that role to another domain controller.

Solution: When the current PDC emulator has failed, you need to seize the role and move it to another domain controller. It is important that, after the role has been seized, the original role holder is not brought back online.

To seize the PDC emulator role, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.

5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.
6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *`DomainController`* is the domain controller you want to assign the new operations master role, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`seize PDC`** and press Enter.
9. In the Role Seizure Confirmation Dialog screen, click Yes.
10. Ntdsutil first attempts to safe transfer the role before seizing the role. If a safe transfer fails, ntdsutil proceeds with the role seizure, as shown in Figure 5.32.



```
server connections: quit
fsmo maintenance: seize PDC
Attempting safe transfer of PDC FSMO before seizure.
ldap_modify_sW error 0x34(52 (Unavailable).
Ldap extended error message is 000020AF: SvcErr: DSID-03210575, problem 5002 (UN
AVAILABLE), data 1722

Win32 error returned is 0x20af(The requested FSMO operation failed. The current
FSMO holder could not be contacted.)
)
Depending on the error code this may indicate a connection,
ldap, or role transfer error.
Transfer of PDC FSMO failed, proceeding with seizure ...
Server "ws08dc01" knows about 5 roles
Schema - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=S
ites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Naming Master - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Na
me,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
PDC - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
RID - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Infrastructure - CN=NTDS Settings,CN=WS08DC02,CN=Servers,CN=Default-First-Site-N
ame,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
fsmo maintenance:
```

FIGURE 5.32
Seizing the PDC Emulator role.

Seize the Infrastructure Master Role

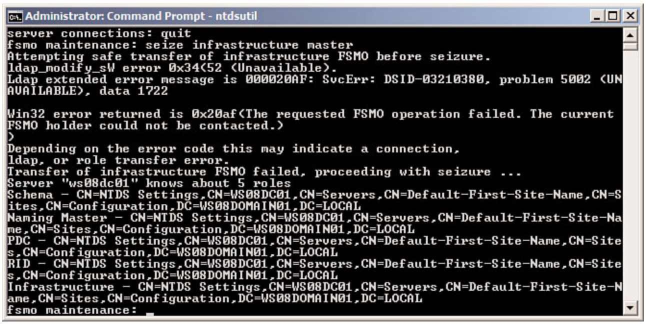
Scenario/Problem: If the current infrastructure master role holder becomes unavailable and cannot be recovered, you need to move that role to another domain controller.

Solution: When the current infrastructure master has failed, you need to seize the role and move it to another domain controller. It is important that, after the role has been seized, the original role holder is not brought back online.

To seize the infrastructure master role, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and press Enter.
4. At the ntdsutil command prompt, type **`roles`** and press Enter.

5. At the fsmo maintenance command prompt, type **`connections`** and press Enter.
6. At the fsmo maintenance command prompt, type **`connect to server`** ***`DomainController`***, where *`DomainController`* is the domain controller you want to assign the new operations master role, and press Enter.
7. At the server connections command prompt, type **`quit`** and press Enter.
8. At the fsmo maintenance command prompt, type **`seize infrastructure master`** and press Enter.
9. In the Role Seizure Confirmation Dialog screen, click Yes.
10. Ntdsutil first attempts to safe transfer the role before seizing the role. If a safe transfer fails, ntdsutil proceeds with the role seizure, as shown in Figure 5.33.



```
server connections: quit
fsmo maintenance: seize infrastructure master
Attempting safe transfer of infrastructure FSMO before seizure.
ldap_modify_sW error 0x34(52 (Unavailable).
Ldap extended error message is 000020AF: SvcErr: DSID-03210380, problem 5002 (UN
AVAILABLE), data 1722

Win32 error returned is 0x20af(The requested FSMO operation failed. The current
FSMO holder could not be contacted.)
)
Depending on the error code this may indicate a connection,
ldap, or role transfer error.
Transfer of infrastructure FSMO failed, proceeding with seizure ...
Server "ws08dc01" knows about 5 roles
Schema - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=S
ites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Naming Master - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Na
me,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
PDC - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
RID - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-Name,CN=Site
s,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
Infrastructure - CN=NTDS Settings,CN=WS08DC01,CN=Servers,CN=Default-First-Site-N
ame,CN=Sites,CN=Configuration,DC=WS08DOMAIN01,DC=LOCAL
fsmo maintenance: _
```

FIGURE 5.33

Seizing the infrastructure master role.

This page intentionally left blank

CHAPTER 6

Manage Sites and Replication

IN THIS CHAPTER

- Create Sites
- Remove Sites
- Enable Universal Group Membership Caching
- Disable Universal Group Membership Caching
- Configure Site Properties
- Create Site Links
- Remove Site Links
- Configure Site Link Properties
- Associate a Site with a Site Link
- Create Site Link Bridges
- Remove Site Link Bridges
- Add a Subnet
- Remove a Subnet
- Move Domain Controllers Between Sites
- Enable a Domain Controller as a Preferred Bridgehead Server
- Disable a Domain Controller as a Preferred Bridgehead Server
- Create Manual Connection Objects
- Remove Connection Objects
- Disable KCC for a Site
- Enable KCC for a Site
- Disable Inbound Replication
- Enable Inbound Replication
- Disable Outbound Replication
- Enable Outbound Replication
- Disable the Bridge All Site Links Option
- Enable the Bridge All Site Links Option
- Verify Replication Is Functioning
- Trigger Replication

Active Directory Domain Services (AD DS) sites represent the physical topology of your network. AD DS uses this topology information, which is stored in sites and site links, to build the most efficient replication topology. AD DS sites are used for replication, authentication, and directory-aware applications and services.

Active Directory Domain Services replication is used to maintain replicas of the directory data on multiple domain controllers. AD DS replication ensures directory availability and performance.

This chapter describes the steps required to manage sites and replication.

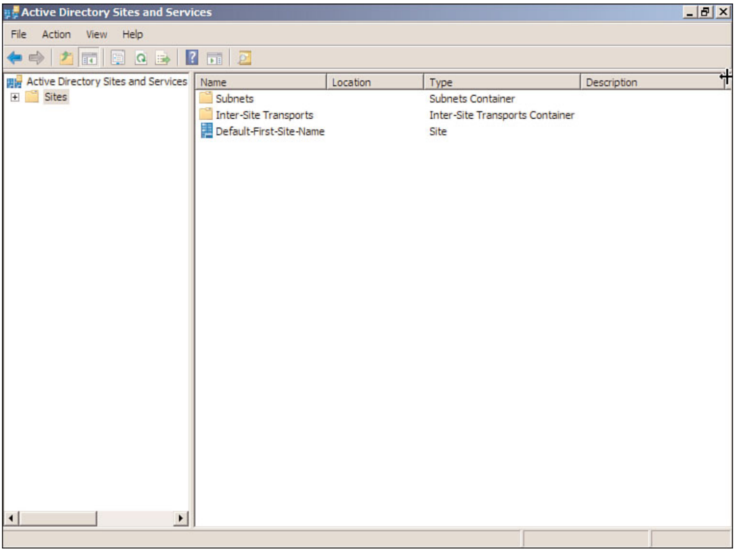
Create Sites

Scenario/Problem: When AD DS is first installed, a single site exists in the forest. This site is called the Default-First-Site-Name. If your network topology consists of multiple physical locations, you might need to control authentication and replication.

Solution: Create site objects to control authentication and replication. The creation of site objects is required whenever new offices are added to your network.

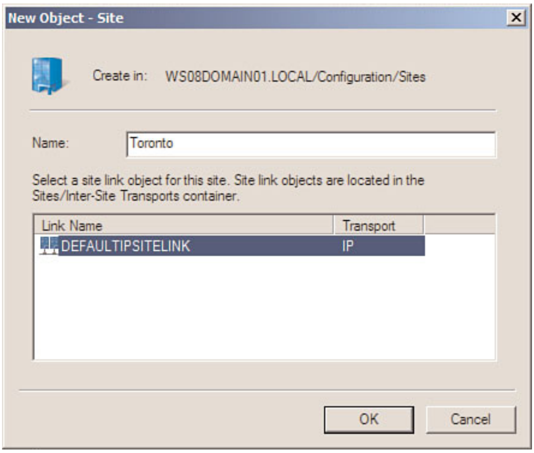
To create a site, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, shown in Figure 6.1, right-click the Sites node and click New Site.
4. In the New Object — Site window, shown in Figure 6.2, type a name for the site in the Name field, select a site link from the list, and click OK.


Active Directory Sites and Services
File
Action
View
Help
Active Directory Sites and Services
Sites

Name	Location	Type	Description
Subnets		Subnets Container	
Inter-Site Transports		Inter-Site Transports Container	
Default-First-Site-Name		Site	

FIGURE 6.1
Active Directory Sites and Services console.



Create in: WS08DOMAIN01.LOCAL/Configuration/Sites

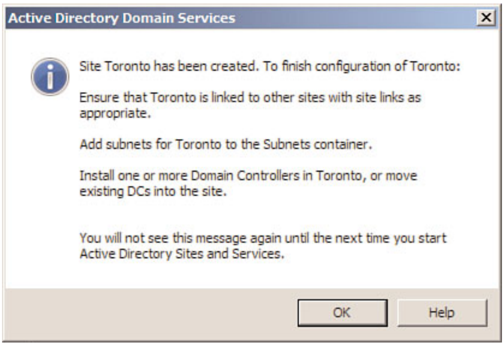
Name: Toronto

Select a site link object for this site. Site link objects are located in the Sites/Inter-Site Transports container.

Link Name	Transport
DEFAULTIPSITELINK	IP

FIGURE 6.2
New Object — Site window.

5. If this is the first site you have created, a notification, shown in Figure 6.3, displays that reminds you that additional configuration steps are required. Click OK.



Site Toronto has been created. To finish configuration of Toronto:

Ensure that Toronto is linked to other sites with site links as appropriate.

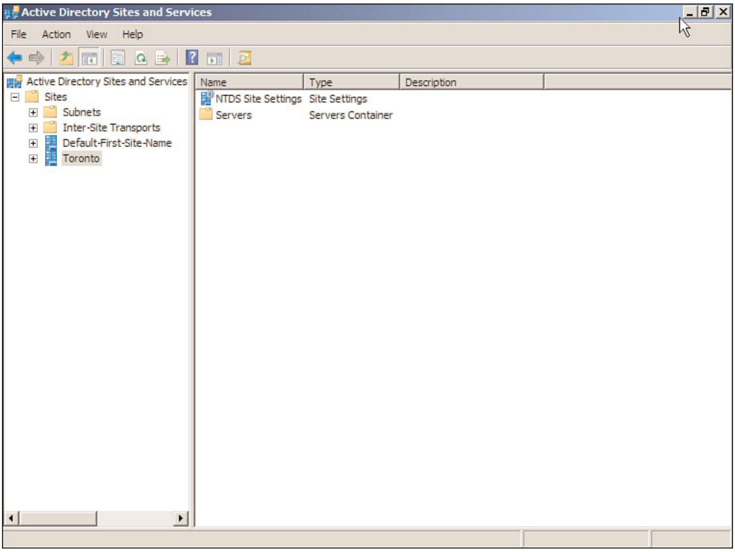
Add subnets for Toronto to the Subnets container.

Install one or more Domain Controllers in Toronto, or move existing DCs into the site.

You will not see this message again until the next time you start Active Directory Sites and Services.

FIGURE 6.3
The new site additional configuration steps reminder.

6. Notice that, as shown in Figure 6.4, a node for the new site now exists in the console tree in Active Directory Sites and Services.



Name	Type	Description
NTDS Site Settings	Site Settings	
Servers	Servers Container	

FIGURE 6.4
The new site node in Active Directory Sites and Services.

Remove Sites

Scenario/Problem: Remote offices, which are typically represented by a separate segment on your network, can become obsolete. When your network topology changes, you need to incorporate these changes into your AD DS site design.

Solution: You can remove site objects by using the Active Directory Sites and Services console.

To delete a site, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, right-click the site you want to remove and click Delete, as shown in Figure 6.5.

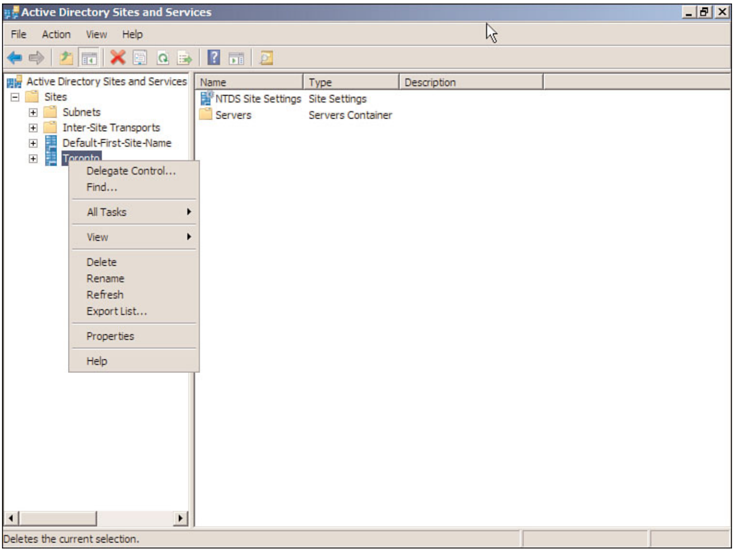
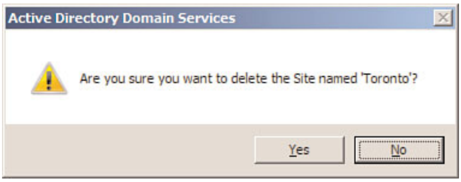


FIGURE 6.5
Deleting a site.

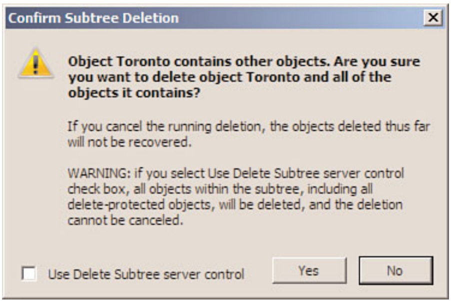
4. In the confirmation dialog box, shown in Figure 6.6, click Yes to delete the site.


Active Directory Domain Services

Are you sure you want to delete the Site named 'Toronto'?

FIGURE 6.6
The Delete Site confirmation dialog box.

5. If the site object contains other objects, you are presented with the Confirm Subtree Deletion dialog box, shown in Figure 6.7. Click Yes to delete the site and any subobjects.


Confirm Subtree Deletion

Object Toronto contains other objects. Are you sure you want to delete object Toronto and all of the objects it contains?

If you cancel the running deletion, the objects deleted thus far will not be recovered.

WARNING: if you select Use Delete Subtree server control check box, all objects within the subtree, including all delete-protected objects, will be deleted, and the deletion cannot be canceled.

□ Use Delete Subtree server control

FIGURE 6.7
The Confirm Subtree Deletion dialog box.

NOTE When a site is created in Active Directory, a number of objects are automatically created within the site. These objects are used to store Server objects for domain controllers and NTDS site settings, which define the configuration of the site.

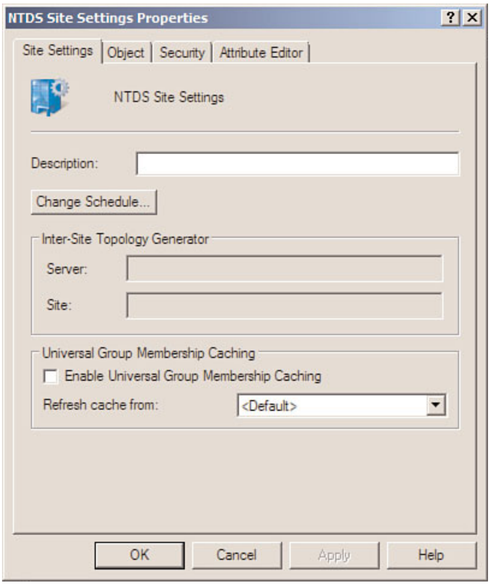
Enable Universal Group Membership Caching

Scenario/Problem: Universal groups can contain members that are users and groups from any domain in the forest. Universal groups enable you to assign permissions on a resource in any domain in the forest. These groups are particularly useful when you have multiple domains in your forest and you need to provide resource access across these domains. When a user logs on to his PC by using his AD DS credentials, the logon process contacts a global catalog server to retrieve a list of the universal groups of which the user is a member. In some cases, you might not have a global catalog server in every AD DS site, which can impede the logon process for the user.

Solution: You can enable universal group membership caching to ensure the user's universal group membership is retrieved without the need to contact a global catalog server.

To enable universal group membership caching, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and select the site on which you want to enable Universal Group Membership Caching.
4. In the details pane, right-click NTDS Settings and click Properties.
5. In the NTDS Site Settings Properties page, shown in Figure 6.8, select Enable Universal Group Membership Caching.



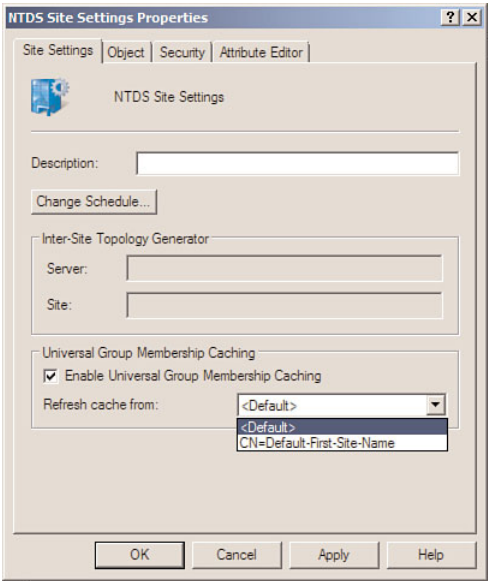
Description:

Inter-Site Topology Generator
Server:
Site:

Universal Group Membership Caching
□ Enable Universal Group Membership Caching
Refresh cache from: <Default>

FIGURE 6.8
NTDS Site Settings Properties screen.

6. If you want to define which site the cache is refreshed from, select the site name in the drop-down menu as shown in Figure 6.9, and click OK.



Description:

Inter-Site Topology Generator

Server:

Site:

Universal Group Membership Caching

☑ Enable Universal Group Membership Caching

Refresh cache from: <Default>

<Default>
CN=Default-First-Site-Name

FIGURE 6.9
Selecting Enable Universal Group Membership Caching.

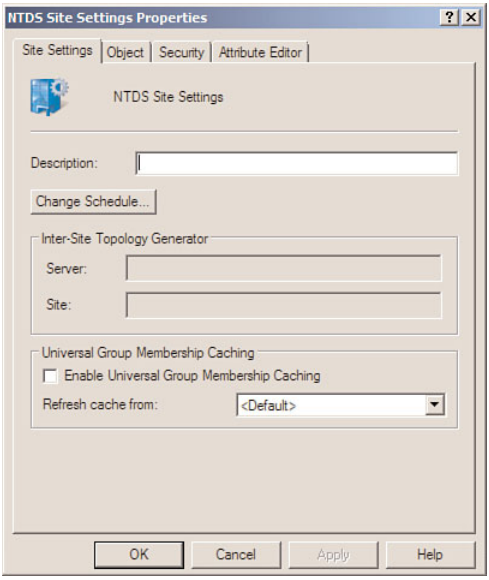
Disable Universal Group Membership Caching

Scenario/Problem: In some cases, you might have had a previous requirement to enable universal group membership caching. If that requirement no longer exists, you need to ensure the user's membership in the universal group is retrieved from the global catalog at logon.

Solution: You disable universal group membership caching when you want to ensure the user's membership in the universal groups is retrieved from the global catalog at the time of logon.

To disable universal group membership caching, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and select the site on which you want to disable universal group membership caching.
4. In the details pane, right-click NTDS Settings and click Properties.
5. Uncheck the Enable Universal Group Membership Caching option, as shown in Figure 6.10; then click OK.


NTDS Site Settings Properties

Site Settings | Object | Security | Attribute Editor

NTDS Site Settings

Description:

Inter-Site Topology Generator

Server:

Site:

Universal Group Membership Caching

□ Enable Universal Group Membership Caching

Refresh cache from: <Default>

FIGURE 6.10
Disabling universal group membership caching.

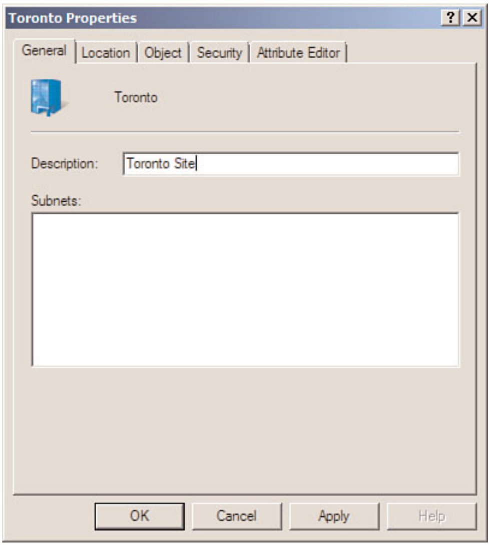
Configure Site Properties

Scenario/Problem: In a complex AD DS environment, forests commonly have multiple site objects. You might need to store additional information on these site objects for administration purposes. You might also need to modify the security of these site objects.

Solution: You can modify site properties to store description and location information on a site object. You can also protect a site object from accidental deletions. Last, you can modify the security on a site object. All this can be done by modifying the site properties using Active Directory Sites and Services.

To configure site properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node, right-click the site for which you want to configure site properties, and click Properties.
4. On the General tab of the site properties page, shown in Figure 6.11, enter a description in the Description field.

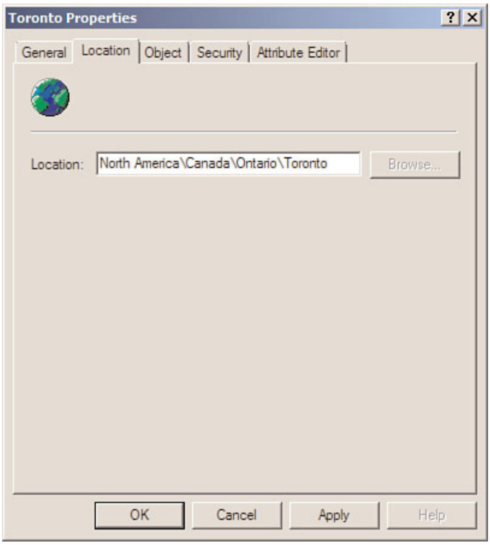


Description: Toronto Site

Subnets:

FIGURE 6.11
The General tab of the site's properties page.

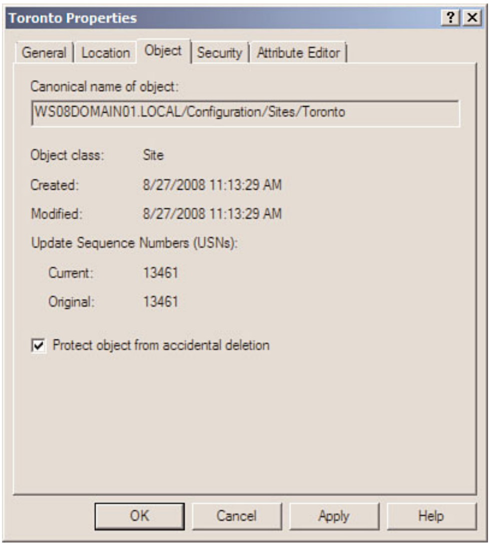
5. Click the Location tab.
6. Enter a location in the Location field, as shown in Figure 6.12.



Location: North America\Canada\Ontario\Toronto

FIGURE 6.12
The Location tab of the site's properties page.

7. Click the Object tab.
8. Select Protect Object from Accidental Deletion, shown in Figure 6.13, if you want to ensure the site is not accidently deleted.



Canonical name of object:
WS08DOMAIN01.LOCAL/Configuration/Sites/Toronto

Object class: Site

Created: 8/27/2008 11:13:29 AM

Modified: 8/27/2008 11:13:29 AM

Update Sequence Numbers (USNs):

Current: 13461

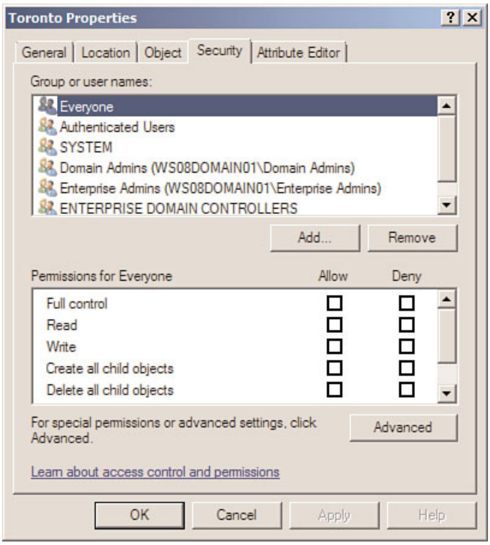
Original: 13461

☑ Protect object from accidental deletion

FIGURE 6.13
The Object tab of the site's properties page.

TIP This is a new option in Windows Server 2008. By enabling this option, an Access Control Entry (ACE) is added to the object's Access Control List (ACL) that denies the Delete permission.

9. Click the Security tab, shown in Figure 6.14.
10. Modify the security of the site as required.



Group or user names:

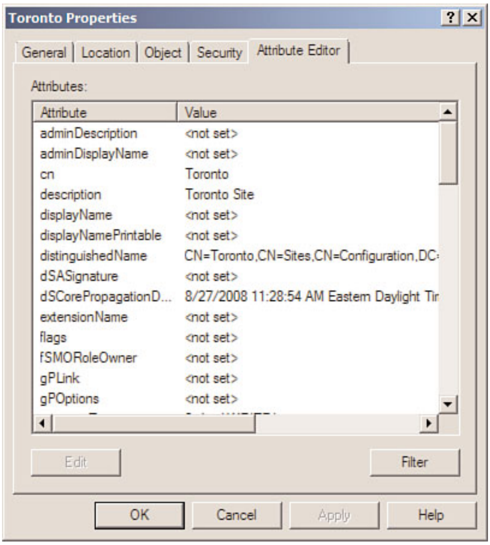
- Everyone
- Authenticated Users
- SYSTEM
- Domain Admins (WS08DOMAIN01\Domain Admins)
- Enterprise Admins (WS08DOMAIN01\Enterprise Admins)
- ENTERPRISE DOMAIN CONTROLLERS

Permissions for Everyone	Allow	Deny
Full control	□	□
Read	□	□
Write	□	□
Create all child objects	□	□
Delete all child objects	□	□

For special permissions or advanced settings, click Advanced.

FIGURE 6.14
The Security tab of the site's properties page.

11. Click the Attribute Editor tab, shown in Figure 6.15.
12. Modify any attributes as required.



Attribute	Value
adminDescription	<not set>
adminDisplayName	<not set>
cn	Toronto
description	Toronto Site
displayName	<not set>
displayNamePrintable	<not set>
distinguishedName	CN=Toronto,CN=Sites,CN=Configuration,DC=
dSASignature	<not set>
dSCorePropagationD...	8/27/2008 11:28:54 AM Eastern Daylight Tir
extensionName	<not set>
flags	<not set>
fSMORoleOwner	<not set>
gPLink	<not set>
gPOptions	<not set>

FIGURE 6.15
The Attribute Editor tab of the site's properties page.

TIP The Attribute Editor is a new feature in Windows Server 2008. The Attribute Editor enables you to view and modify all the attributes for a given object, including any custom attributes you have added to the AD DS schema. In previous versions of Windows, the only attributes that were exposed through the AD DS interfaces were those included with the base schema.

13. Click OK to save your changes.

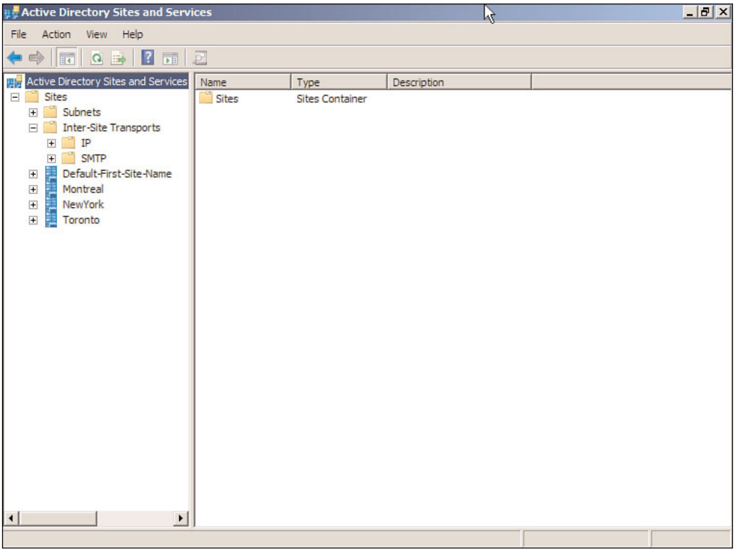
Create Site Links

Scenario/Problem: When your AD DS forest has more than one site object, you need to configure replication between these sites.

Solution: Connect sites together for replication by creating site links.

To create site links, perform the following steps:

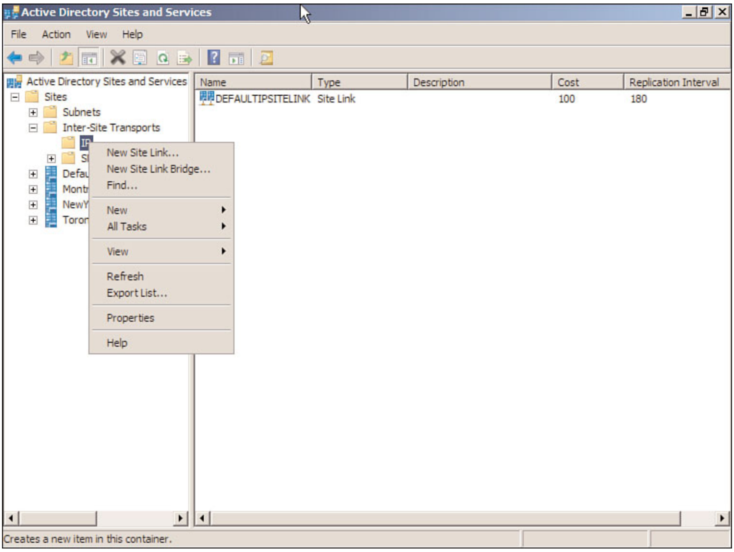
1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and then expand the Inter-Site Transports node, as shown in Figure 6.16.



Name	Type	Description
Sites	Sites Container	

FIGURE 6.16
The Inter-Site Transports node.

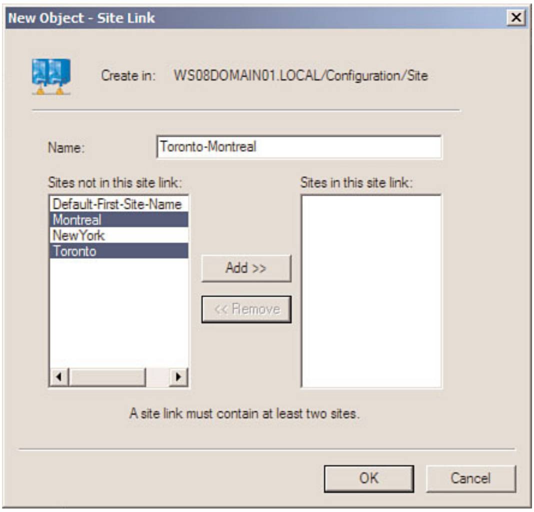
4. In the console tree, under the Inter-Site Transports node, right-click the IP or SMTP node; then click New Site Link, as shown in Figure 6.17.
5. In the New Object — Site Link window, shown in Figure 6.18, type a name for the site link in the Name field, select at least two sites you want to add to the site link in the Sites Not in This Site Link section, and click Add.



Name	Type	Description	Cost	Replication Interval
DEFAULTIPSITELINK	Site Link		100	180

Creates a new item in this container.

FIGURE 6.17
The New Site Link action.



Create in: WS08DOMAIN01.LOCAL/Configuration/Site

Name: Toronto-Montreal

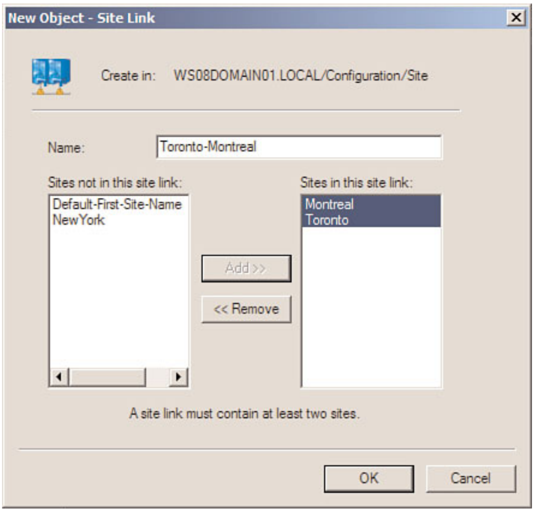
Sites not in this site link:
Default-First-Site-Name
Montreal
NewYork
Toronto

Sites in this site link:

A site link must contain at least two sites.

FIGURE 6.18
The Sites Not in this Site Link section.

6. The sites are moved to the Sites in This Site Link section, as shown in Figure 6.19. Click OK.



Create in: WS08DOMAIN01.LOCAL/Configuration/Site

Name: Toronto-Montreal

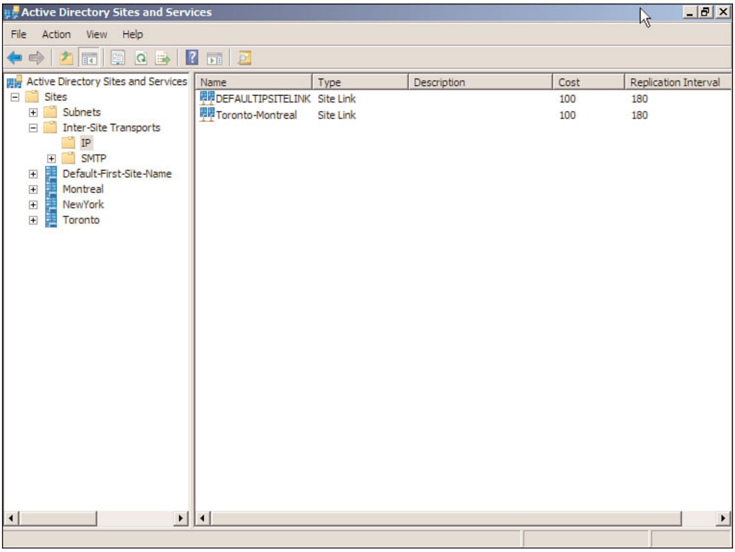
Sites not in this site link:
Default-First-Site-Name
NewYork

Sites in this site link:
Montreal
Toronto

A site link must contain at least two sites.

FIGURE 6.19
The Sites in this Site Link section.

7. Notice that, as shown in Figure 6.20, the new site link now exists in the details pane under the transport in which you created the site link.



Active Directory Sites and Services
Sites
Subnets
Inter-Site Transports
IP
SMTP
Default-First-Site-Name
Montreal
NewYork
Toronto

Name	Type	Description	Cost	Replication Interval
DEFAULTIPSITELINK	Site Link		100	180
Toronto-Montreal	Site Link		100	180

FIGURE 6.20
The new site link in the details pane.

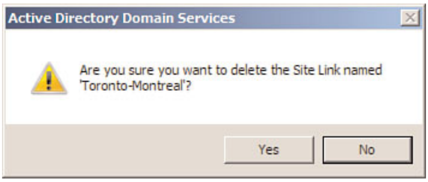
Remove Site Links

Scenario/Problem: As your network topology changes and remote offices close, you need to ensure that any obsolete connections between sites are removed.

Solution: You remove site links to remove a connection between sites.

To remove site links, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and then expand the Inter-Site Transports node.
4. In the console tree, under the Inter-Site Transports node, select the transport—IP or SMTP—for which the site link belongs.
5. In the details pane, right-click the site link you want to delete and click Delete.
6. In the confirmation dialog box, shown in Figure 6.21, click Yes.



Are you sure you want to delete the Site Link named 'Toronto-Montreal'?

FIGURE 6.21
Deleting the site link confirmation dialog box.

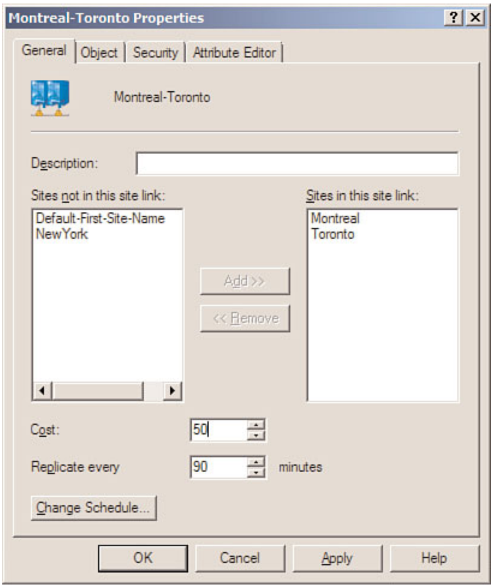
Configure Site Link Properties

Scenario/Problem: In a complex AD DS environment, forests commonly have multiple site link objects. You might need to store additional information on these site link objects for administration purposes. You might also need to modify the security of these site link objects. Last, you might need to modify the cost, replication frequency, and replication schedule between sites.

Solution: You can modify site link properties to store description and location information on a site object. You can also protect a site link object from accidental deletions. You can modify the security on a site link object. You can configure the site link cost, replication frequency, and replication schedule on a site link. All this can be done by modifying the site link properties using Active Directory Sites and Services.

To configure site link properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and then expand the Inter-Site Transports node.
4. In the console tree, under the Inter-Site Transports node, select the transport—IP or SMTP—for which the site link belongs.
5. In the details pane, right-click the site link you want to modify and select Properties.
6. On the General tab of the site link properties page, shown in Figure 6.22, enter a description in the Description field, enter a site link cost in the Cost field, and enter a replication interval in the Replicate Every field.



Montreal-Toronto

Description:

Sites not in this site link:
Default-First-Site-Name
NewYork

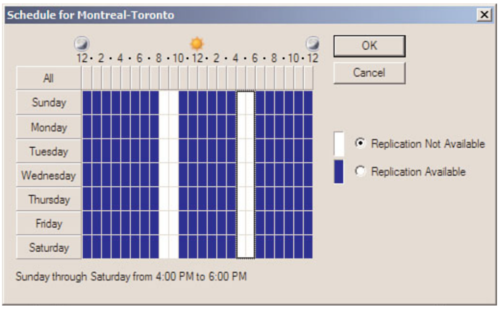
Sites in this site link:
Montreal
Toronto

Cost: 50

Replicate every 90 minutes

FIGURE 6.22
The General tab of the site link's Properties page.

7. To modify the replication schedule, click Change Schedule.
8. On the Schedule for Site Link page, shown in Figure 6.23, modify the schedule according to your requirements and then click OK.



Schedule for Montreal-Toronto

□ ● Replication Not Available

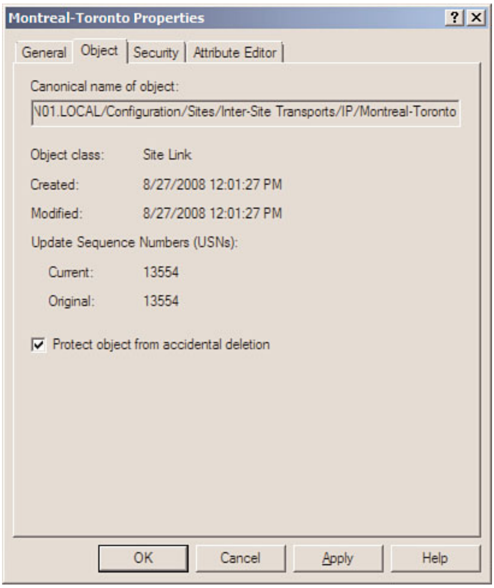
■ ○ Replication Available

Sunday through Saturday from 4:00 PM to 6:00 PM

FIGURE 6.23
The site link's Schedule for page.

9. Click the Object tab.

10. Select Protect Object from Accidental Deletion if you want to ensure the site link is not accidently deleted, as shown in Figure 6.24.



Montreal-Toronto Properties

Canonical name of object:

N01.LOCAL/Configuration/Sites/Inter-Site Transports/IP/Montreal-Toronto

Object class: Site Link

Created: 8/27/2008 12:01:27 PM

Modified: 8/27/2008 12:01:27 PM

Update Sequence Numbers (USNs):

Current: 13554

Original: 13554

☑ Protect object from accidental deletion

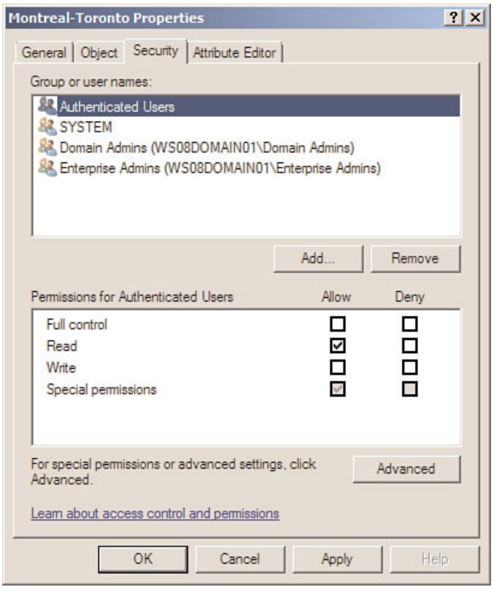
FIGURE 6.24
The Object tab of the site link's Properties page.

11. Click the Security tab, shown in Figure 6.25.

12. Modify the security of the site link as required.

13. Click the Attribute Editor tab, shown in Figure 6.26.

14. Modify any attributes as required.



Montreal-Toronto Properties

General | Object | Security | Attribute Editor

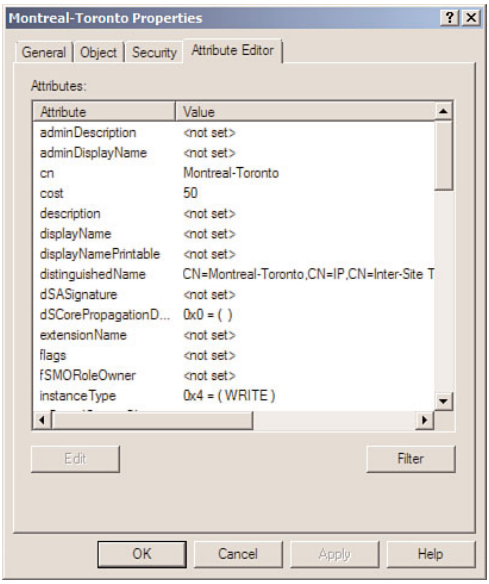
Group or user names:

- Authenticated Users
- SYSTEM
- Domain Admins (WS08DOMAIN01\Domain Admins)
- Enterprise Admins (WS08DOMAIN01\Enterprise Admins)

Permissions for Authenticated Users	Allow	Deny
Full control	□	□
Read	☑	□
Write	□	□
Special permissions	☑	□

For special permissions or advanced settings, click Advanced.

FIGURE 6.25
The Security tab of the site link's Properties page.



Montreal-Toronto Properties

General | Object | Security | Attribute Editor

Attributes:

Attribute	Value
adminDescription	<not set>
adminDisplayName	<not set>
cn	Montreal-Toronto
cost	50
description	<not set>
displayName	<not set>
displayNamePrintable	<not set>
distinguishedName	CN=Montreal-Toronto,CN=IP,CN=Inter-Site T
dSASignature	<not set>
dSCorePropagationD...	0x0 = ( )
extensionName	<not set>
flags	<not set>
fSMORoleOwner	<not set>
instanceType	0x4 = (WRITE)

FIGURE 6.26
The Attribute Editor tab of the site link's Properties page.

15. Click OK to save your changes.

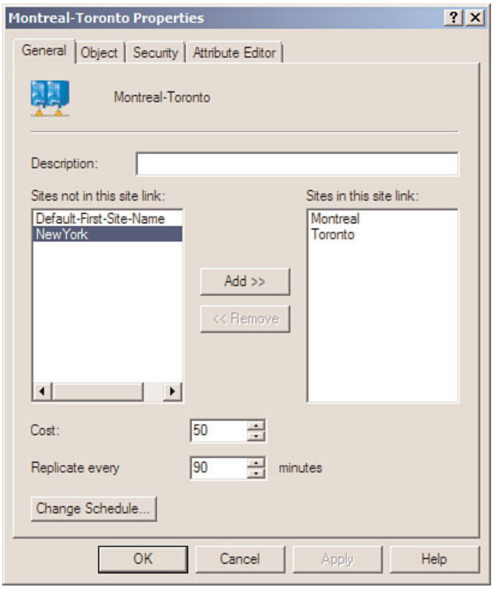
Associate a Site with a Site Link

Scenario/Problem: A number of organizations have a hub and spoke network topology, where remote offices are connected to a central office. If this is the case, you need to ensure that your AD DS site and replication topology match your network topology.

Solution: You can associate a site with a site link to connect sites together.

To asociate a site with a site link, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and then expand the Inter-Site Transports node.
4. In the console tree, under the Inter-Site Transports node, select the transport—IP or SMTP—for which the site link belongs.
5. In the details pane, right-click the site link you want to modify and select Properties.
6. In the site link's properties page, shown in Figure 6.27, select the site you want to add to the site link in the Sites Not in This Site Link section; then click Add.



Montreal-Toronto

Description:

Sites not in this site link:
Default-First-Site-Name
NewYork

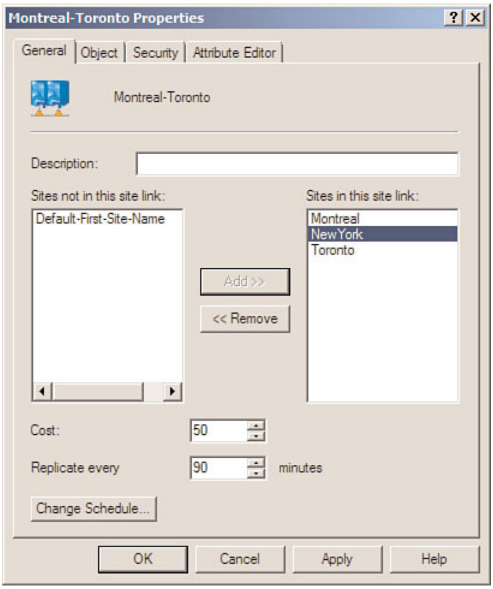
Sites in this site link:
Montreal
Toronto

Cost: 50

Replicate every 90 minutes

FIGURE 6.27
The Sites Not in This Site Link section.

7. The site is moved to the Sites in This Site Link section, as shown in Figure 6.28. Click OK.


Montreal-Toronto Properties

Montreal-Toronto

Description:

Sites not in this site link:
Default-First-Site-Name

Sites in this site link:
Montreal
NewYork
Toronto

Cost: 50

Replicate every 90 minutes

FIGURE 6.28
The Sites in This Site Link section.

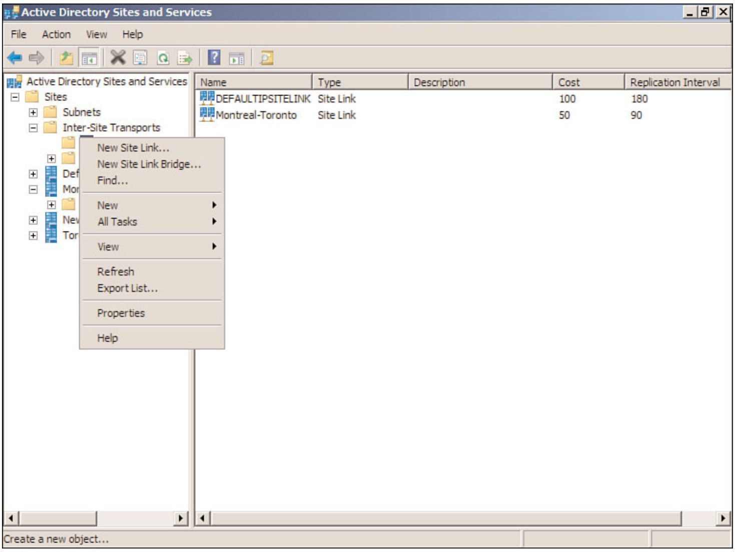
Create Site Link Bridges

Scenario/Problem: By default, site links are bridged together. This ensures AD DS replication follows the route with the lowest cost between sites. In some cases, you might want to prevent a specific route to a site from being used for replication.

Solution: You create a site link bridge to prevent a certain route to a site from being used for AD DS replication.

To create site link bridges, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and then expand the Inter-Site Transports node.
4. In the console tree, under the Inter-Site Transports node, right-click the IP or SMTP node and click New Site Link Bridge, as shown in Figure 6.29.

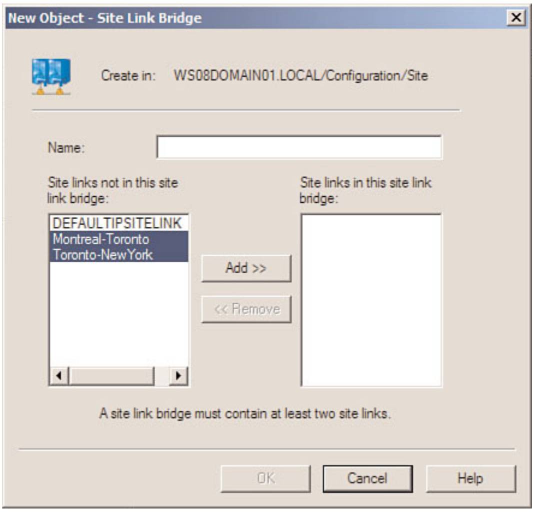


Name	Type	Description	Cost	Replication Interval
DEFAULTIPSITELINK	Site Link		100	180
Montreal-Toronto	Site Link		50	90

FIGURE 6.29

The New Site Link Bridge action.

5. In the New Object — Site Link Bridge window, shown in Figure 6.30, type a name for the site link bridge in the Name field, select at least two site links you want to add to the site link bridge in the Site Links Not in This Site Link Bridge section, and click Add.



Create in: WS08DOMAIN01.LOCAL/Configuration/Site

Name:

Site links not in this site link bridge:

DEFAULTIPSITELINK
Montreal-Toronto
Toronto-NewYork

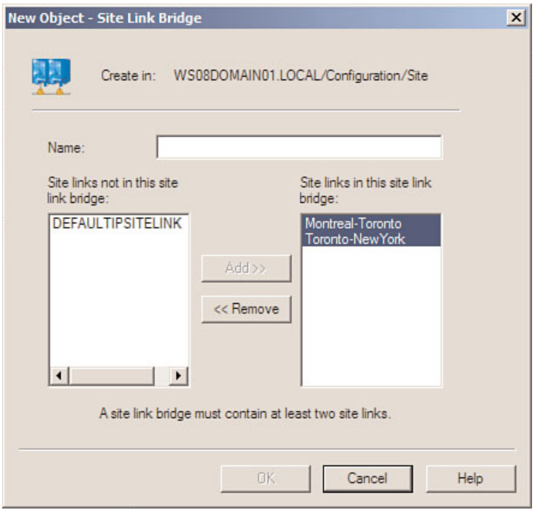
Site links in this site link bridge:

A site link bridge must contain at least two site links.

FIGURE 6.30

The Site Links Not in This Site Link Bridge section.

6. The sites links are moved to the Site Links in This Site Link Bridge section, as shown in Figure 6.31. Click OK.



Create in: WS08DOMAIN01.LOCAL/Configuration/Site

Name:

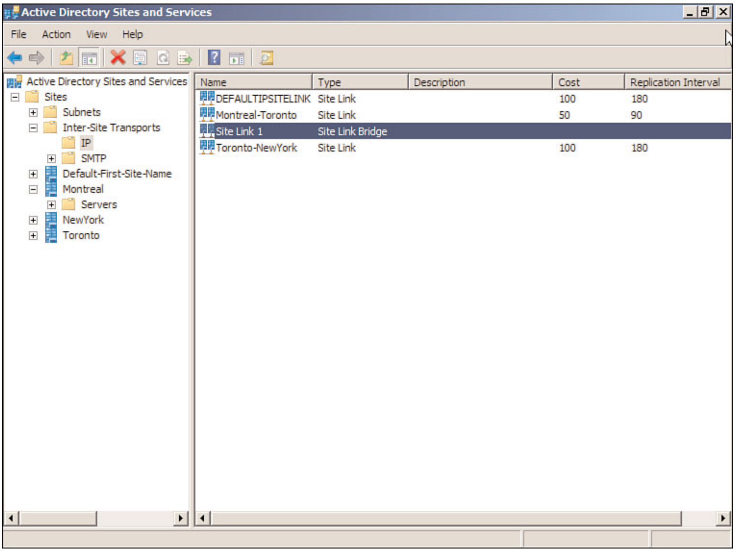
Site links not in this site link bridge:
DEFAULTIPSITELINK

Site links in this site link bridge:
Montreal-Toronto
Toronto-NewYork

A site link bridge must contain at least two site links.

FIGURE 6.31
The Site Links in This Site Link Bridge section.

7. Notice that, as shown in Figure 6.32, the new site link bridge now exists in the details pane under the transport in which you created the site link bridge.



Name	Type	Description	Cost	Replication Interval
DEFAULTIPSITELINK	Site Link		100	180
Montreal-Toronto	Site Link		50	90
Site Link 1	Site Link Bridge			
Toronto-NewYork	Site Link		100	180

FIGURE 6.32
The new site link bridge in the details pane.

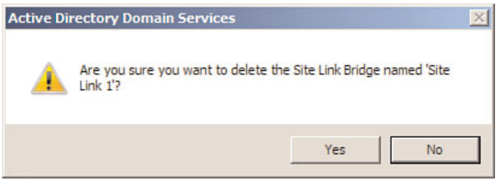
Remove Site Link Bridges

Scenario/Problem: As your network topology changes over time, you need to remove any restrictions you manually created for connections between sites.

Solution: You remove manual site link bridges to remove any restrictions you created for connections between sites.

To remove a site link bridge, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and then expand the Inter-Site Transports node.
4. In the console tree, under the Inter-Site Transports node, select the transport—IP or SMTP—for which the site link bridge belongs.
5. In the details pane, right-click the site link bridge you want to delete and click Delete.
6. In the confirmation dialog box, shown in Figure 6.33, click Yes to delete the site link bridge.



Are you sure you want to delete the Site Link Bridge named 'Site Link 1'?

FIGURE 6.33
The delete site link bridge confirmation dialog box.

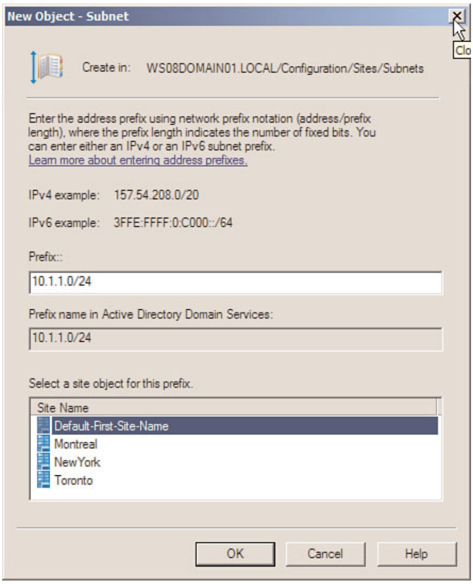
Add a Subnet

Scenario/Problem: AD DS requires a mechanism to know which network segments are in use in a particular office. This is more relevant when the office is represented by a site object in AD DS.

Solution: You add a subnet to AD DS to create an object that represents each network segment.

To add a subnet, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node, right-click the Subnets node and click New Subnet.
4. In the New Object — Subnet, shown in Figure 6.34, enter a prefix for the subnet in the Prefix field, select the site with which to associate the subnet, and click OK.


New Object - Subnet

Create in: WS08DOMAIN01.LOCAL/Configuration/Sites/Subnets

Enter the address prefix using network prefix notation (address/prefix length), where the prefix length indicates the number of fixed bits. You can enter either an IPv4 or an IPv6 subnet prefix.
Learn more about entering address prefixes.

IPv4 example: 157.54.208.0/20

IPv6 example: 3FFE:FFFF:0:C000::/64

Prefix:: 10.1.1.0/24

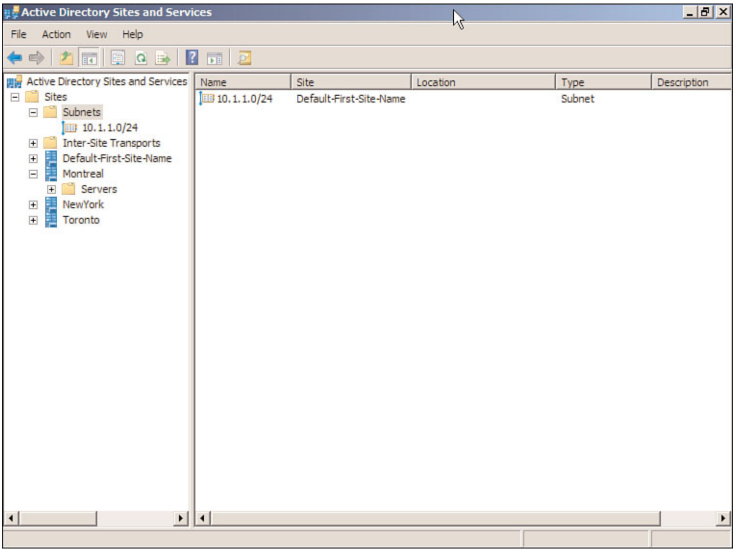
Prefix name in Active Directory Domain Services: 10.1.1.0/24

Select a site object for this prefix.

Site Name
Default-First-Site-Name
Montreal
NewYork
Toronto

FIGURE 6.34
The New Object — Subnet window.

5. Click the Subnets node in the console tree.
6. Notice that, as shown in Figure 6.35, the new subnet is listed in the details pane, along with the site with which the subnet is associated.



Name	Site	Location	Type	Description
10.1.1.0/24	Default-First-Site-Name		Subnet	

FIGURE 6.35
The new subnet in the details pane.

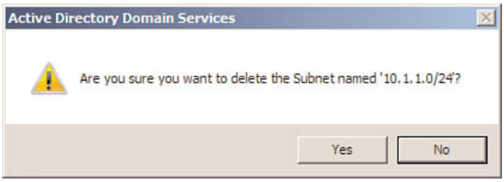
Remove a Subnet

Scenario/Problem: As your network topology changes, you will inevitability have network segments that are decommissioned. You need to ensure that AD DS is aware of the removal of these network segments.

Solution: You remove a subnet from AD DS when the network segment is no longer in use.

To remove a subnet, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and click the Subnets node.
4. Right-click the subnet you want to delete in the details pane, and click Delete.
5. In the confirmation dialog box, shown in Figure 6.36, click Yes to delete the subnet.



Are you sure you want to delete the Subnet named '10.1.1.0/24'?

FIGURE 6.36
Deleting the subnet confirmation dialog box.

Move Domain Controllers Between Sites

Scenario/Problem: The location of domain controllers within sites is important for authentication, replication, and service location. Users are directed to a domain controller in their site; replication within a site operates differently than replication between sites; and site-aware applications leverage sites to service clients.

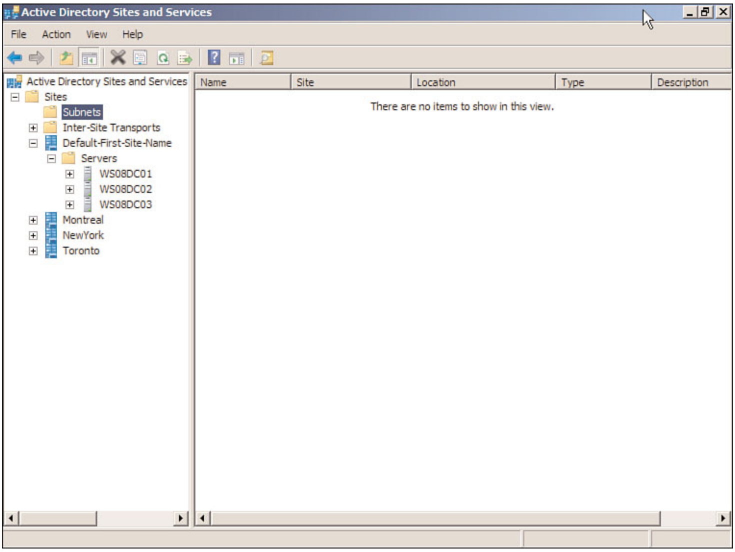
Solution: You move domain controllers between sites to control authentication, replication, and service location.

To move domain controllers between sites, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node.
4. Expand the site node for the site to which the domain controller currently belongs.

TIP If you do not know to which site a domain controller belongs, you can use the Find feature in Active Directory Sites and Services to locate the domain controller. The Find feature is accessed by right clicking on Find on any node below the Active Directory Sites and Services node in the console tree.

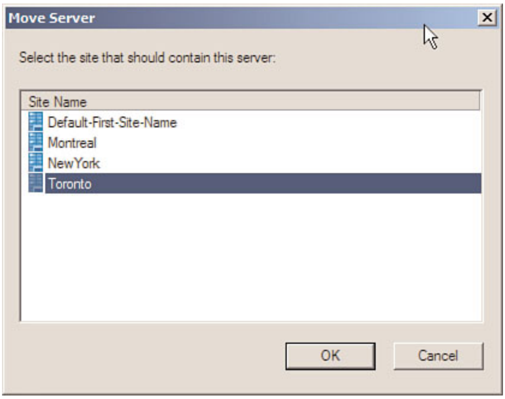
5. Expand the Servers node, as shown in Figure 6.37.
6. In the console tree, under the Servers node, right-click the domain controller you want to move and click Move.
7. In the Move Server window, shown in Figure 6.38, select the site to which you want to move the domain controller; then click OK.



There are no items to show in this view.

FIGURE 6.37

The Servers node in Active Directory Sites and Services.



Select the site that should contain this server:

Site Name
Default-First-Site-Name
Montreal
NewYork
Toronto

FIGURE 6.38

The Move Server window.

8. Notice that the domain controller is no longer listed under the current site in Active Directory Sites and Services.

9. Expand the site to which the domain controller was moved, and verify the server object exists, as shown in Figure 6.39.

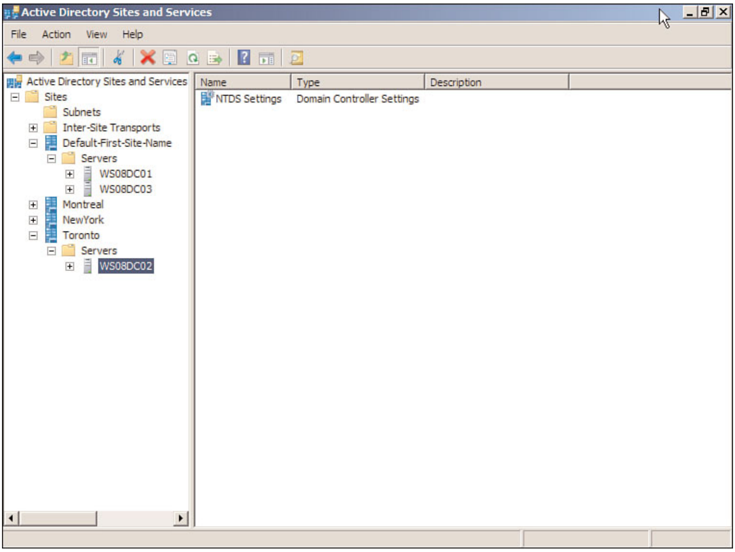


FIGURE 6.39
The domain controller moved between sites.

Enable a Domain Controller as a Preferred Bridgehead Server

Scenario/Problem: Each site object can contain multiple domain controllers. When replication occurs between two sites, all the domain controllers in one site replicating with all the domain controllers in another site is inefficient. A *bridgehead server* is a server that is responsible for requesting changes from its source replication partner in another site. The bridgehead server then replicates these changes with the domain controllers within its site.

Bridgehead servers are automatically selected in each site. However, you might need to prevent a server from becoming a bridgehead if that server, for example, is unreliable or incapable of handling the additional load.

Solution: You enable a domain controller as a preferred bridgehead server to ensure that domain controller participates in intersite replication with other sites.

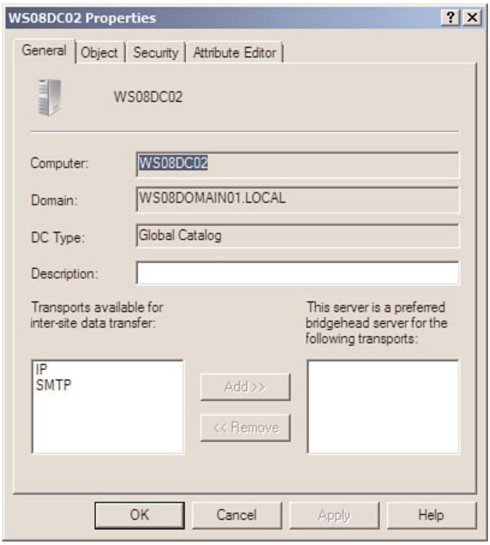
WARNING Microsoft does not recommend that you configure preferred bridgehead servers manually. This has to do with the fact that by manually configuring preferred bridgehead servers, you limit the ability of the Active Directory Knowledge Consistency Checker (KCC) to automatically configure a fault-tolerant inter-site replication topology.

To enable a domain controller as a preferred bridgehead server, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node.
4. Expand the site node for the site to which the domain controller belongs.

WARNING If you do not know to which site a domain controller belongs, you can use the Find feature in Active Directory Sites and Services to locate the domain controller. The Find feature is accessed by right clicking on Find on any node below the Active Directory Sites and Services node in the console tree.

5. Expand the Servers node.
6. In the console tree, under the Servers node, right-click the domain controller you want to move and click Properties, as shown in Figure 6.40.


WS08DC02 Properties

WS08DC02

Computer: WS08DC02

Domain: WS08DOMAIN01.LOCAL

DC Type: Global Catalog

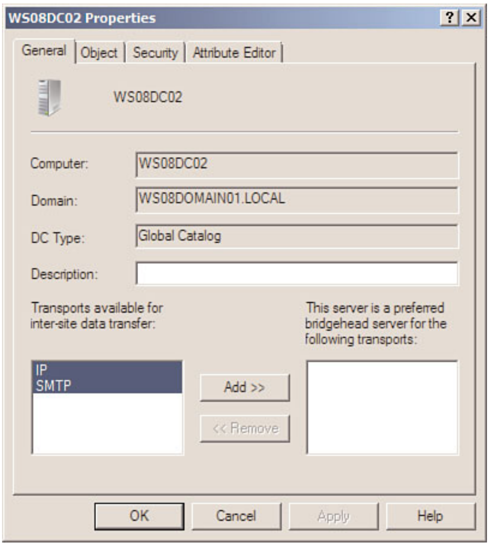
Description:

Transports available for inter-site data transfer: IP, SMTP

This server is a preferred bridgehead server for the following transports:

FIGURE 6.40 The domain controller's Properties window.

7. On the domain controller's Properties page, under Transports Available for Intersite Data Transfer, select the inter-site transport or transports for which the computer will be a preferred bridgehead server; then click Add, as shown in Figure 6.41.



WS08DC02

Computer: WS08DC02

Domain: WS08DOMAIN01.LOCAL

DC Type: Global Catalog

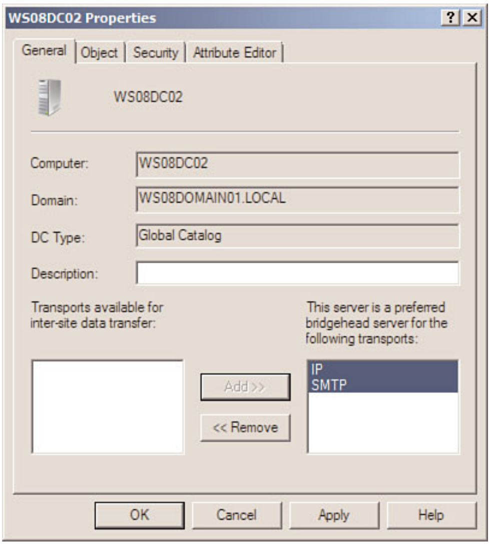
Description:

Transports available for inter-site data transfer:
IP
SMTP

This server is a preferred bridgehead server for the following transports:

FIGURE 6.41
The transports available for inter-site data transfer.

8. The transports are moved to the This Server Is a Preferred Bridgehead Server for the Following Transports section, as shown in Figure 6.42. Click OK.



WS08DC02

Computer: WS08DC02

Domain: WS08DOMAIN01.LOCAL

DC Type: Global Catalog

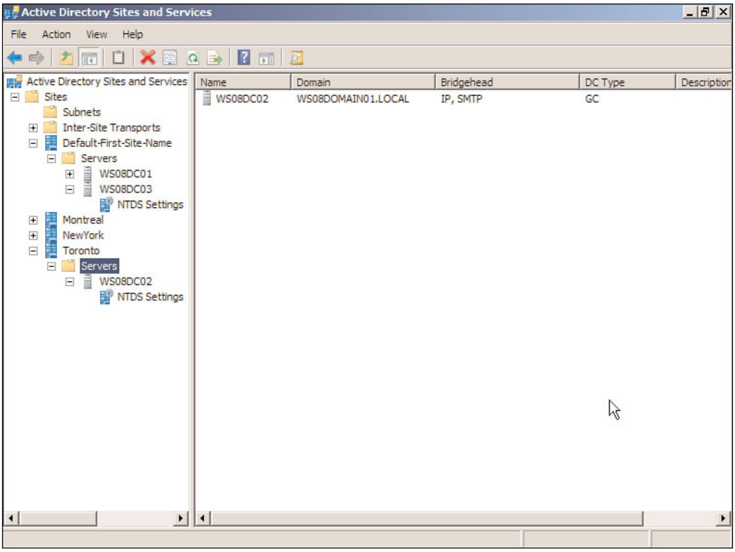
Description:

Transports available for inter-site data transfer:

This server is a preferred bridgehead server for the following transports:
IP
SMTP

FIGURE 6.42
This Server Is a Preferred Bridgehead Server for the Following Transports section.

9. Click the Servers node under the site. Notice that the transports are listed under the Bridgehead column.



Name	Domain	Bridgehead	DC Type	Description
WS08DC02	WS08DOMAIN01.LOCAL	IP, SMTP	GC	

FIGURE 6.43

The transports listed under Bridgehead column.

Disable a Domain Controller as a Preferred Bridgehead Server

Scenario/Problem: You need to remove a previous manual designation as a preferred bridgehead server when the requirement no longer exists.

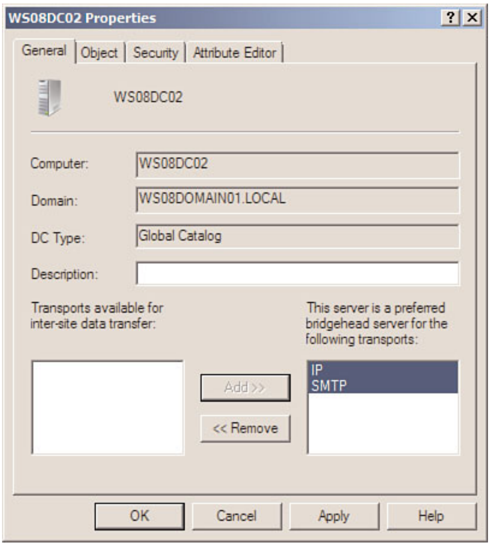
Solution: You disable a domain controller as a preferred bridgehead server.

To disable a domain controller as a preferred bridgehead server, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node.
4. Expand the site node for the site to which the domain controller belongs.

TIP If you do not know to which site a domain controller belongs, you can use the Find feature in Active Directory Sites and Services to locate the domain controller. The Find feature is accessed by right clicking on Find on any node below the Active Directory Sites and Services node in the console tree.

5. Expand the Servers node.
6. In the console tree, under the Servers node, right-click the domain controller you want to modify and click Properties.
7. On the domain controller properties page, under This Server Is a Preferred Bridgehead Server for the Following Transports, select the inter-site transport or transports for which you want to remove the preferred bridgehead role from this computer as shown in Figure 6.44,; then click Remove.



WS08DC02

Computer: WS08DC02

Domain: WS08DOMAIN01.LOCAL

DC Type: Global Catalog

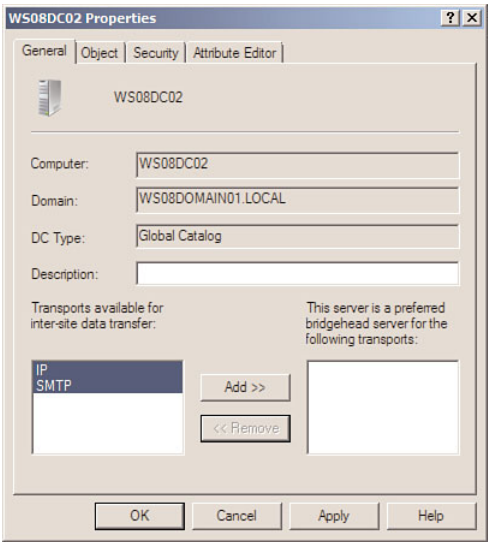
Description:

Transports available for inter-site data transfer:

This server is a preferred bridgehead server for the following transports:
IP
SMTP

FIGURE 6.44
The This Server Is a Preferred Bridgehead Server for the Following Transports section.

8. The transports are moved to the Transports Available for Inter-site Data Transfer section, as shown in Figure 6.45. Click OK.
9. Click the Servers node under the site. Notice the transports are not listed under the Bridgehead column.


WS08DC02 Properties
General
Object
Security
Attribute Editor
WS08DC02
Transports available for inter-site data transfer:
This server is a preferred bridgehead server for the following transports:
Add >>
<< Remove
OK
Cancel
Apply
Help

Computer: WS08DC02

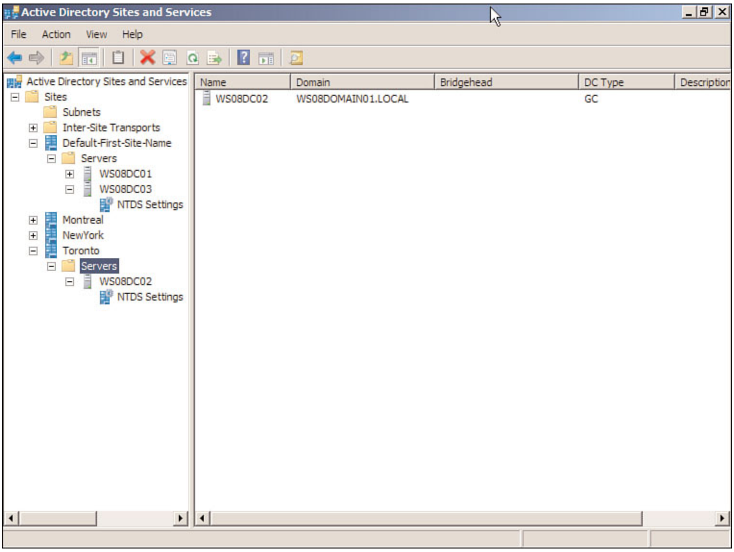
Domain: WS08DOMAIN01.LOCAL

DC Type: Global Catalog

Description:

IP
SMTP

FIGURE 6.45
The Transports Available for Inter-Site Data Transfer section.



Name	Domain	Bridgehead	DC Type	Description
WS08DC02	WS08DOMAIN01.LOCAL		GC	

FIGURE 6.46
The transports not listed under the Bridgehead column.

Create Manual Connection Objects

Scenario/Problem: AD DS creates replication connections between domain controllers based on the site and services design. You might need to ensure that a particular domain controller replicates only with another domain controller.

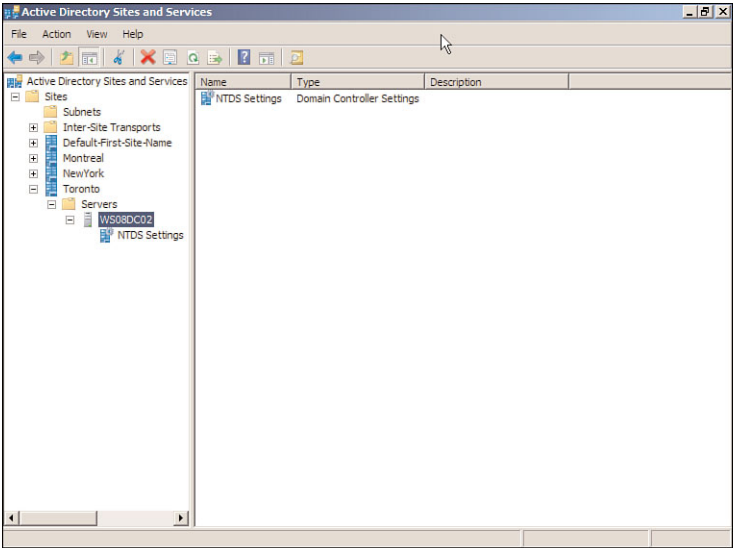
Solution: You create manual connection objects when you want more granular control over replication between specific domain controllers.

To create manual connection objects, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node.
4. Expand the site node for the site to which the domain controller belongs.

TIP If you do not know to which site a domain controller belongs, you can use the Find feature in Active Directory Sites and Services to locate the domain controller. The Find feature is accessed by right clicking on Find on any node below the Active Directory Sites and Services node in the console tree.

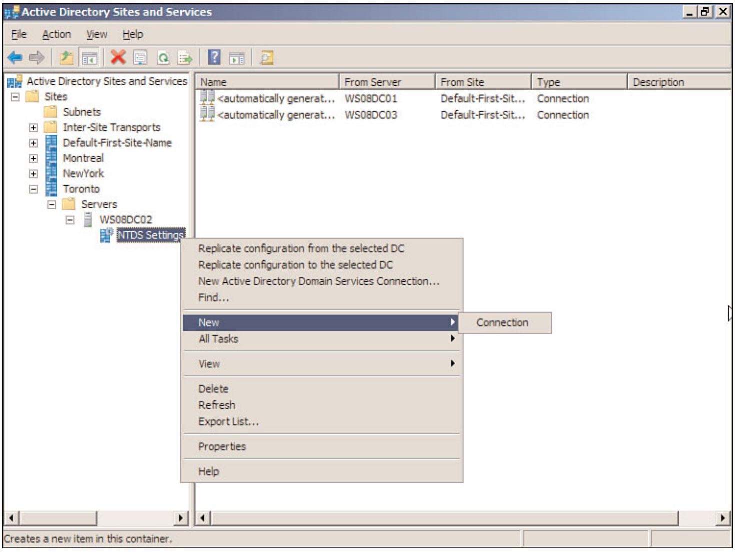
5. Expand the Servers node.
6. In the console tree, select the server you want to create the manual connection object on; then select NTDS Settings.
7. The current connection objects—those generated manually and those generated automatically—are listed in the details pane, as shown in Figure 6.47.
8. In the console tree, right-click NTDS Settings, click New, and then click Connection. as shown in Figure 6.48.



Name	Type	Description
NTDS Settings	Domain Controller Settings	

FIGURE 6.47

The connection objects shown in the details pane.


Active Directory Sites and Services
File
Action
View
Help
Active Directory Sites and Services
Sites
Subnets
Inter-Site Transports
Default-First-Site-Name
Montreal
NewYork
Toronto
Servers
WS08DC02
NTDS Settings
Replicate configuration from the selected DC
Replicate configuration to the selected DC
New Active Directory Domain Services Connection…
Find…
New
All Tasks
View
Delete
Refresh
Export List…
Properties
Help
Connection

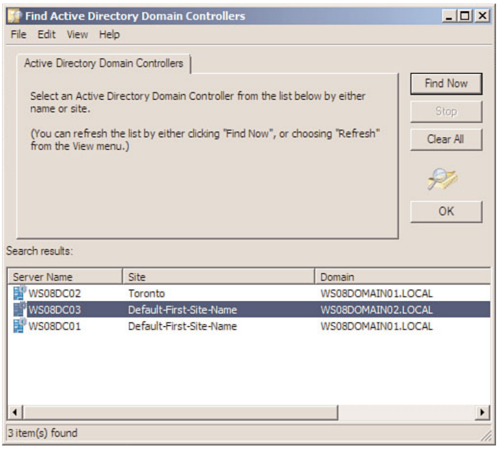
Name	From Server	From Site	Type	Description
<automatically generat…	WS08DC01	Default-First-Sit…	Connection	
<automatically generat…	WS08DC03	Default-First-Sit…	Connection	

Creates a new item in this container.

FIGURE 6.48

The New Connection action.

9. In the Find Active Directory Domain Controllers window, shown in Figure 6.49, select the domain controller with which you want to create the manual connection and click OK.


Find Active Directory Domain Controllers
File
Edit
View
Help
Active Directory Domain Controllers
Find Now
Stop
Clear All
OK

Select an Active Directory Domain Controller from the list below by either name or site.

(You can refresh the list by either clicking "Find Now", or choosing "Refresh" from the View menu.)

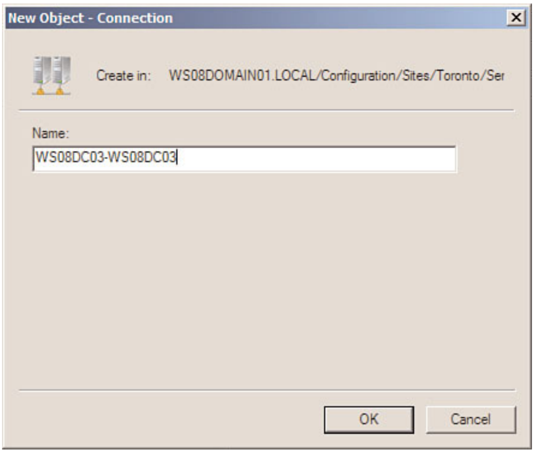
Search results:

Server Name	Site	Domain
WS08DC02	Toronto	WS08DOMAIN01.LOCAL
WS08DC03	Default-First-Site-Name	WS08DOMAIN02.LOCAL
WS08DC01	Default-First-Site-Name	WS08DOMAIN01.LOCAL

3 item(s) found

FIGURE 6.49
The Find Active Directory Domain Controllers window.

10. In the New Object — Connection window, shown in Figure 6.50, enter a name for the connection in the Name field and then click OK.

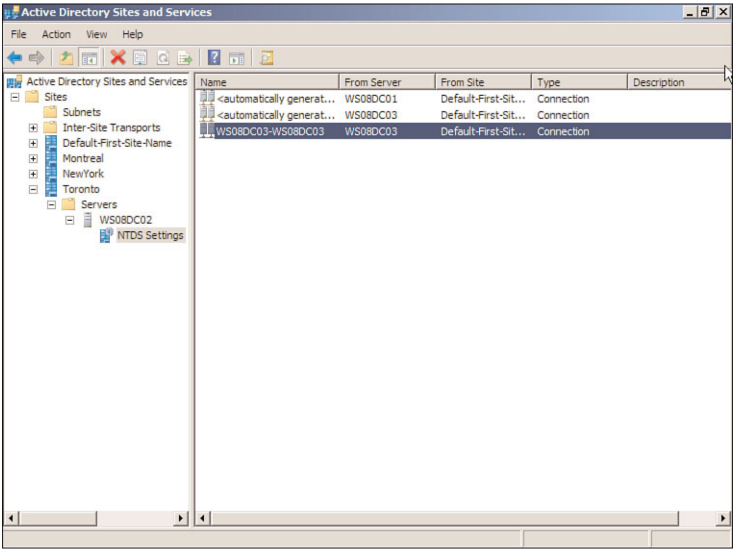


Create in: WS08DOMAIN01.LOCAL/Configuration/Sites/Toronto/Ser

Name:
WS08DC03-WS08DC03

FIGURE 6.50
The New Object — Connection window.

11. Notice that, as shown in Figure 6.51, the new connection object now appears in the details pane of the NTDS Settings for the domain controller.



Name	From Server	From Site	Type	Description
<automatically generat...	WS08DC01	Default-First-Sit...	Connection	
<automatically generat...	WS08DC03	Default-First-Sit...	Connection	
WS08DC03-WS08DC03	WS08DC03	Default-First-Sit...	Connection	

FIGURE 6.51

The new connection object in the details pane.

Remove Connection Objects

Scenario/Problem: As your network topology changes, you might no longer have a requirement to force two domain controllers to be replication partners.

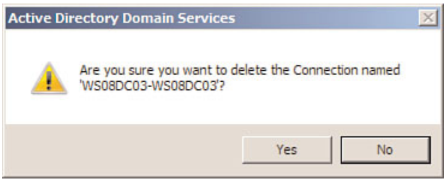
Solution: You remove connection objects from domain controllers to enable AD DS to build automatic connection objects.

To remove connection objects, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node.
4. Expand the site node for the site to which the domain controller belongs.

TIP If you do not know to which site a domain controller belongs, you can use the Find feature in Active Directory Sites and Services to locate the domain controller. The Find feature is accessed by right clicking on Find on any node below the Active Directory Sites and Services node in the console tree.

5. Expand the Servers node.
6. In the console tree, select the server from which you want to remove a connection object; then select NTDS Settings.
7. The current connection objects—those generated manually and those generated automatically—are listed in the details pane.
8. In the details pane, right-click the connection object you want to remove and select Delete.
9. On the confirmation box for deleting the connection object, shown in Figure 6.52, click Yes.



Are you sure you want to delete the Connection named 'WS08DC03-WS08DC03'?

FIGURE 6.52
Confirming to delete the connection object.

10. Notice that the connection object is no longer listed in the details pane.

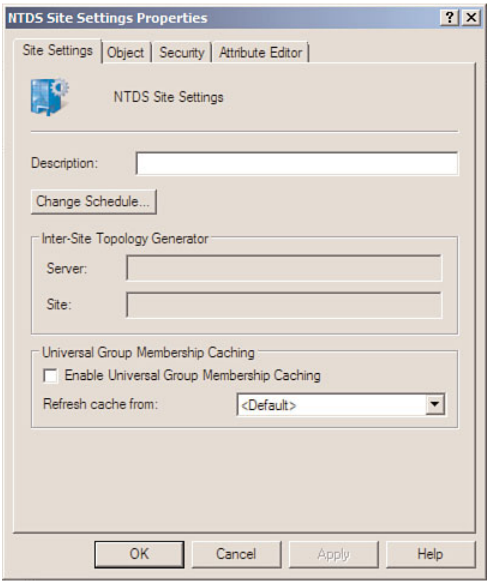
Disable KCC for a Site

Scenario/Problem: The knowledge consistency checker is a process that runs on every domain controller and generates the AD DS replication topology for the forest. By default, KCC creates separate replication topologies for intrasite replication and intersite replication. You might want to prevent KCC from creating replication topologies for replication within a site (intrasite), replication between sites (intersite), or both.

Solution: You disable automatic intrasite topology generation, automatic intersite topology generation, or both for a site.

To disable KCC for a site, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node.
4. In the console tree, select the site on which you want to disable KCC.
5. In the details pane, right-click NTDS Site Settings and click Properties, as shown in Figure 6.53.

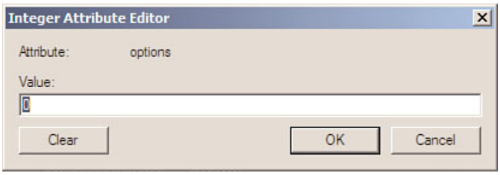


☐ Enable Universal Group Membership Caching

Refresh cache from: <Default>

FIGURE 6.53
The NTDS Site Settings Properties window.

6. In the NTDS Site Settings Properties window, click the Attribute Editor tab.
7. On the Attribute Editor tab, select the options attribute and click Edit.
8. In the Integer Attribute Editor window, shown in Figure 6.54, type one of the following:
   - **1** to disable automatic intrasite topology generation
   - **16** to disable automatic intersite topology generation
   - **17** to disable both intrasite and intersite topology generation
9. Click OK.
10. The options attribute, shown in Figure 6.55, is updated based on the value you provided in Step 8. Table 6.1 shows the decimal values, the meaning, and the corresponding value that display in Attribute Editor.



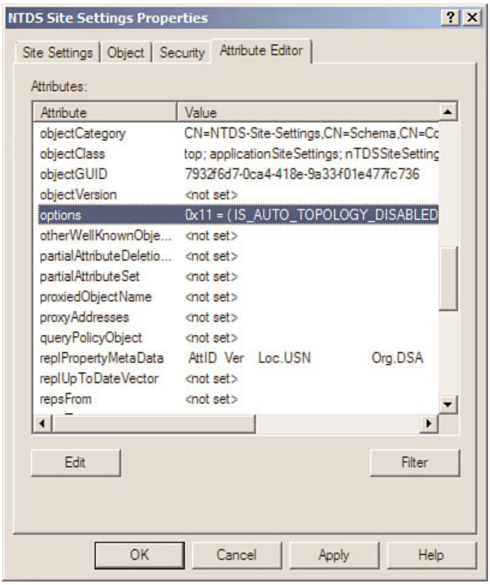
Attribute: options

Value: 0

FIGURE 6.54
The Integer Attribute Editor window.

TABLE 6.1 **Disabling KCC by Using the Attribute Editor in Windows Server 2008**

Decimal Value	Meaning	Value in Attribute Editor
<not set>	Automatic intrasite topology generation enabled	`<not set>`
1	Automatic intrasite topology generation disabled	`0x1=(IS_AUTO_TOPOLOGY_DISABLED)`
16	Automatic intersite topology generation disabled	`0x10=(IS_INTER_SITE_AUTO_TOPOLOGY_DISABLED)`
17	Intrasite and intersite topology generation	`0x11=(IS_AUTO_TOPOLOGY_DISABLED ¦ IS_INTER_SITE_AUTO_TOPOLOGY_DISABLED)`



Attributes:

Attribute	Value
objectCategory	CN=NTDS-Site-Settings,CN=Schema,CN=Cc
objectClass	top; applicationSiteSettings; nTDSSiteSetting
objectGUID	7932f6d7-0ca4-418e-9a33-f01e477fc736
objectVersion	<not set>
options	0x11 = (IS_AUTO_TOPOLOGY_DISABLED
otherWellKnownObje...	<not set>
partialAttributeDeletio...	<not set>
partialAttributeSet	<not set>
proxiedObjectName	<not set>
proxyAddresses	<not set>
queryPolicyObject	<not set>
replPropertyMetaData	AttID Ver Loc.USN Org.DSA
replUpToDateVector	<not set>
repsFrom	<not set>

FIGURE 6.55
The updated options attribute.

Enable KCC for a Site

Scenario/Problem: You might have previously had a requirement to prevent KCC from generating the intrasite and/or intersite replication topology for a site. If this requirement no longer exists, you need to ensure that KCC generates these topologies.

Solution: You enable automatic intrasite topology generation, automatic intersite topology generation, or both for a site.

TIP KCC is enabled by default. The steps in this section are required only if KCC was previously disabled and you want to reenable it.

To enable KCC for a site, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node.
4. In the console tree, select the site on which you want to disable KCC.
5. In the details pane, right-click NTDS Site Settings and click Properties.
6. In the NTDS Site Settings Properties window, click the Attribute Editor tab.
7. On the Attribute Editor tab, select the options attribute and click Edit.
8. In the Integer Attribute Editor window, click Clear.
9. Click OK.
10. The options attribute is changed to `<not set>`.

Disable Inbound Replication

Scenario/Problem: You want to temporarily prevent a domain controller from receiving updates from other domain controllers.

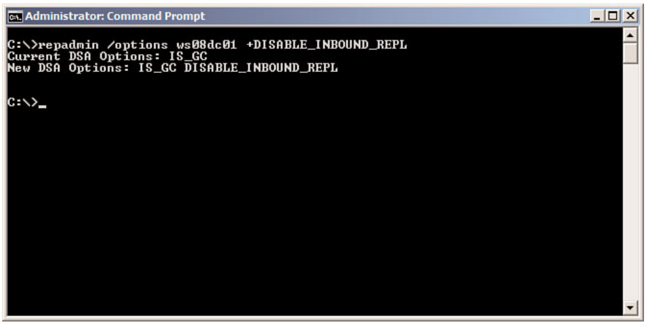
Solution: You disable inbound replication on the domain controller.

To disable inbound replication, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command:

   `repadmin /options` *`servername`* `+DISABLE_INBOUND_REPL`

   (where *`servername`* is the domain controller on which you want to perform the change).
4. Verify that `DISABLE_INBOUND_REPL` is listed in the results under New DSA Options, as shown in Figure 6.56:



```
C:\>repadmin /options ws08dc01 +DISABLE_INBOUND_REPL
Current DSA Options: IS_GC
New DSA Options: IS_GC DISABLE_INBOUND_REPL

C:\>_
```

FIGURE 6.56
Disabling inbound replication.

Enable Inbound Replication

Scenario/Problem: You previously disabled a domain controller from receiving updates from other domain controllers. You now might want the domain controller to receive updates.

Solution: You enable inbound replication on the domain controller.

To enable inbound replication, perform the following steps:

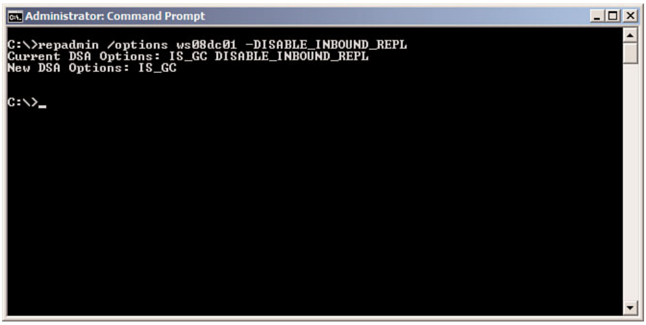
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.

3. In the Command Prompt window, type the following command:

   `repadmin /options` ***`servername`*** **`-DISABLE_INBOUND_REPL`**

   (where *`servername`* is the domain controller on which you want to perform the change).

4. Verify that `DISABLE_INBOUND_REPL` is listed in the results under Current DSA Options: and not New DSA Options, as shown in Figure 6.57:



```
C:\>repadmin /options ws08dc01 -DISABLE_INBOUND_REPL
Current DSA Options: IS_GC DISABLE_INBOUND_REPL
New DSA Options: IS_GC

C:\>_
```

FIGURE 6.57
Enabling inbound replication.

Disable Outbound Replication

Scenario/Problem: You might want to temporarily prevent a domain controller from sending updates to other domain controllers.

Solution: You disable outbound replication on the domain controller.

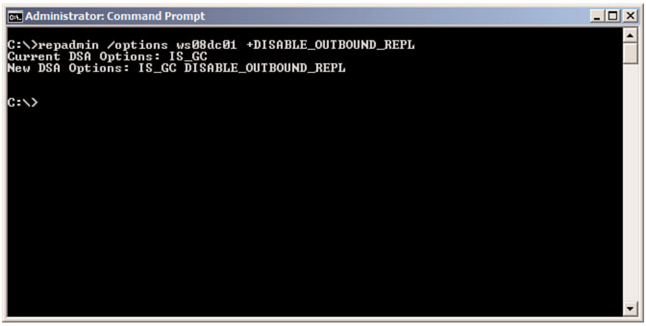
To disable outbound replication, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command:

   `repadmin /options` ***`servername`*** **`+DISABLE_OUTBOUND_REPL`**

   (where *`servername`* is the domain controller on which you want to perform the change).

4. Verify that `DISABLE_OUTBOUND_REPL` is listed in the results under New DSA Options, as shown in Figure 6.58:



```
C:\>repadmin /options ws08dc01 +DISABLE_OUTBOUND_REPL
Current DSA Options: IS_GC
New DSA Options: IS_GC DISABLE_OUTBOUND_REPL

C:\>
```

FIGURE 6.58
Disabling outbound replication.

Enable Outbound Replication

Scenario/Problem: You previously disabled a domain controller from sending updates to other domain controllers. You now might want the domain controller to send updates.

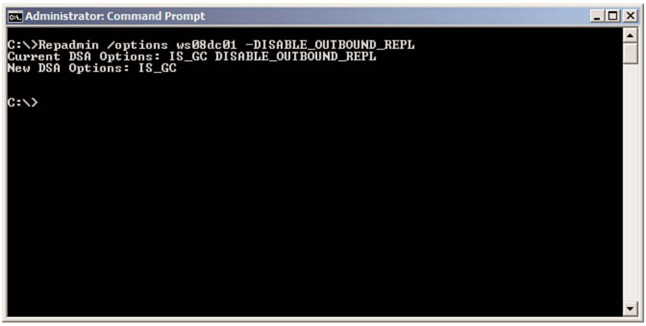
Solution: You enable outbound replication on the domain controller.

To enable outbound replication, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command:

   `repadmin /options` ***`servername`*** **`-DISABLE_OUTBOUND_REPL`**

   (where *`servername`* is the domain controller on which you want to perform the change).
4. Verify that `DISABLE_OUTBOUND_REPL` is listed in the results under Current DSA Options: and not New DSA Options, as shown in Figure 6.59:



```
C:\>Repadmin /options ws08dc01 -DISABLE_OUTBOUND_REPL
Current DSA Options: IS_GC DISABLE_OUTBOUND_REPL
New DSA Options: IS_GC

C:\>
```

FIGURE 6.59
Enabling outbound replication.

Disable the Bridge All Site Links Option

Scenario/Problem: By default, all site links are transitive in AD DS. You might have a network that is not fully routed, or you might need to control the replication flow of changes made in AD DS.

Solution: You disable the bridge all site links option for the given transport.

To disable the bridge all site links option, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and then expand the Inter-Site Transports node.
4. In the console tree, under the Inter-Site Transports node, right-click either the IP node if you want to disable this setting for the IP transport or the SMTP node if you want to disable this setting for the SMTP transport. Then click Properties.
5. On the transport properties page, shown in Figure 6.60, uncheck the Bridge All Site Links option and click OK.

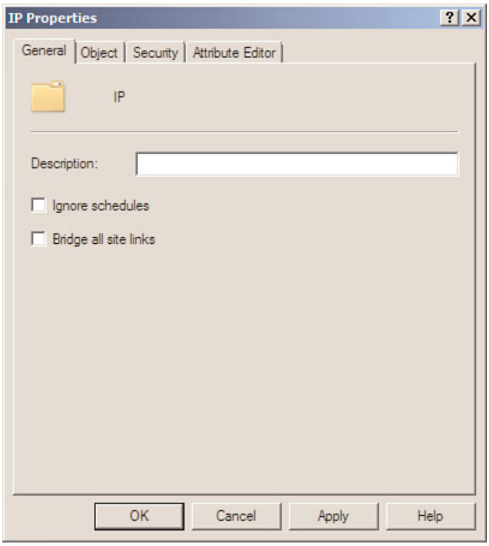


FIGURE 6.60
Disabling the Bridge All Site Links option.

Enable the Bridge All Site Links Option

Scenario/Problem: You previously might have had a network that was not fully routed or previously wanted to control the replication flow of changes made in AD DS. This requirement no longer exists.

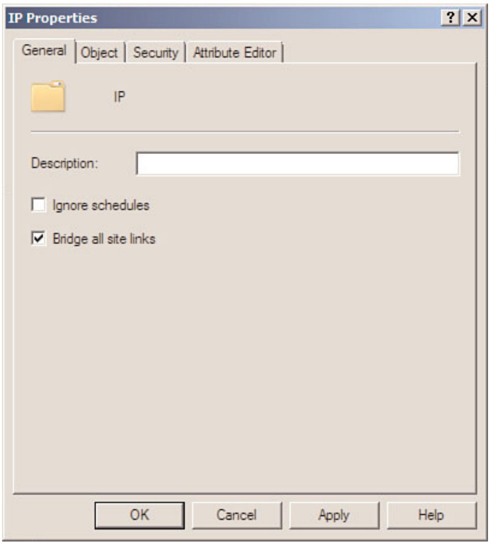
Solution: You enable the bridge all site links option for the given transport.

TIP The bridge all site links option is enabled by default. The steps in this section are required only if the bridge all site links option was previously disabled and you want to re-enable it.

To enable the bridge all site links option, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Sites and Services.
3. In the console tree, expand the Sites node and then expand the Inter-Site Transports node.

4. In the console tree, under the Inter-Site Transports node, right-click either the IP node if you want to enable this setting for the IP transport or SMTP node if you want to enable this setting for the SMTP transport. Then click Properties.
5. On the transport properties page, shown in Figure 6.61, check the Bridge All Site Links option and click OK.


IP Properties

General | Object | Security | Attribute Editor

IP

Description:

□ Ignore schedules

☑ Bridge all site links

FIGURE 6.61
Disabling the Bridge All Site Links option.

Verify Replication Is Functioning

Scenario/Problem: You might have made a change to your AD DS site design and now want to ensure that replication is occurring as expected.

Solution: Verify replication is functioning.

To verify replication is functioning, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

```
dcdiag /test:replications
```

4. The results are presented in the Command Prompt window.

Trigger Replication

Scenario/Problem: You might have made a change to AD DS and now cannot wait for the replication interval for the change to be replicated.

Solution: You trigger replication.

To trigger replication, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   repadmin /replicate DEST-DC SOURCE-DC NAMINGCONTEXT
   ```

   (where *DEST-DC* is the name of the destination domain controller, *SOURCE-DC* is the name of the source domain controller, and *NAMINGCONTEXT* is the naming context you want to replicate).

   Continuing with the previous example, if you have a destination DC with a name of `WS08DC01` and a source DC with a naming of `WS08DC02` and you want to replicate the `DC=DOMAIN,DC=LOCAL` naming context, you would type the following command:

   ```
   repadmin /replicate WS08DC02 WS08DC01 DC=DOMAIN,DC=LOCAL
   ```

4. The results are presented in the Command Prompt window.

This page intentionally left blank

CHAPTER 7

Manage the Active Directory Domain Services Schema

IN THIS CHAPTER

- Install the Active Directory Schema Snap-In
- Apply Active Directory Schema Administrative Permissions
- View Schema Class and Attribute Definitions
- Create Attributes
- Deactivate Attributes
- Activate Attributes
- Index Attributes
- Remove Attributes from the Index
- Add Attributes to Ambiguous Name Resolution Filter
- Remove Attributes from Ambiguous Name Resolution Filter
- Add Attributes to Global Catalog Replication
- Remove Attributes from Global Catalog Replication
- Configure Attributes to Be Copied When Duplicating Users
- Configure Attributes Not to Be Copied When Duplicating Users
- Configuring Attributes to Be Indexed for Containerized Searches
- Configuring Attributes Not to Be Indexed for Containerized Searches
- Configure Attribute Range
- Create Classes
- Deactivate Classes
- Activate Classes
- Configure Classes to Be Visible in Advanced View
- Configure Classes Not to Be Visible in Advanced View
- Configure Class Relationships
- Configure Class Attributes

The Active Directory Domain Services (AD DS) schema contains formal definitions of every object class that can be created in an AD DS forest. The schema also contains formal definitions of every attribute that can exist in an AD DS object.

This chapter describes the steps required to manage the schema.

Install the Active Directory Schema Snap-In

Scenario/Problem: You need to manage the AD DS schema, which can include extending the schema, modifying existing attributes and classes.

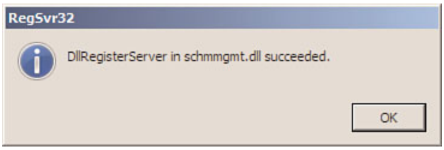
Solution: You need to install the Active Directory Schema snap-in.

To install the Active Directory Schema snap-in, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   `regsvr32 schmmgmt.dll`

4. You will receive a notification that `schmmgmt.dll` was registered successfully, as shown in Figure 7.1. Click OK and close the Command Prompt window.

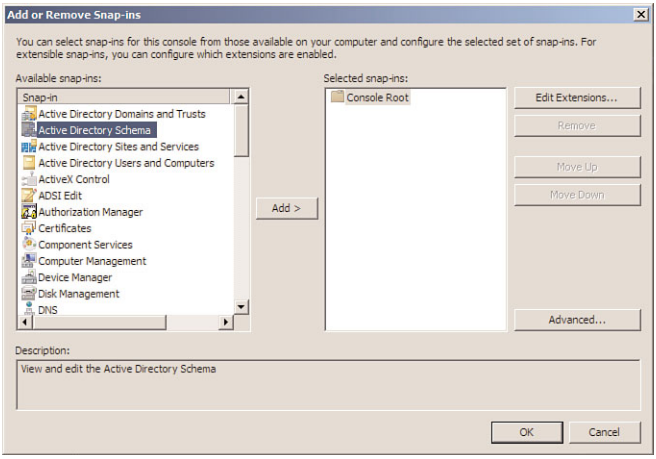


RegSvr32

DllRegisterServer in schmmgmt.dll succeeded.

FIGURE 7.1
`schmmgmt.dll` was registered successfully.

5. Click Start, click Run, type **`mmc /a`**, and click OK.
6. On the File menu, click Add/Remove Snap-In.
7. In the Add or Remove Snap-ins window, shown in Figure 7.2, select Active Directory Schema under Available Snap-ins, click Add, and then click OK. The Active Directory Schema snap-in is added to the MMC console, as shown in Figure 7.3.



Add or Remove Snap-ins

You can select snap-ins for this console from those available on your computer and configure the selected set of snap-ins. For extensible snap-ins, you can configure which extensions are enabled.

Available snap-ins:

- Active Directory Domains and Trusts
- Active Directory Schema
- Active Directory Sites and Services
- Active Directory Users and Computers
- ActiveX Control
- ADSI Edit
- Authorization Manager
- Certificates
- Component Services
- Computer Management
- Device Manager
- Disk Management
- DNS

Selected snap-ins:

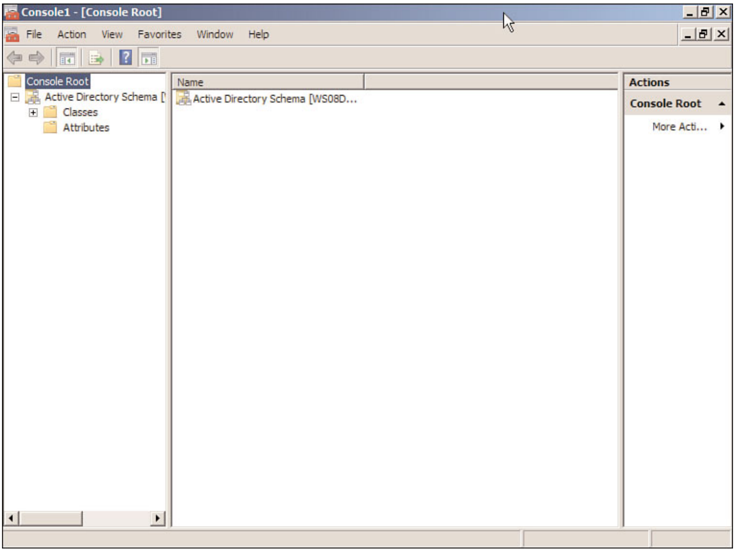
- Console Root

Description:

View and edit the Active Directory Schema

FIGURE 7.2

Adding the Active Directory Schema snap-in to the MMC console.



Console1 - [Console Root]

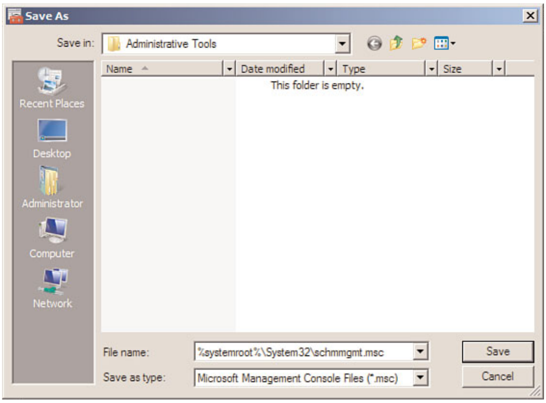
- Console Root
  - Active Directory Schema [
    - Classes
    - Attributes

Name
Active Directory Schema [WS08D...

FIGURE 7.3

The Active Directory Schema snap-in.

8. On the File menu, click Save As.
9. In the Save As window, shown in Figure 7.4, type **`systemroot%\System32\schmmgmt.msc`** in the File name field, and click Save.


Save in: Administrative Tools

This folder is empty.

File name: %systemroot%\System32\schmmgmt.msc

Save as type: Microsoft Management Console Files (*.msc)

FIGURE 7.4
Saving the Active Directory Schema snap-in.

10. Close the console.
11. Right-click Start, and click Open All Users, shown in Figure 7.5.

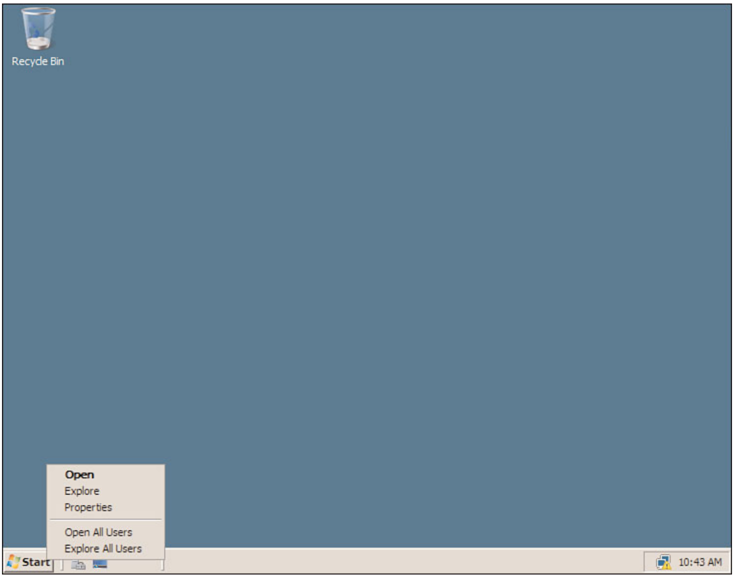
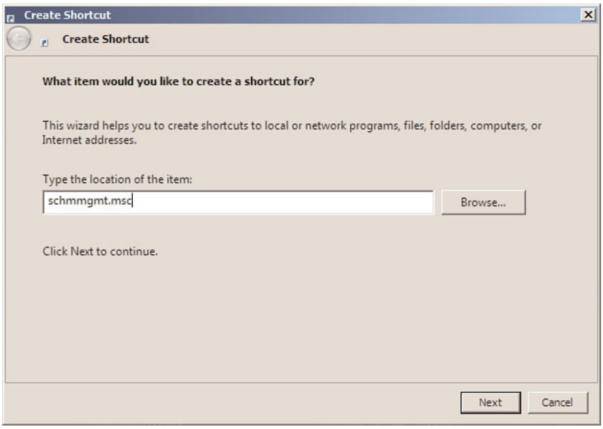


FIGURE 7.5
Selecting Open All Users.

12. Double-click Programs and double-click Administrative Tools.
13. On the File menu, click New; then click Shortcut.
14. In the Create Shortcut Wizard, shown in Figure 7.6, in the Type the Location of the Item box, type **schmmgmt.msc**; then click Next.



What item would you like to create a shortcut for?

This wizard helps you to create shortcuts to local or network programs, files, folders, computers, or Internet addresses.

Type the location of the item: schmmgmt.msc

Click Next to continue.

FIGURE 7.6
The Create Shortcut Wizard.

15. On the Select a Title for the Program page, in the Type a name for this shortcut, type **`Active Directory Schema`**; then click Finish.
16. To verify that the Active Directory Schema shortcut was created successfully, click Start, click Administrative Tools, and verify that Active Directory Schema is listed, as shown in Figure 7.7.

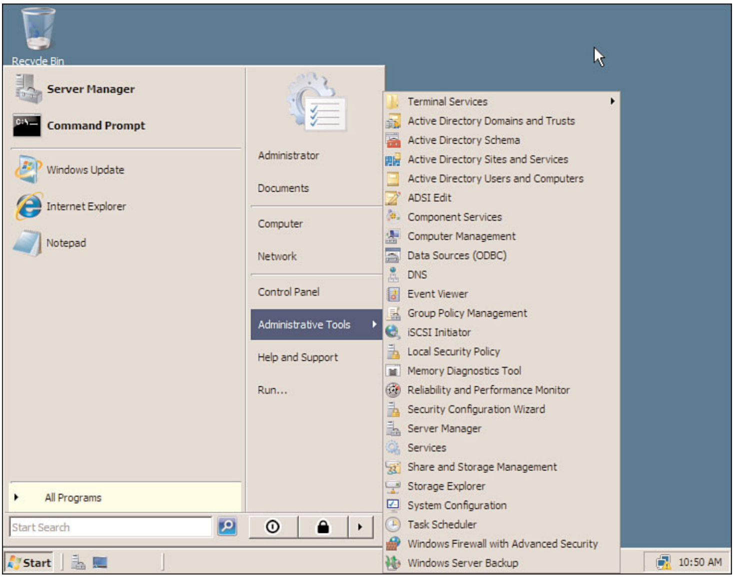


FIGURE 7.7
The Active Directory Schema Snap-in.

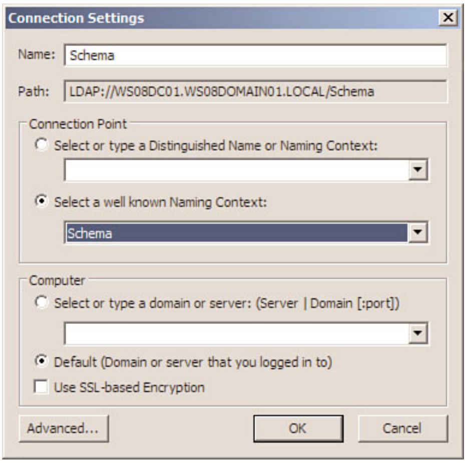
Apply Active Directory Schema Administrative Permissions

Scenario/Problem: You need to modify the default permissions on an attribute or a class in the schema.

Solution: Apply permissions to schema attributes or classes.

To apply Active Directory schema administrative permissions, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click ADSI Edit.
3. In the console tree, right-click the ADSI Edit node and click Connect to.
4. On the Connection Settings window, under Select a well known Naming Context, select Schema, as shown in Figure 7.8; then click OK.



Connection Settings

Name: Schema

Path: LDAP://WS08DC01.WS08DOMAIN01.LOCAL/Schema

Connection Point

○ Select or type a Distinguished Name or Naming Context:

● Select a well known Naming Context:

Schema

Computer

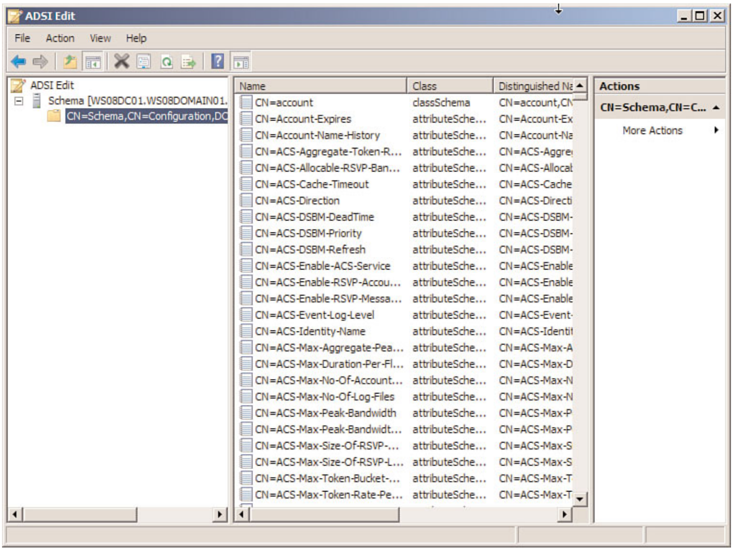
○ Select or type a domain or server: (Server | Domain [:port])

● Default (Domain or server that you logged in to)

□ Use SSL-based Encryption

FIGURE 7.8
Connecting to the schema naming context in ADSI Edit.

5. In the console tree, click the Schema node, expand the Schema node, and then click the node that begins with `CN=Schema,CN=Configuration`, as shown in Figure 7.9.



ADSI Edit

ADSI Edit
Schema [WS08DC01.WS08DOMAIN01.
CN=Schema,CN=Configuration,DC

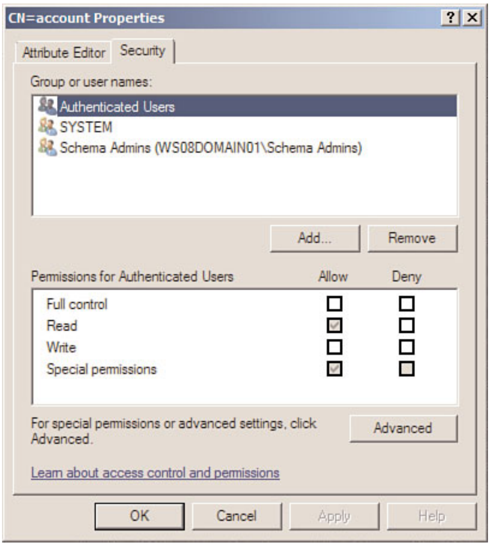
Name	Class	Distinguished Na
CN=account	classSchema	CN=account,CN
CN=Account-Expires	attributeSche...	CN=Account-Ex
CN=Account-Name-History	attributeSche...	CN=Account-Na
CN=ACS-Aggregate-Token-R...	attributeSche...	CN=ACS-Aggre
CN=ACS-Allocable-RSVP-Ban...	attributeSche...	CN=ACS-Allocat
CN=ACS-Cache-Timeout	attributeSche...	CN=ACS-Cache
CN=ACS-Direction	attributeSche...	CN=ACS-Directi
CN=ACS-DSBM-DeadTime	attributeSche...	CN=ACS-DSBM-
CN=ACS-DSBM-Priority	attributeSche...	CN=ACS-DSBM-
CN=ACS-DSBM-Refresh	attributeSche...	CN=ACS-DSBM-
CN=ACS-Enable-ACS-Service	attributeSche...	CN=ACS-Enable
CN=ACS-Enable-RSVP-Accou...	attributeSche...	CN=ACS-Enable
CN=ACS-Enable-RSVP-Messa...	attributeSche...	CN=ACS-Enable
CN=ACS-Event-Log-Level	attributeSche...	CN=ACS-Event-
CN=ACS-Identity-Name	attributeSche...	CN=ACS-Identi
CN=ACS-Max-Aggregate-Pea...	attributeSche...	CN=ACS-Max-A
CN=ACS-Max-Duration-Per-Fl...	attributeSche...	CN=ACS-Max-D
CN=ACS-Max-No-Of-Account...	attributeSche...	CN=ACS-Max-N
CN=ACS-Max-No-Of-Log-Files	attributeSche...	CN=ACS-Max-N
CN=ACS-Max-Peak-Bandwidth	attributeSche...	CN=ACS-Max-P
CN=ACS-Max-Peak-Bandwidt...	attributeSche...	CN=ACS-Max-P
CN=ACS-Max-Size-Of-RSVP-...	attributeSche...	CN=ACS-Max-S
CN=ACS-Max-Size-Of-RSVP-L...	attributeSche...	CN=ACS-Max-S
CN=ACS-Max-Token-Bucket-...	attributeSche...	CN=ACS-Max-T
CN=ACS-Max-Token-Rate-Pe...	attributeSche...	CN=ACS-Max-T

FIGURE 7.9

Viewing the schema naming context in ADSI Edit.

6. In the details pane, right-click the attribute or class to which you want to apply permissions, and click Properties.

7. On the attribute or class properties page, click the Security tab, shown in Figure 7.10.



CN=account Properties

Group or user names:

Authenticated Users
SYSTEM
Schema Admins (WS08DOMAIN01\Schema Admins)

Permissions for Authenticated Users	Allow	Deny
Full control	□	□
Read	☑	□
Write	□	□
Special permissions	☑	□

For special permissions or advanced settings, click Advanced.

FIGURE 7.10

The Attribute and Class Security tab.

8. Modify the permissions according to your requirements and then click OK.

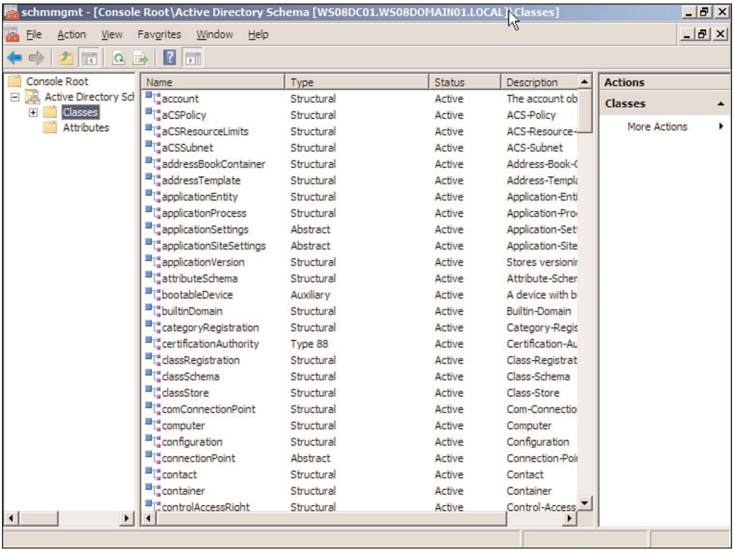
View Schema Class and Attribute Definitions

Scenario/Problem: You need to determine the configuration of a particular attribute or class.

Solution: Use the Active Directory Schema snap-in to view schema class and attribute definitions.

To view schema class and attribute definitions, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema.
4. To view schema class definitions, click the Classes node in the console tree, as shown in Figure 7.11.

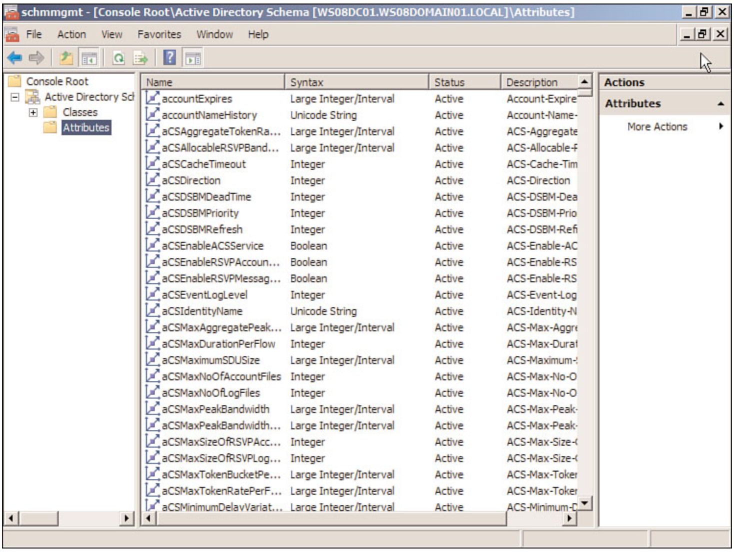


schmmgmt - [Console Root\Active Directory Schema [WS08DC01.WS08DOMAIN01.LOCAL]\Classes]

Name	Type	Status	Description
account	Structural	Active	The account ob
aCSPolicy	Structural	Active	ACS-Policy
aCSResourceLimits	Structural	Active	ACS-Resource-
aCSSubnet	Structural	Active	ACS-Subnet
addressBookContainer	Structural	Active	Address-Book-(
addressTemplate	Structural	Active	Address-Templa
applicationEntity	Structural	Active	Application-Enti
applicationProcess	Structural	Active	Application-Pro
applicationSettings	Abstract	Active	Application-Set
applicationSiteSettings	Abstract	Active	Application-Site
applicationVersion	Structural	Active	Stores versionir
attributeSchema	Structural	Active	Attribute-Scher
bootableDevice	Auxiliary	Active	A device with b
builtinDomain	Structural	Active	Builtin-Domain
categoryRegistration	Structural	Active	Category-Regis
certificationAuthority	Type 88	Active	Certification-Au
classRegistration	Structural	Active	Class-Registrat
classSchema	Structural	Active	Class-Schema
classStore	Structural	Active	Class-Store
comConnectionPoint	Structural	Active	Com-Connectio
computer	Structural	Active	Computer
configuration	Structural	Active	Configuration
connectionPoint	Abstract	Active	Connection-Poi
contact	Structural	Active	Contact
container	Structural	Active	Container
controlAccessRight	Structural	Active	Control-Access

FIGURE 7.11
Classes in the Active Directory Schema snap-in.

5. To view schema attribute definitions, click the Attributes node in the console tree, as shown in Figure 7.12.



Name	Syntax	Status	Description
accountExpires	Large Integer/Interval	Active	Account-Expire
accountNameHistory	Unicode String	Active	Account-Name-
aCSAggregateTokenRa...	Large Integer/Interval	Active	ACS-Aggregate
aCSAllocableRSVPBand...	Large Integer/Interval	Active	ACS-Allocable-F
aCSCacheTimeout	Integer	Active	ACS-Cache-Tim
aCSDirection	Integer	Active	ACS-Direction
aCSDSBMDeadTime	Integer	Active	ACS-DSBM-Dea
aCSDSBMPriority	Integer	Active	ACS-DSBM-Prio
aCSDSBMRefresh	Integer	Active	ACS-DSBM-Refi
aCSEnableACSService	Boolean	Active	ACS-Enable-AC
aCSEnableRSVPAccoun...	Boolean	Active	ACS-Enable-RS
aCSEnableRSVPMessag...	Boolean	Active	ACS-Enable-RS
aCSEventLogLevel	Integer	Active	ACS-Event-Log
aCSIdentityName	Unicode String	Active	ACS-Identity-N
aCSMaxAggregatePeak...	Large Integer/Interval	Active	ACS-Max-Aggre
aCSMaxDurationPerFlow	Integer	Active	ACS-Max-Durat
aCSMaximumSDUSize	Large Integer/Interval	Active	ACS-Maximum-:
aCSMaxNoOfAccountFiles	Integer	Active	ACS-Max-No-O
aCSMaxNoOfLogFiles	Integer	Active	ACS-Max-No-O
aCSMaxPeakBandwidth	Large Integer/Interval	Active	ACS-Max-Peak-
aCSMaxPeakBandwidth...	Large Integer/Interval	Active	ACS-Max-Peak-
aCSMaxSizeOfRSVPAcc...	Integer	Active	ACS-Max-Size-(
aCSMaxSizeOfRSVPLog...	Integer	Active	ACS-Max-Size-(
aCSMaxTokenBucketPe...	Large Integer/Interval	Active	ACS-Max-Toker
aCSMaxTokenRatePerF...	Large Integer/Interval	Active	ACS-Max-Toker
aCSMinimumDelayVariat...	Large Integer/Interval	Active	ACS-Minimum-D

FIGURE 7.12

Attributes in the Active Directory Schema snap-in.

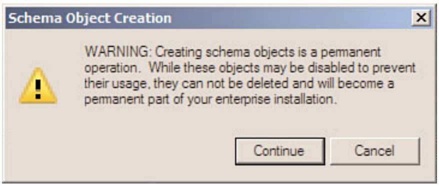
Create Attributes

Scenario/Problem: Your company requires a number of custom attributes in which to store employee information.

Solution: Use the Active Directory Schema snap-in to create attributes in the schema.

To create an attribute, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.
4. On the Action menu, click Create Attribute.
5. On the Schema Object Creation warning, shown in Figure 7.13, click Continue.

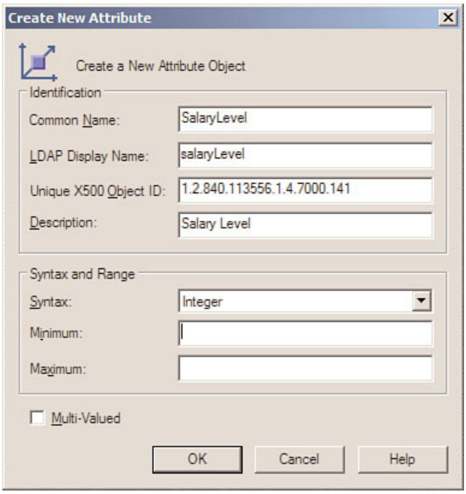


Schema Object Creation

WARNING: Creating schema objects is a permanent operation. While these objects may be disabled to prevent their usage, they can not be deleted and will become a permanent part of your enterprise installation.

FIGURE 7.13
The Schema Object Creation warning box.

6. On the Create New Attribute window, shown in Figure 7.14, do the following:
   - Type a common name in the Common Name field.
   - Type an LDAP display name in the LDAP Display Name field.
   - Type the OID in the Unique X500 Object ID field.
   - Type a description in the Description field, if required.
   - Select the attribute syntax in the Syntax field.
   - Type a minimum acceptable value in the Minimum field, if required.
   - Type a maximum acceptable value in the Maximum field, if required.
   - Select Multi-Valued if the attributed is a multivalued attribute.



Create New Attribute

Create a New Attribute Object

Identification

Common Name: SalaryLevel

LDAP Display Name: salaryLevel

Unique X500 Object ID: 1.2.840.113556.1.4.7000.141

Description: Salary Level

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

☐ Multi-Valued

FIGURE 7.14
The Create New Attribute window.

7. Click OK to create the new attribute.

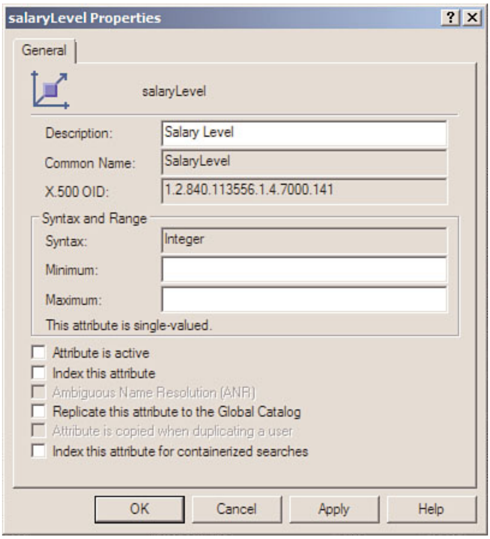
Deactivate Attributes

Scenario/Problem: You previously created a custom attribute that is no longer used.

Solution: Deactivate the attribute using the Active Directory Schema snap-in.

To deactivate an attribute, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you want to deactivate and click Properties.
5. On the attribute's properties page, shown in Figure 7.15, deselect the check box next to Attribute is active.



salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☐ Attribute is active

☐ Index this attribute

☐ Ambiguous Name Resolution (ANR)

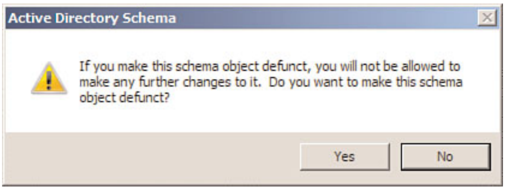
☐ Replicate this attribute to the Global Catalog

☐ Attribute is copied when duplicating a user

☐ Index this attribute for containerized searches

FIGURE 7.15
Deactivating an attribute.

6. On the warning box for making the schema object defunct, shown in Figure 7.16, click Yes.
7. Click OK to save the changes.



Active Directory Schema

If you make this schema object defunct, you will not be allowed to make any further changes to it. Do you want to make this schema object defunct?

FIGURE 7.16
The warning box for making the schema object defunct.

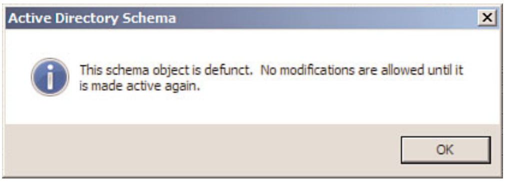
Activate Attributes

Scenario/Problem: You previously deactivated an attribute in the schema.

Solution: Activate the attribute by using the Active Directory Schema snap-in.

To activate an attribute, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you want to activate and click Properties.
5. A notification that the attribute is defunct displays, and no changes are allowed on the object until it is made active again, as shown in Figure 7.17. Click OK.

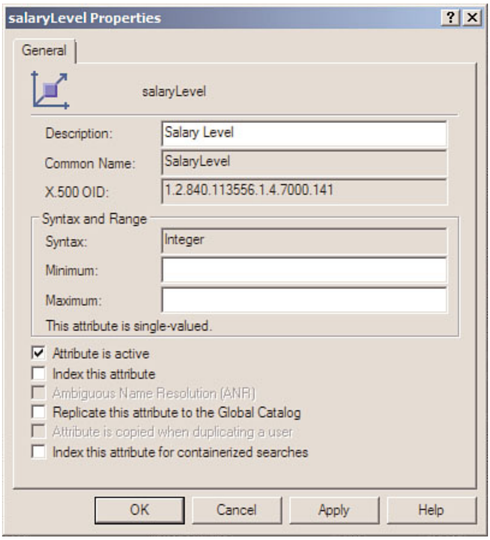


Active Directory Schema

This schema object is defunct. No modifications are allowed until it is made active again.

FIGURE 7.17
The message that the schema object is defunct.

6. On the attribute properties page, select the check box next to Attribute is active, as shown in Figure 7.18.
7. Click OK to save the changes.



salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active

□ Index this attribute

□ Ambiguous Name Resolution (ANR)

□ Replicate this attribute to the Global Catalog

□ Attribute is copied when duplicating a user

□ Index this attribute for containerized searches

FIGURE 7.18
Activating an attribute.

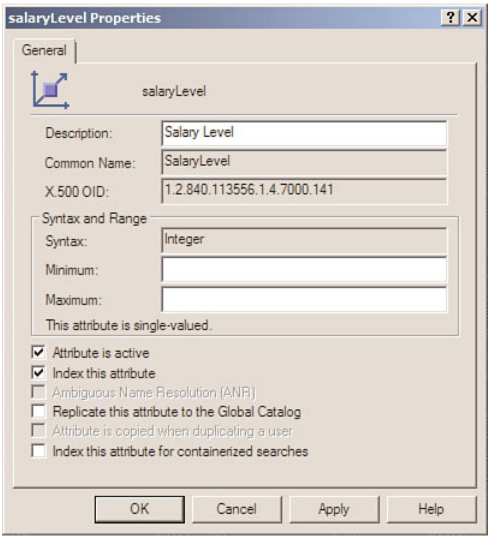
Index Attributes

Scenario/Problem: You have an application that queries users who have a specific value in an attribute. You need to optimize the queries.

Solution: Index the attribute by using the Active Directory Schema snap-in.

To index an attribute, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you want to index and click Properties.
5. On the attribute properties page, select the check box next to Index this attribute, as shown in Figure 7.19.
6. Click OK to save the changes.



salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active

☑ Index this attribute

□ Ambiguous Name Resolution (ANR)

□ Replicate this attribute to the Global Catalog

□ Attribute is copied when duplicating a user

□ Index this attribute for containerized searches

FIGURE 7.19
Indexing an attribute.

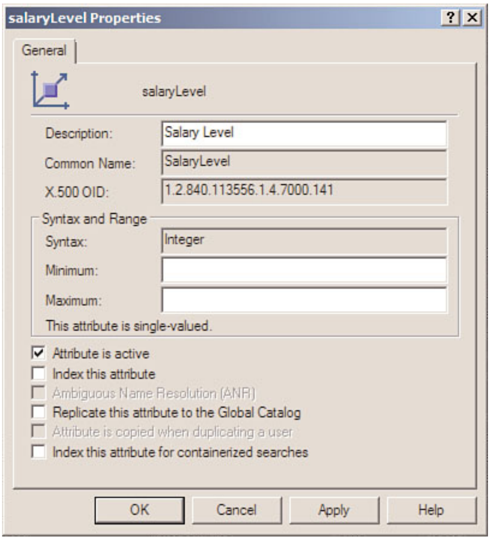
Remove Attributes from the Index

Scenario/Problem: You previously indexed an attribute so that queries responded more quickly; however, this is no longer required.

Solution: Remove the attribute from the index by using the Active Directory Schema snap-in.

To remove an attribute from the index, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you want to remove from the index and click Properties.
5. On the attribute properties page, deselect the check box next to Index this attribute, as shown in Figure 7.20.
6. Click OK to save the changes.



salaryLevel Properties

General

salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active

□ Index this attribute

□ Ambiguous Name Resolution (ANR)

□ Replicate this attribute to the Global Catalog

□ Attribute is copied when duplicating a user

□ Index this attribute for containerized searches

FIGURE 7.20
Removing an attribute from the index.

Add Attributes to Ambiguous Name Resolution Filter

Scenario/Problem: You need to provide clients the capability to search multiple naming-related attributes on objects via a single clause in a search filter. You want a custom naming-related attribute to be searched as well.

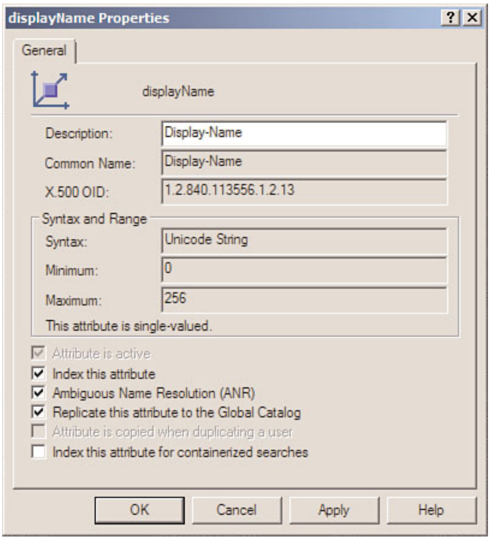
Solution: Add the attribute to the ambiguous name resolution (ANR) filter by using the Active Directory Schema snap-in.

To add attributes to the Ambiguous Name Resolution filter, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you want to add to the ANR filter and click Properties.

NOTE Attributes that use the string syntax, and have been configured to be indexed, can only be added to the ANR filter. You cannot add attributes that use another syntax type, such as integrator or Boolean. Furthermore, the option to add an attribute that uses the string syntax to the ANR filter is limited to indexed attributes.

5. On the attribute properties page, select the check box next to Ambiguous Name Resolution (ANR), as shown in Figure 7.21.



displayName

Description: Display-Name

Common Name: Display-Name

X.500 OID: 1.2.840.113556.1.2.13

Syntax and Range

Syntax: Unicode String

Minimum: 0

Maximum: 256

This attribute is single-valued.

☑ Attribute is active

☑ Index this attribute

☑ Ambiguous Name Resolution (ANR)

☑ Replicate this attribute to the Global Catalog

☐ Attribute is copied when duplicating a user

☐ Index this attribute for containerized searches

FIGURE 7.21
Adding attributes to the ANR filter.

6. Click OK to save the changes.

Remove Attributes from Ambiguous Name Resolution Filter

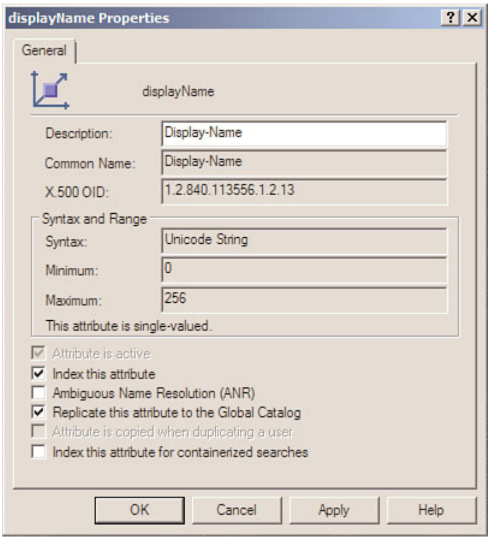
Scenario/Problem: You previously added an attribute to the ANR filter, but you do not need it to be searched.

Solution: Remove the attribute from the ANR filter by using the Active Directory Schema snap-in.

To remove attributes from the Ambiguous Name Resolution filter, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.

4. In the details pane, right-click the attribute you want to remove from the ANR filter and click Properties.
5. On the attribute properties page, deselect the check box next to Ambiguous Name Resolution (ANR), as shown in Figure 7.22.



displayName

Description: Display-Name

Common Name: Display-Name

X.500 OID: 1.2.840.113556.1.2.13

Syntax and Range

Syntax: Unicode String

Minimum: 0

Maximum: 256

This attribute is single-valued.

☑ Attribute is active

☑ Index this attribute

☐ Ambiguous Name Resolution (ANR)

☑ Replicate this attribute to the Global Catalog

☐ Attribute is copied when duplicating a user

☐ Index this attribute for containerized searches

FIGURE 7.22
Removing attributes from the ANR filter.

6. Click OK to save the changes.

Add Attributes to Global Catalog Replication

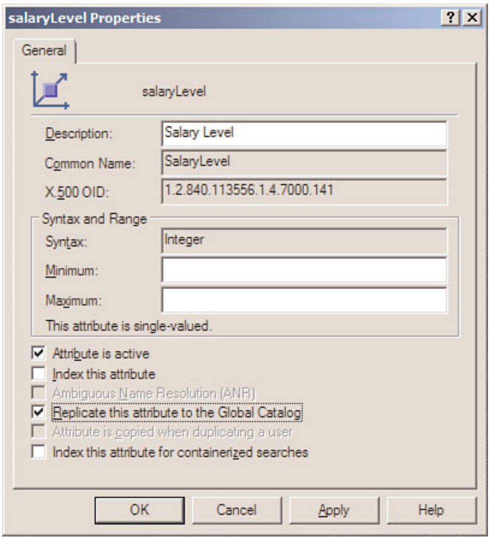
Scenario/Problem: You created a custom attribute in your schema and want users from all domains in the forest to be able to see the values in that attribute.

Solution: Add the attribute to global catalog replication by using the Active Directory Schema snap-in.

To add an attribute to global catalog replication, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.

4. In the details pane, right-click the attribute you want to add to global catalog replication and click Properties.
5. On the attribute properties page, select the check box next to Replicate this attribute to the Global Catalog, as shown in Figure 7.23.



Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active

☐ Index this attribute

☐ Ambiguous Name Resolution (ANR)

☑ Replicate this attribute to the Global Catalog

☐ Attribute is copied when duplicating a user

☐ Index this attribute for containerized searches

FIGURE 7.23
Adding attributes to global catalog replication.

6. Click OK to save the changes.

Remove Attributes from Global Catalog Replication

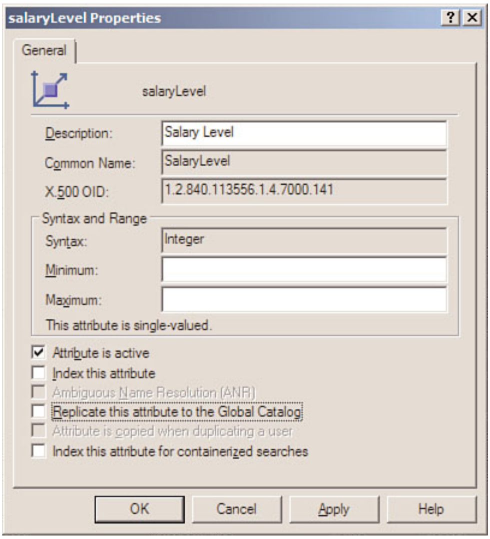
Scenario/Problem: You previously added an attribute to global catalog replication but no longer require this attribute to be replicated to the global catalog.

Solution: Remove the attribute from global catalog replication by using the Active Directory Schema snap-in.

To remove an attribute from global catalog replication, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.

4. In the details pane, right-click the attribute you want to remove from global catalog replication and click Properties.
5. On the attribute properties page, deselect the check box next to Replicate this attribute to the Global Catalog, as shown in Figure 7.24.


salaryLevel Properties

General

salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active
☐ Index this attribute
☐ Ambiguous Name Resolution (ANR)
☐ Replicate this attribute to the Global Catalog
☐ Attribute is copied when duplicating a user
☐ Index this attribute for containerized searches

FIGURE 7.24
Removing attributes from global catalog replication.

6. Click OK to save the changes.

Configure Attributes to Be Copied When Duplicating Users

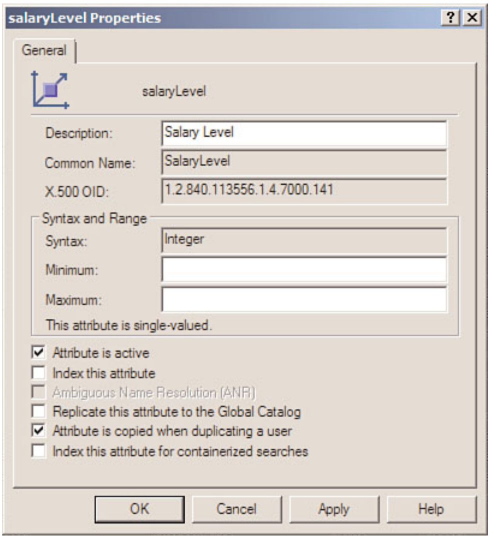
Scenario/Problem: You have a custom attribute you added to your schema and want this attribute to be copied when users are duplicated.

Solution: Configure the attribute to be copied when duplicating users.

To configure an attribute to be copied when duplicating users, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.

3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you want to be copied when duplicating users and click Properties.
5. On the attribute properties page, select the check box next to Attribute is copied when duplicating a user, as shown in Figure 7.25.



salaryLevel Properties

General

salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active

☐ Index this attribute

☐ Ambiguous Name Resolution (ANR)

☐ Replicate this attribute to the Global Catalog

☑ Attribute is copied when duplicating a user

☐ Index this attribute for containerized searches

FIGURE 7.25
Configuring an attribute to be copied when duplicating a user.

6. Click OK to save the changes.

Configure Attributes Not to Be Copied When Duplicating Users

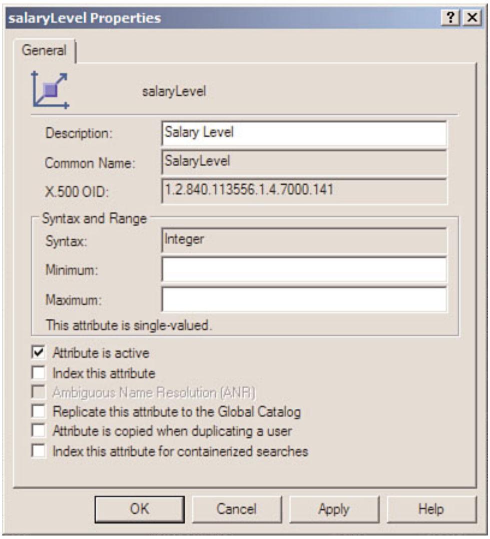
Scenario/Problem: You do not want an attribute to be copied when users are duplicated.

Solution: Configure the attribute not to be copied when duplicating users.

To configure an attribute not to be copied when duplicating users, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.

3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you do not want to be copied when duplicating users and click Properties.
5. On the attribute properties page, deselect the check box next to Attribute is copied when duplicating a user, as shown in Figure 7.26.



salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active

☐ Index this attribute

☐ Ambiguous Name Resolution (ANR)

☐ Replicate this attribute to the Global Catalog

☐ Attribute is copied when duplicating a user

☐ Index this attribute for containerized searches

FIGURE 7.26
Configuring an attribute not to be copied when duplicating a user.

6. Click OK to save the changes.

Configuring Attributes to Be Indexed for Containerized Searches

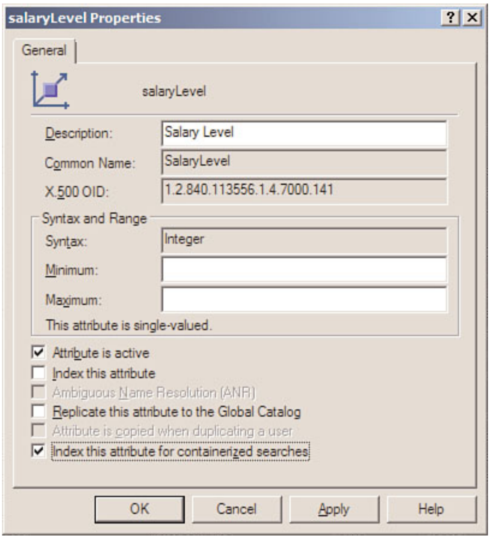
Scenario/Problem: You need to define a search for an attribute located in a specific organizational unit.

Solution: Configure the attribute to be indexed for containerized searches.

To configure an attribute to be indexed for containerized searches, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.

3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you want to be indexed for categorized containerized searches and click Properties.
5. On the attribute properties page, select the check box next to Index this attribute for containerized searches, as shown in Figure 7.27.



salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active
☐ Index this attribute
☐ Ambiguous Name Resolution (ANR)
☐ Replicate this attribute to the Global Catalog
☐ Attribute is copied when duplicating a user
☑ Index this attribute for containerized searches

FIGURE 7.27
Configuring an attribute to be indexed for containerized searches.

6. Click OK to save the changes.

Configuring Attributes Not to Be Indexed for Containerized Searches

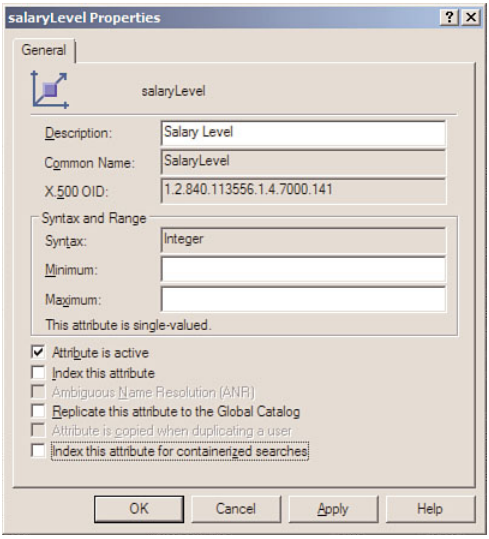
Scenario/Problem: You do not want an attribute to be defined for a search located in a specific organizational unit.

Solution: Configure the attribute not to be indexed for containerized searches.

To configure an attribute not to be indexed for containerized searches, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.

3. In the console tree, expand Active Directory Schema and then click Attributes.
4. In the details pane, right-click the attribute you do not want to be indexed for categorized containerized searches and click Properties.
5. On the attribute properties page, deselect the check box next to Index this attribute for containerized searches, as shown in Figure 7.28.



salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum:

Maximum:

This attribute is single-valued.

☑ Attribute is active

□ Index this attribute

□ Ambiguous Name Resolution (ANR)

□ Replicate this attribute to the Global Catalog

□ Attribute is copied when duplicating a user

□ Index this attribute for containerized searches

FIGURE 7.28
Configuring an attribute not to be indexed for containerized searches.

6. Click OK to save the changes.

Configure Attribute Range

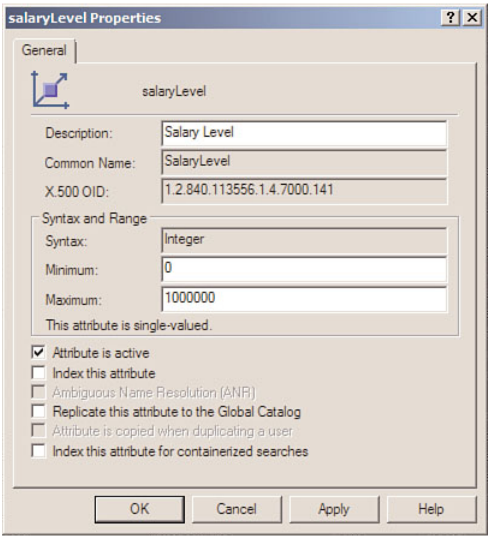
Scenario/Problem: You need to define the upper and lower values an attribute can have.

Solution: Configure the attribute range by using the Active Directory Schema snap-in.

To configure the attribute range, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Attributes.

4. In the details pane, right-click the attribute for which you want to configure the range and click Properties.
5. On the attribute properties page, enter a minimum value in the Minimum field and enter a maximum value in the Maximum field, as shown in Figure 7.29.



salaryLevel

Description: Salary Level

Common Name: SalaryLevel

X.500 OID: 1.2.840.113556.1.4.7000.141

Syntax and Range

Syntax: Integer

Minimum: 0

Maximum: 1000000

This attribute is single-valued.

☑ Attribute is active

□ Index this attribute

□ Ambiguous Name Resolution (ANR)

□ Replicate this attribute to the Global Catalog

□ Attribute is copied when duplicating a user

□ Index this attribute for containerized searches

FIGURE 7.29
Configuring an attribute's range.

6. Click OK to save the changes.

Attribute Range Acceptable Values

The minimum acceptable value is determined by the attribute's syntax. Integer, Large Integer, and Enumeration syntaxes accept negative numbers. For these syntaxes, the smallest value that can be entered is -2,147,483,648. For all other syntaxes, the smallest value that can be entered is 0 (zero).

The maximum acceptable value is determined by the attribute's syntax. If minimum and maximum values are defined, the maximum value must be greater than or equal to the minimum value.

Valid characters for minimum and maximum are 0–9.

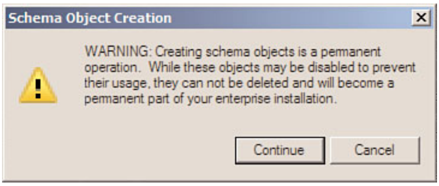
Create Classes

Scenario/Problem: You need to group a number of attributes together.

Solution: Create a class by using the Active Directory Schema snap-in.

To create a class, perform the following steps:

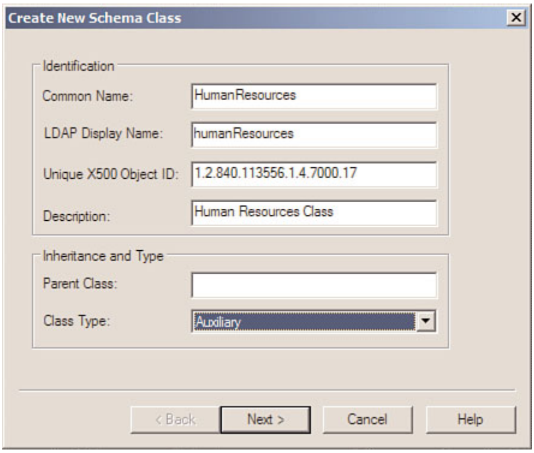
1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Classes.
4. On the Action menu, click Create Class.
5. On the Schema Object Creation warning box, shown in Figure 7.30, click Continue.



WARNING: Creating schema objects is a permanent operation. While these objects may be disabled to prevent their usage, they can not be deleted and will become a permanent part of your enterprise installation.

FIGURE 7.30
The warning box for schema object creation.

6. On the Create New Schema Class window, shown in Figure 7.31, do the following:
   - Type a common name in the Common Name field.
   - Type an LDAP display name in the LDAP Display Name field.
   - Type the OID in the Unique X500 Object ID field.
   - Type a description in the Description field, if required.
   - Type a parent class in the Parent Class field, if required.
   - Select a class type of Structural, Abstract, or Auxiliary in the Class Type field.



Identification

Common Name: HumanResources

LDAP Display Name: humanResources

Unique X500 Object ID: 1.2.840.113556.1.4.7000.17

Description: Human Resources Class

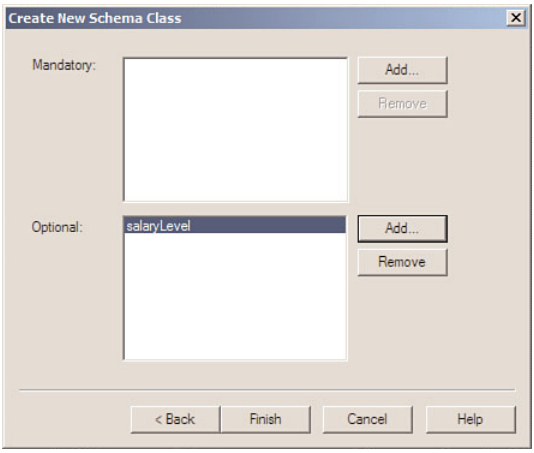
Inheritance and Type

Parent Class:

Class Type: Auxiliary

FIGURE 7.31
The Create New Schema Class window.

7. Click Next.
8. To add mandatory attributes to the class, click Add beside the mandatory field, shown in Figure 7.32, and select the attributes you want to add as mandatory.
9. To add optional attributes to the class, click Add beside the optional field, shown in Figure 7.32, and select the attributes you want to add as mandatory.



Optional: salaryLevel

FIGURE 7.32
The window for adding attributes.

10. Click Finish.

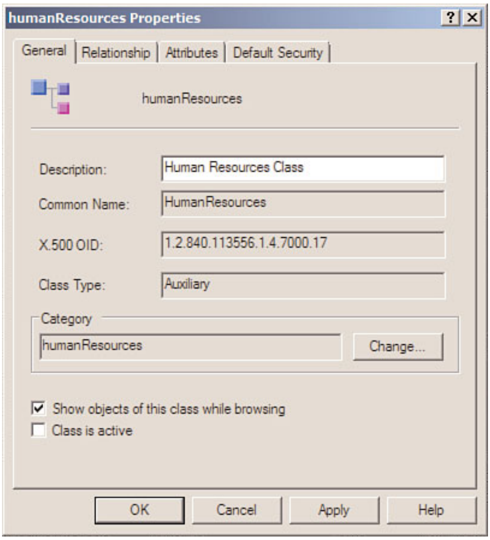
Deactivate Classes

Scenario/Problem: You previously created a class you no longer require.

Solution: Deactivate the class by using the Active Directory Schema snap-in.

To deactivate a class, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Classes.
4. In the details pane, right-click the class you want to deactivate and click Properties.
5. On the class properties page, deselect the check box next to Class is active, as shown in Figure 7.33.



humanResources

Description: Human Resources Class

Common Name: HumanResources

X.500 OID: 1.2.840.113556.1.4.7000.17

Class Type: Auxiliary

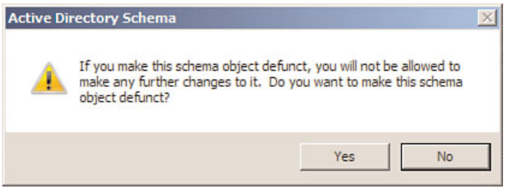
Category: humanResources

☑ Show objects of this class while browsing

☐ Class is active

FIGURE 7.33
Deactivating a class.

6. On the warning box for making a schema object defunct, shown in Figure 7.34, click Yes.



If you make this schema object defunct, you will not be allowed to make any further changes to it. Do you want to make this schema object defunct?

FIGURE 7.34
The warning box for making a schema object defunct.

7. Click OK to save the changes.

Activate Classes

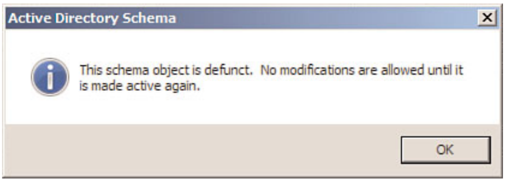
Scenario/Problem: You previously deactivated a class, and now you require it.

Solution: Activate the class by using the Active Directory Schema snap-in.

To activate a class, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.

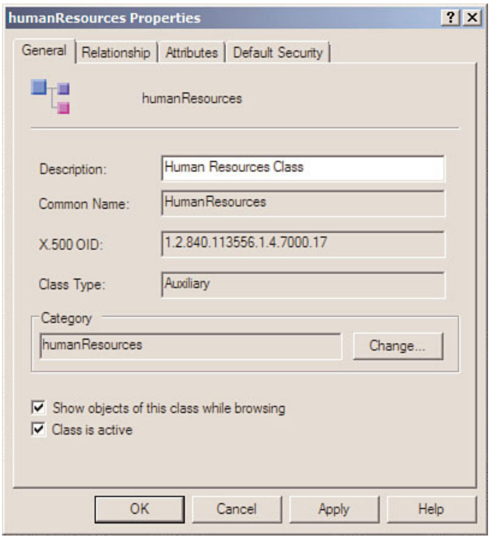
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Classes.
4. In the details pane, right-click the class you want to activate and click Properties.
5. A notification that the class is defunct displays, and no changes are allowed on the object until it is made active again, as shown in Figure 7.35. Click OK.



This schema object is defunct. No modifications are allowed until it is made active again.

FIGURE 7.35
The message that the schema object is defunct.

6. On the class properties page, select the check box next to Class is active, as shown in Figure 7.36.



humanResources

Description: Human Resources Class

Common Name: HumanResources

X.500 OID: 1.2.840.113556.1.4.7000.17

Class Type: Auxiliary

Category: humanResources

☑ Show objects of this class while browsing

☑ Class is active

FIGURE 7.36
Activating a class.

7. Click OK to save the changes.

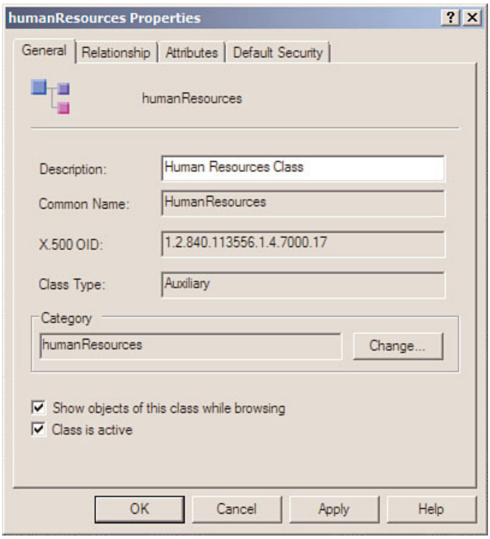
Configure Classes to Be Visible in Advanced View

Scenario/Problem: You want a class to be visible only in advanced view.

Solution: Configure the class to be visible in advanced view by using the Active Directory Schema snap-in.

To configure a class to be visible in advanced view, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Classes.
4. In the details pane, right-click the class you want to make visible in advanced view and click Properties.
5. On the class properties page, select the check box next to Show objects of this class while browsing, as shown in Figure 7.37.



humanResources

Description: Human Resources Class

Common Name: HumanResources

X.500 OID: 1.2.840.113556.1.4.7000.17

Class Type: Auxiliary

Category: humanResources

☑ Show objects of this class while browsing

☑ Class is active

FIGURE 7.37
Configuring a class to be visible in advanced view.

6. Click OK to save the changes.

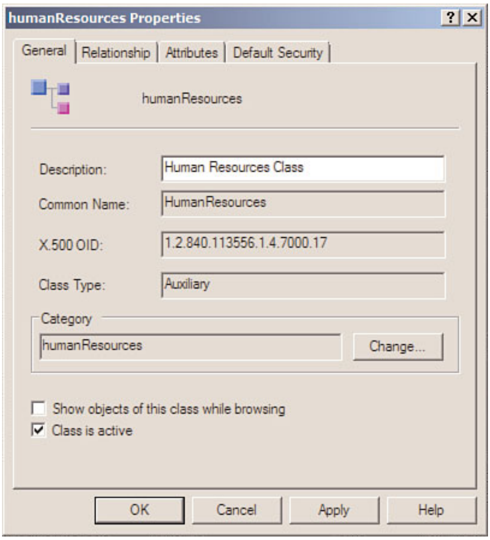
Configure Classes Not to Be Visible in Advanced View

Scenario/Problem: You do not want an attribute to be visible in advanced view.

Solution: Configure the class to not be visible in advanced view by using the Active Directory Schema snap-in.

To configure a class not to be visible in advanced view, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Classes.
4. In the details pane, right-click the class you want to make invisible in advanced view and click Properties.
5. On the class properties page, deselect the check box next to Show objects of this class while browsing, as shown in Figure 7.38.



Description: Human Resources Class

Common Name: HumanResources

X.500 OID: 1.2.840.113556.1.4.7000.17

Class Type: Auxiliary

Category: humanResources Change...

☐ Show objects of this class while browsing

☑ Class is active

FIGURE 7.38
Configuring a class not to be visible in advanced view.

6. Click OK to save the changes.

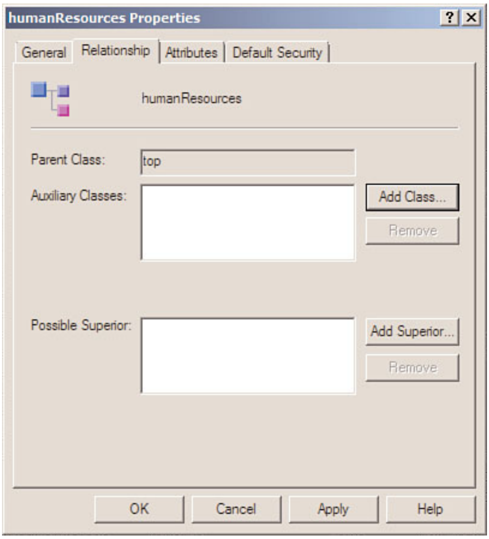
Configure Class Relationships

Scenario/Problem: You want to configure the subclasses of a parent class.

Solution: Configure class relationships by using the Active Directory Schema snap-in.

To configure class relationships, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Classes.
4. In the details pane, right-click the class on which you want to configure the relationship and click Properties.
5. On the class properties page, click the Relationship tab, as shown in Figure 7.39.
6. To add auxiliary classes, click Add Class and select the class you want to add as an auxiliary class.
7. To remove auxiliary classes, click the auxiliary class you want to remove and then click Remove.
8. To add superior classes, click Add Superior.
9. To remove superior classes, click the superior class you want to remove and then click Remove.



humanResources Properties

humanResources

Parent Class: top

Auxiliary Classes:

Possible Superior:

FIGURE 7.39
The Relationship tab.

10. Click OK to save the changes.

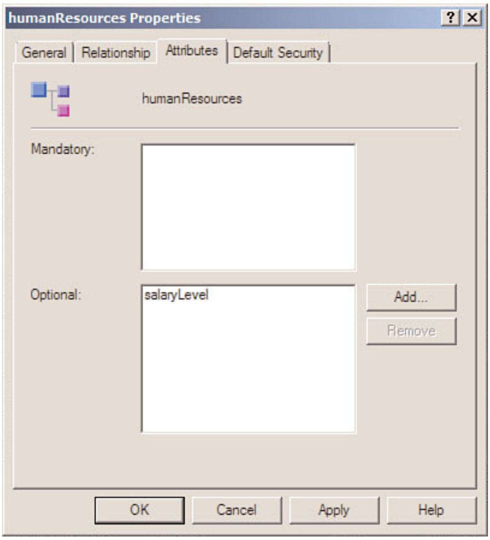
Configure Class Attributes

Scenario/Problem: You do not want to define the mandatory and optional attributes within a class.

Solution: Configure class attributes by using the Active Directory Schema snap-in.

To configure class attributes, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and click Active Directory Schema.
3. In the console tree, expand Active Directory Schema and then click Classes.
4. In the details pane, right-click the class on which you want to configure class attributes and click Properties.
5. On the class properties page, click the Attributes tab, as shown in Figure 7.40.
6. To add optional attributes to the class, click Add and select the attributes you want to add as optional.
7. To remove optional attributes to the class, click the optional attribute you want to remove and then click Remove.



humanResources

Mandatory:

Optional: salaryLevel

FIGURE 7.40
The Attributes tab.

8. Click OK to save the changes.

CHAPTER 8

Manage Active Directory Domain Services Data

IN THIS CHAPTER

- Create User Object
- Delete User Object
- Rename User Object
- Copy User Object
- Move User Object
- Add User to Group
- Disable a User Object
- Enable a User Object
- Reset a User Account Password
- Modify a User Object’s General Properties
- Modify a User Object’s Address Properties
- Modify a User Object’s Account Properties
- Modify a User’s Logon Hours
- Modify the Computers a User Can Log On To
- Modify a User Object’s Profile Properties
- Modify a User’s Object Telephone Properties
- Modify a User’s Object Organization Properties
- Modify a User’s Manager
- View a User Object’s Direct Reports
- Modify a User’s Group Membership
- Modify a User Object’s Dial-in Properties
- Modify a User Object’s Environment Properties
- Modify a User Object’s Sessions Properties

- Modify a User Object's Remote Control Properties
- Modify a User Object's Terminal Services Properties
- Modify a User Object's COM+ Properties
- Modify a User Object's Published Certificates Properties
- View the Password Replication Policies Applied to a User Object
- Modify a User Object's Protection from Deletion Properties
- Modify a User Object's Custom Attributes
- Create a Group Object
- Delete a Group Object
- Rename a Group Object
- Move a Group Object
- Add a Group to a Group
- Modify a Group Object's General Properties
- Modify a Group Object's Scope
- Modify a Group Object's Type
- Modify a Group Object's Members
- Modify a Group Object Managed By Properties
- Modify a Group Object Protection from Deletion
- Modify a Group Object's Custom Attributes
- Create a Computer Object
- Delete a Computer Object
- Move a Computer Object
- Add a Computer to a Group
- Disable a Computer Object
- Enable a Computer Object
- Modify a Computer Object's General Properties
- View a Computer Object's Operating System Properties
- Modify a Computer Object's Delegation Properties
- View the Password Replication Policies Applied to a Computer Object
- Modify a Computer Object's Location Properties
- Modify a Computer Object's Managed By Properties
- Modify a Computer Object's Protection from Deletion
- Modify a Computer Object's Custom Attributes
- Create an Organizational Unit
- Delete an Organizational Unit
- Rename an Organizational Unit
- Move an Organizational Unit
- Modify an Organizational Unit's General Properties
- Modify an Organizational Unit's Managed By Properties
- Modify an Organizational Unit's COM+ Properties
- Modify an Organizational Unit's Protection from Deletion
- Modify an Organizational Unit's Custom Attributes

Each Active Directory Domain Services (AD DS) domain contains data in the form of objects and accounts. Domain data mainly consists of users, groups, computers, and organizational units (OUs).

This chapter describes the steps required to manage the data within the AD DS directory.

Create User Object

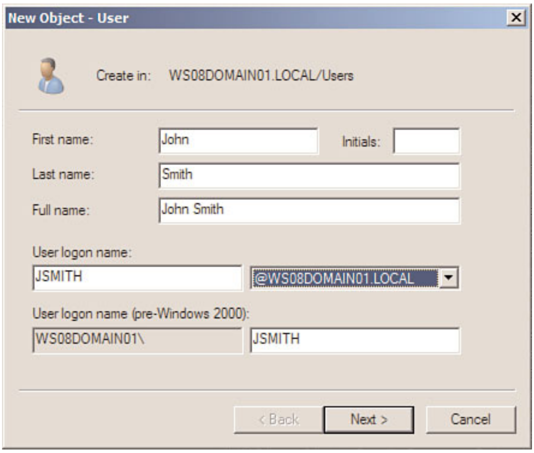
Scenario/Problem: Your employees need to log on to their desktops by using AD DS authentication.

Solution: Create an AD DS user account by using the Windows interface or by using the command line.

Create User Object by Using the Windows Interface

To create user objects by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU or container where want to store the user object, click New, and click User.
4. As shown in Figure 8.1, type the user's first name in the First name field, type the user's initials in the Initials field if required, type the user's last name in the Last name field, type the user's logon name in the User logon name field, and click Next.



New Object - User

Create in: WS08DOMAIN01.LOCAL/Users

First name: John

Initials:

Last name: Smith

Full name: John Smith

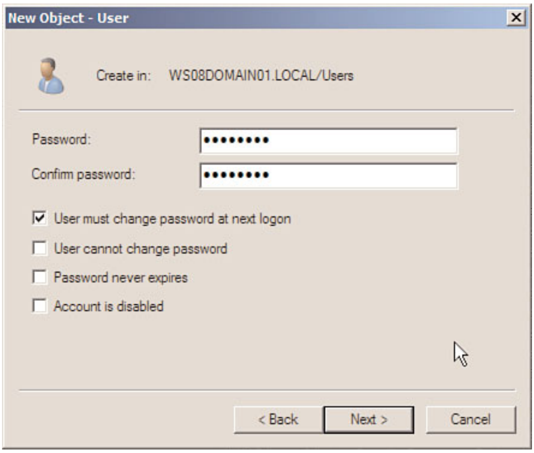
User logon name: JSMITH @WS08DOMAIN01.LOCAL

User logon name (pre-Windows 2000): WS08DOMAIN01\ JSMITH

FIGURE 8.1
The New Object - User account information page.

TIP The Full name and User logon name (pre-Windows 2000) fields are automatically populated by the wizard. You can modify these fields if required.

5. Type a password into the Password and Confirm password fields; then click Next, as shown in Figure 8.2.



Password: ••••••••

Confirm password: ••••••••

☑ User must change password at next logon

☐ User cannot change password

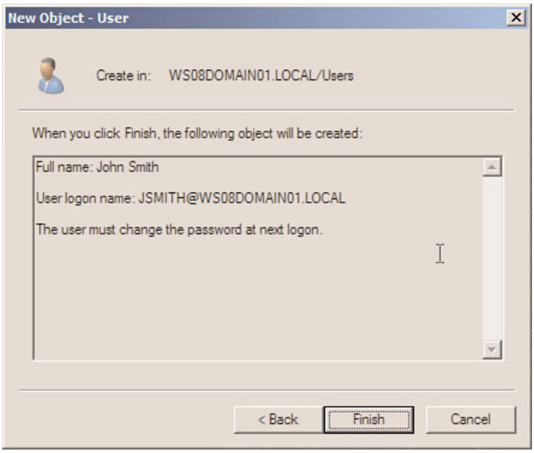
☐ Password never expires

☐ Account is disabled

FIGURE 8.2
The New Object - User account password page.

TIP Password options can be set on this page as well.

6. Confirm the user object options, as shown in Figure 8.3, and click Finish.



When you click Finish, the following object will be created:

Full name: John Smith

User logon name: JSMITH@WS08DOMAIN01.LOCAL

The user must change the password at next logon.

FIGURE 8.3
The New Object - User confirmation page.

Create User Object by Using the Command Line

To create user objects by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

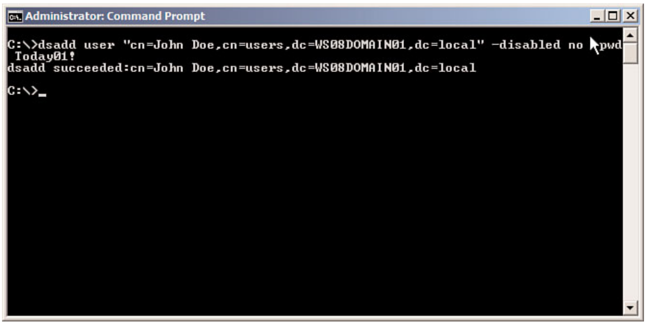
   ```
   Dsadd user "CN=John Doe,CN=Users,DC=WS08DOMAIN01,DC=local" -samid
   JDOE -UPN JDOE@WS08DOMAIN01.LOCAL -disabled NO -pwd Today01!
   ```

   Table 8.1 lists each parameter used in the previous command.

TABLE 8.1 **Parameters to Create User Objects by Using the Command Line**

Parameter	Meaning
`"CN=John Doe,CN=Users,DC=WS08DOMAIN01,DC=local"`	Distinguished name
`-samid`	Pre-Windows 2000 logon name
`-UPN`	User principle name
`-disabled`	Status of user account after creation
`-pwd`	Password

3. Verify that the results of the `dsadd` command entered above returns `dsadd` succeeded, as shown in Figure 8.4.



```
C:\>dsadd user "cn=John Doe,cn=users,dc=WS08DOMAIN01,dc=local" -disabled no -pwd
 Today01!
dsadd succeeded:cn=John Doe,cn=users,dc=WS08DOMAIN01,dc=local

C:\>_
```

FIGURE 8.4
Creating the user object using the command line.

TIP For a full list of `dsadd` user parameters, go to http://technet.microsoft.com/en-us/library/cc731279.aspx.

Delete User Object

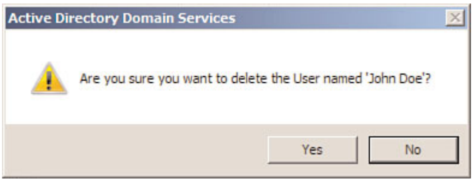
Scenario/Problem: An employee has left your company, and you need to remove the employee's identify from your AD DS environment.

Solution: Delete an AD DS user account by using the Windows interface or the command line.

Delete User Object by Using the Windows Interface

To delete user objects by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user object you want to delete and click Delete.
4. Click Yes on the confirmation page, shown in Figure 8.5.



Are you sure you want to delete the User named 'John Doe'?

FIGURE 8.5
Confirming the user object deletion.

Delete User Object by Using the Command Line

To delete user objects by using the command line, perform the following steps:

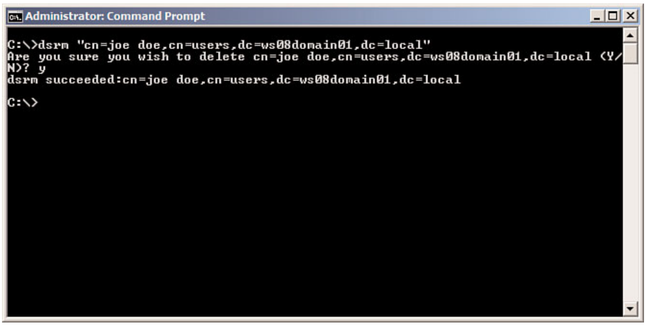
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsrm "CN=John Doe,CN=Users,DC=WS08DOMAIN01,DC=local"
   ```

   (where "*CN=John Doe,CN=Users,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the user object you want to delete).
4. Type **Y** to confirm the deletion and press Enter.

TIP For a full list of `dsrm` parameters, go to http://technet.microsoft.com/en-us/library/cc731865.aspx.

5. Verify that the results of the `dsrm` command entered above returns `dsrm` succeeded, as shown in Figure 8.6.



```
C:\>dsrm "cn=joe doe,cn=users,dc=ws08domain01,dc=local"
Are you sure you wish to delete cn=joe doe,cn=users,dc=ws08domain01,dc=local (Y/
N)? y
dsrm succeeded:cn=joe doe,cn=users,dc=ws08domain01,dc=local

C:\>
```

FIGURE 8.6
Deleting the user object using the command line.

Rename User Object

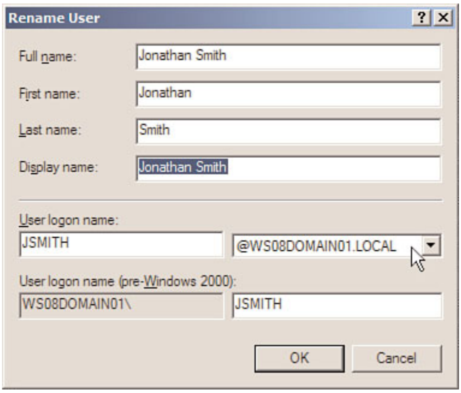
Scenario/Problem: An employee was married recently and her last name has changed.

Solution: Rename an AD DS user account by using the Windows interface or the command line.

Rename User Object by Using the Windows Interface

To rename a user object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user object you want to rename and click Rename.
4. Type the new full name of the user and press Enter.
5. On the Rename User window, shown in Figure 8.7, modify the applicable name fields; then click OK.



Full name: Jonathan Smith

First name: Jonathan

Last name: Smith

Display name: Jonathan Smith

User logon name: JSMITH @WS08DOMAIN01.LOCAL

User logon name (pre-Windows 2000): WS08DOMAIN01\ JSMITH

FIGURE 8.7
The Rename User page.

Rename User Object by Using the Command Line

To rename a user object by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.

NOTE Renaming a user account by using the command line is a two phase process. The first step uses the `dsmod` command to modify the applicable name attributes for the object. The second step uses the `dsmove` command to modify the distinguished name of the object.

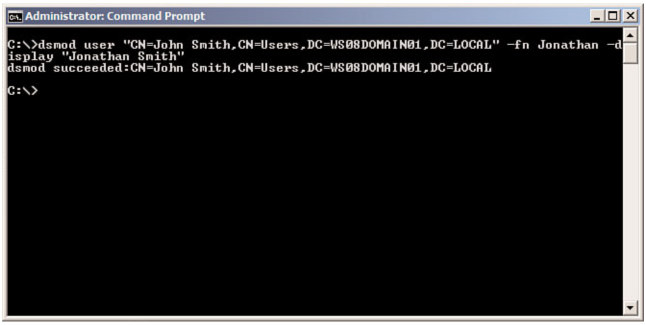
3. In the Command Prompt window, type the following command and press Enter:

```
Dsmod user "CN=John Smith,CN=Users,DC=WS08DOMAIN01,DC=local" -fn
Jonathan -display "Jonathan Smith"
```

(where "*CN=John Smith,CN=Users,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the user, *-fn Jonathan* is the new first name of the user, and *-display "Jonathan Smith"* is the new display name of the user).

TIP For a full list of `dsmod` user parameters, go to http://technet.microsoft.com/en-us/library/cc732954.aspx.

4. Verify that the results of the `dsmod` command entered above returns `dsmod` succeeded, as shown in Figure 8.8.



```
C:\>dsmod user "CN=John Smith,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -fn Jonathan -d
isplay "Jonathan Smith"
dsmod succeeded:CN=John Smith,CN=Users,DC=WS08DOMAIN01,DC=LOCAL

C:\>
```

FIGURE 8.8
Modifying the user's name using the command line.

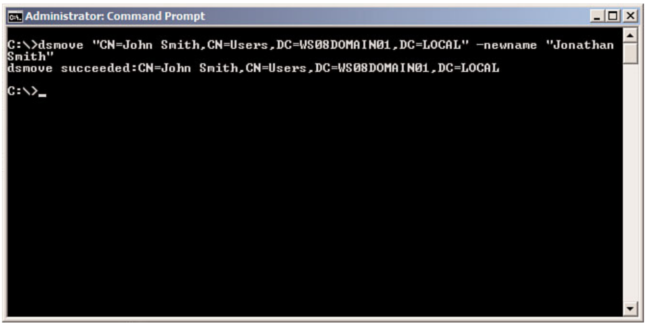
5. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsmove  "CN=John Smith,CN=Users,DC=WS08DOMAIN01,DC=local" -newname
   "Jonathan Smith"
   ```

   (where `"CN=John Smith,CN=Users,DC=WS08DOMAIN01,DC=local"` is the distinguished name of the user, `-fn Jonathan` is the new first name of the user, and `-display "Jonathan Smith"` is the new display name of the user).

6. Verify that the results of the `dsmove` command entered above returns `dsmove` succeeded, as shown in Figure 8.9.

TIP For a full list of `dsmove` parameters, go to http://technet.microsoft.com/en-us/library/cc731094.aspx.



```
C:\>dsmove "CN=John Smith,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -newname "Jonathan
Smith"
dsmove succeeded:CN=John Smith,CN=Users,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.9
Renaming the user using the command line.

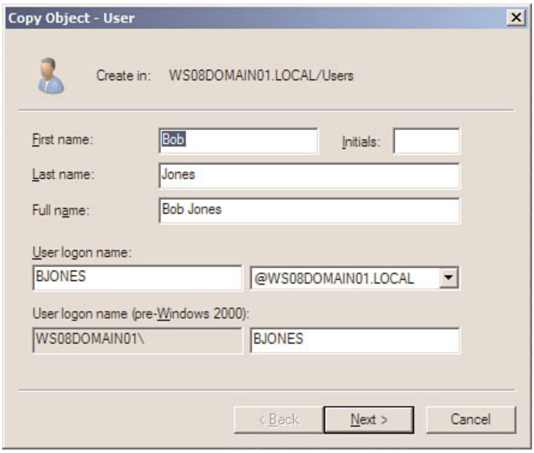
Copy User Object

Scenario/Problem: A new employee has been hired and requires the same access as his counterpart.

Solution: Copy an AD DS user account.

To copy a user object, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user object you want to copy and click Copy.
4. On the Copy Object – User page, shown in Figure 8.10, type the user's first name in the First name field, type the user's initials in the Initials field if required, type the user's last name in the Last name field, type the user's logon name in the User logon name field, and click Next.



Copy Object - User

Create in: WS08DOMAIN01.LOCAL/Users

First name: Bob

Initials:

Last name: Jones

Full name: Bob Jones

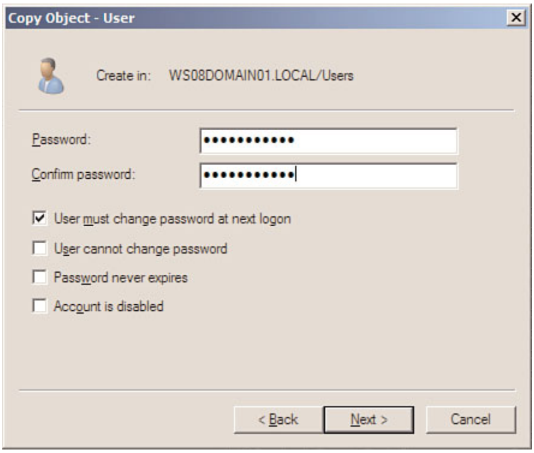
User logon name: BJONES @WS08DOMAIN01.LOCAL

User logon name (pre-Windows 2000): WS08DOMAIN01\ BJONES

FIGURE 8.10
The Copy Object - User account information page.

TIP The Full name and User logon name (pre-Windows 2000) fields are automatically populated by the wizard. You can modify these fields if required.

5. Type a password into the Password and Confirm password fields as shown in Figure 8.11, and click Next.



Password: ●●●●●●●●●●●●

Confirm password: ●●●●●●●●●●●●

☑ User must change password at next logon

☐ User cannot change password

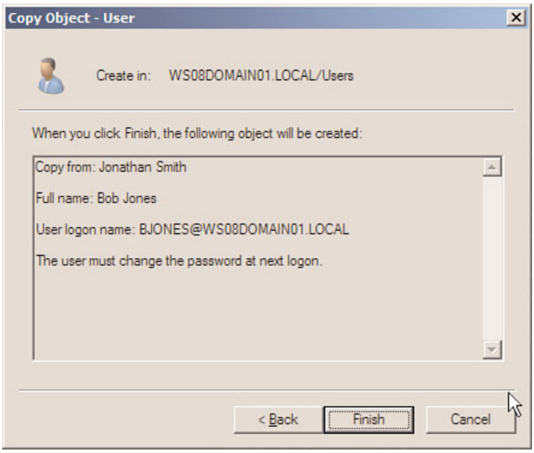
☐ Password never expires

☐ Account is disabled

FIGURE 8.11
The Copy Object - User account password page.

TIP Password options can be set on this page as well.

6. Confirm the user object options, as shown in Figure 8.12, and click Finish.



When you click Finish, the following object will be created:

Copy from: Jonathan Smith

Full name: Bob Jones

User logon name: BJONES@WS08DOMAIN01.LOCAL

The user must change the password at next logon.

FIGURE 8.12
Copy Object – User confirmation page.

Move User Object

Scenario/Problem: Your company's AD DS logical design uses OUs to group employees by region. An employee has moved offices.

Solution: Move an AD DS user account by using the Windows interface or by using the command line.

Move User Object by Using the Windows Interface

To move a user object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user object you want to move and click Move.
4. On the Move window, shown in Figure 8.13, select the OU or container to which you want to move the user object; then click OK.

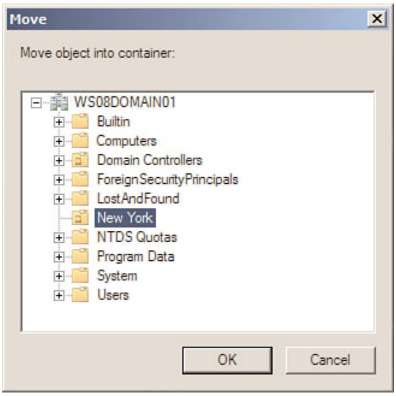


FIGURE 8.13
The Move object window.

Move User Object by Using the Command Line

To move a user object by using the command line, perform the following steps:

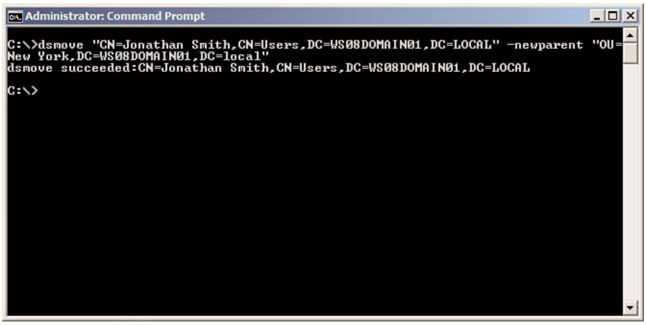
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

```
Dsmove  "CN=Jonathan Smith,CN=Users,DC=WS08DOMAIN01,DC=local"
-newparent "OU=New York,DC=WS08DOMANI01,DC=local"
```

(where "*CN=Jonathan Smith,CN=Users,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the user and "*OU=New York,DC=WS08DOMANI01,DC=local*" is the location to which you want to move the user).

4. Verify that the results of the `dsmove` command entered above returns `dsmove` succeeded, as shown in Figure 8.14.

TIP For a full list of `dsmove` parameters, go to http://technet.microsoft.com/en-us/library/cc731094.aspx.



```
C:\>dsmove "CN=Jonathan Smith,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -newparent "OU=
New York,DC=WS08DOMAIN01,DC=local"
dsmove succeeded:CN=Jonathan Smith,CN=Users,DC=WS08DOMAIN01,DC=LOCAL

C:\>
```

FIGURE 8.14
Moving a user using the command line.

Add User to Group

Scenario/Problem: Your company has an application that uses AD DS groups to grant access to the application. You need to provide an employee with access to the application.

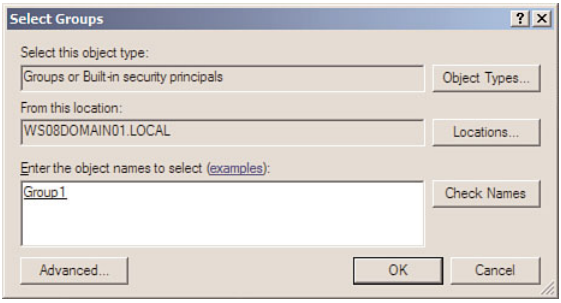
Solution: Add an AD DS user account to a group by using the Windows interface or by using the command line.

Add User to Group by Using the Windows Interface

To add a user to a group by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.

3. In the details pane, right-click the user object you want to add to the group and click Add to a group.
4. In the Select Groups window, shown in Figure 8.15, enter the name of the group to which you want to add the user, click Check Names, and click OK.



Select this object type:
Groups or Built-in security principals

From this location:
WS08DOMAIN01.LOCAL

Enter the object names to select (examples):
Group1

FIGURE 8.15
Adding a user to a group using the Windows interface.

Add User to Group by Using the Command Line

To add a user to a group by using the command line, perform the following steps:

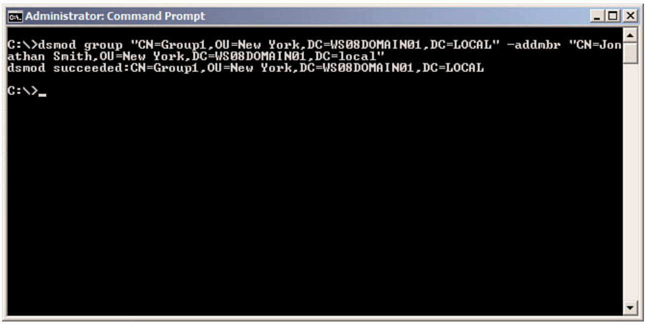
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

```
Dsmod group "CN=Group1,OU=New York,DC=WS08DOMAIN01,DC=local"
-addmbr "CN=Jonathan Smith,CN=Users,DC=WS08DOMAIN01,DC=local"
```

   (where "*CN=Group1,OU=New York,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the group and "*CN=Jonathan Smith,CN=Users,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the user that you want to add to the group).

4. Verify that the results of the `dsmod` group command entered above returns `dsmod` succeeded, as shown in Figure 8.16.

TIP For a full list of `dsmod` group parameters, go to http://technet.microsoft.com/en-us/library/cc732423.aspx.



```
C:\>dsmod group "CN=Group1,OU=New York,DC=WS08DOMAIN01,DC=LOCAL" -addmbr "CN=Jon
athan Smith,OU=New York,DC=WS08DOMAIN01,DC=local"
dsmod succeeded:CN=Group1,OU=New York,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.16
Adding a user to a group using the command line.

Disable a User Object

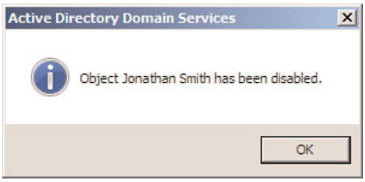
Scenario/Problem: An employee has left for maternity leave, and you need to ensure her account cannot be used until she returns.

Solution: Disable an AD DS user account by using the Windows interface or by using the command line.

Disable User Object by Using the Windows Interface

To disable a user object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user object you want to disable and click Disable Account.
4. Verify the status message that indicates the account was disabled, as shown in Figure 8.17.



Active Directory Domain Services

Object Jonathan Smith has been disabled.

FIGURE 8.17
Disabling a user object using the Windows interface.

Disable a User Object by Using the Command Line

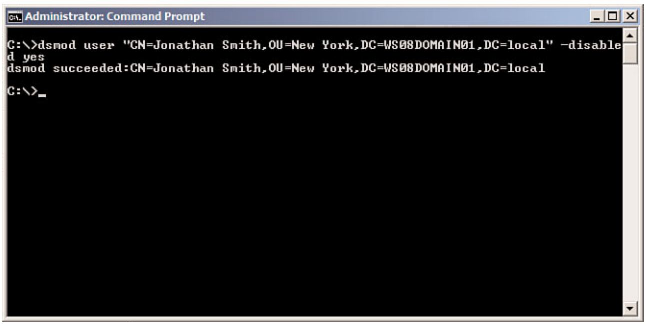
To disable a user object by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsmod user "CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local"
   -disabled yes
   ```

   (where "*CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the user that you want to disable).
4. Verify that the results of the dsmod user command entered above returns dsmod succeeded, as shown in Figure 8.18.

TIP For a full list of dsmod user parameters, go to http://technet.microsoft.com/en-us/library/cc732954.aspx.



Administrator: Command Prompt

```
C:\>dsmod user "CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local" -disable
d yes
dsmod succeeded:CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local

C:\>_
```

FIGURE 8.18
Disabling a user object using the command line.

Enable a User Object

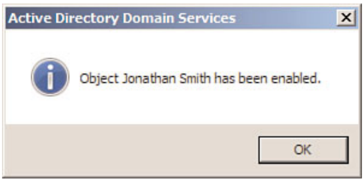
Scenario/Problem: An employee who was away on maternity leave has returned to work.

Solution: Enable an AD DS user account by using the Windows interface or by using the command line.

Enable User Object by Using the Windows Interface

To enable a user object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user object you want to enable and click Enable Account.
4. Verify the status message that indicates the account was enabled, as shown in Figure 8.19.



Active Directory Domain Services

Object Jonathan Smith has been enabled.

FIGURE 8.19
Enabling a user object using the Windows interface.

Enable User Object by Using the Command Line

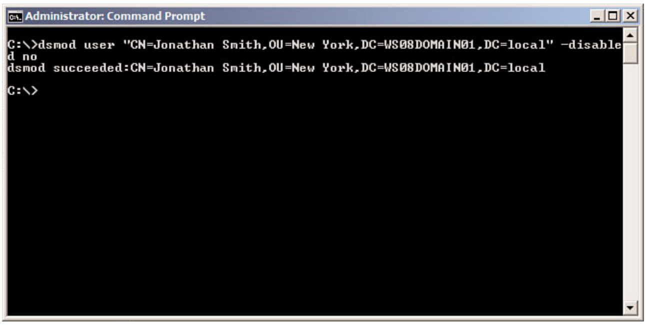
To enable a user object by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsmod user "CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local"
   -disabled no
   ```

   (where "*CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the user you want to enable).
4. Verify that the of results the `dsmod` user command entered above returns `dsmod` succeeded, as shown in Figure 8.20.

TIP For a full list of `dsmod` user parameters, go to http://technet.microsoft.com/en-us/library/cc732954.aspx.



```
C:\>dsmod user "CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local" -disable
d no
dsmod succeeded:CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local

C:\>
```

FIGURE 8.20
Enabling a user object using the command line.

Reset a User Account Password

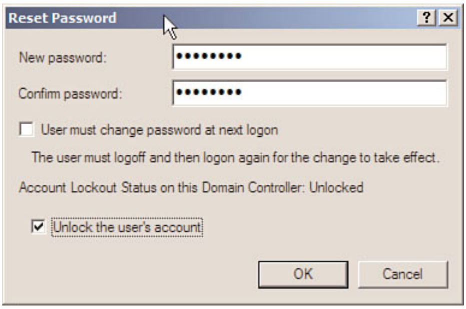
Scenario/Problem: An employee recently changed his password, but he cannot remember what his new password is.

Solution: Reset an AD DS user account password by using the Windows interface or by using the command line.

Reset a User Account Password by Using the Windows Interface

To reset a user account password by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account on which you want to reset the password; then click Reset Password.
4. In the Reset Password window, shown in Figure 8.21, type a password in the Password and Confirm password fields, specify whether the user must change his password at next logon, specify whether the user account should be unlocked, and click OK.



Reset Password

New password: ••••••••

Confirm password: ••••••••

☐ User must change password at next logon

The user must logoff and then logon again for the change to take effect.

Account Lockout Status on this Domain Controller: Unlocked

☑ Unlock the user's account

FIGURE 8.21
Resetting a user account password using the Windows interface.

Reset a User Account Password by Using the Command Line

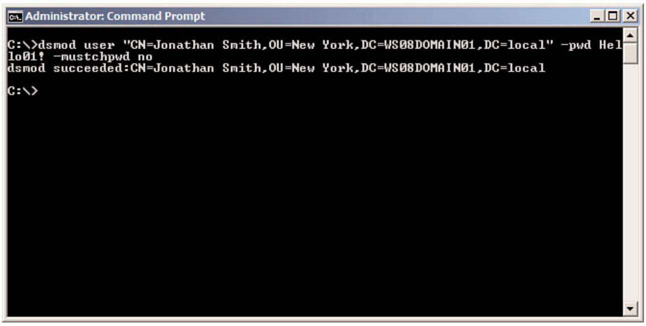
To reset a user account password by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsmod user "CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local"
   -pwd Hello01! -mustchpwd no
   ```

   (where "*CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the user for which you want to reset the password, *-pwd* is the new password, and *-mustchpwd* specifies whether the user must change his password at next logon).
4. Verify that the results of the dsmod user command entered above returns dsmod succeeded, as shown in Figure 8.22.

TIP For a full list of dsmod user parameters, go to http://technet.microsoft.com/en-us/library/cc732954.aspx.



```
C:\>dsmod user "CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local" -pwd Hel
lo01! -mustchpwd no
dsmod succeeded:CN=Jonathan Smith,OU=New York,DC=WS08DOMAIN01,DC=local

C:\>
```

FIGURE 8.22
Resetting a user account password using the command line.

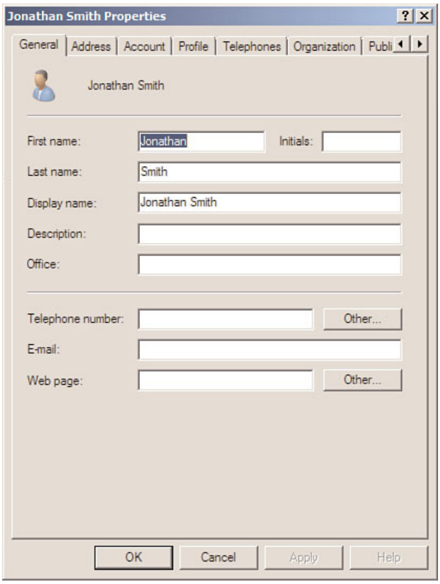
Modify a User Object's General Properties

Scenario/Problem: Your company uses the description field on AD DS user objects to identify to which business unit a user belongs.

Solution: Modify a user object's general properties.

To modify a user object's general properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify, and click Properties.
4. Click the General tab, shown in Figure 8.23.



First name: Jonathan

Initials:

Last name: Smith

Display name: Jonathan Smith

FIGURE 8.23
Modifying a user object's general properties.

5. Modify the applicable properties, and then click OK.

Modify a User Object’s Address Properties

Scenario/Problem: Your company stores address information on user objects in AD DS. An employee has recently changed offices.

Solution: Modify a user object’s address properties.

To modify a user object’s address properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify, and click Properties.
4. Click the Address tab, shown in Figure 8.24.

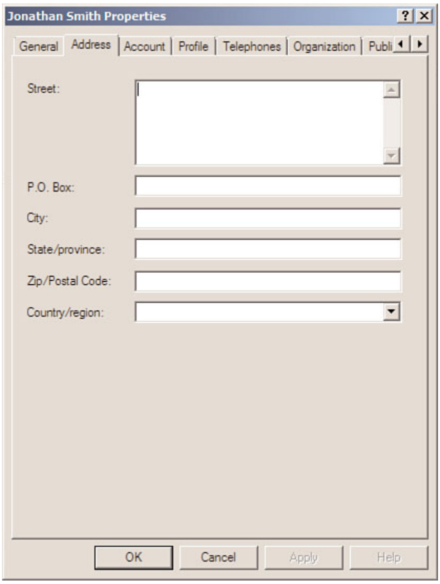


FIGURE 8.24
Modifying a user object’s general properties.

5. Modify the applicable properties, and then click OK.

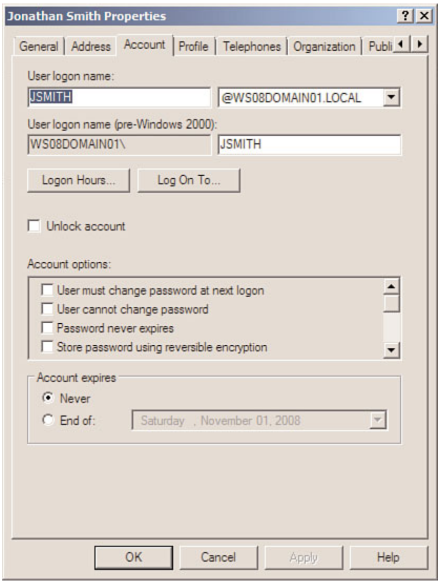
Modify a User Object’s Account Properties

Scenario/Problem: You need to force a user to change her password the next time she logs on.

Solution: Modify a user object’s account properties.

To modify a user object’s account properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify, and click Properties.
4. Click the Account tab, shown in Figure 8.25.



User logon name: JSMITH @WS08DOMAIN01.LOCAL

User logon name (pre-Windows 2000): WS08DOMAIN01\ JSMITH

□ Unlock account

Account options:

- □ User must change password at next logon
- □ User cannot change password
- □ Password never expires
- □ Store password using reversible encryption

Account expires

- ● Never
- ○ End of: Saturday , November 01, 2008

FIGURE 8.25
Modifying a user object’s account properties.

5. Modify the applicable properties, and then click OK.

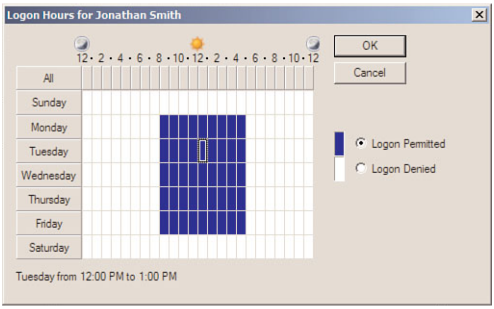
Modify a User’s Logon Hours

Scenario/Problem: You need to prevent a user from logging on outside of business hours.

Solution: Modify user logon hours.

To modify a user object’s logon hours, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify, and click Properties.
4. Click the Account tab.
5. Click Logon Hours. The Logon Hours properties window will open, as shown in Figure 8.26.
6. To deny a user from logging on during a particular day and/or time, select the days and/or time, click the Logon Denied radio button, and then click OK.
7. To allow a user to log on during a particular day and/or time, select the days and/or time, click the Logon Permitted radio button, and then click OK.
8. Click OK to save the account changes.



Logon Hours for Jonathan Smith

● Logon Permitted

○ Logon Denied

Tuesday from 12:00 PM to 1:00 PM

FIGURE 8.26
Modifying a user’s logon hours.

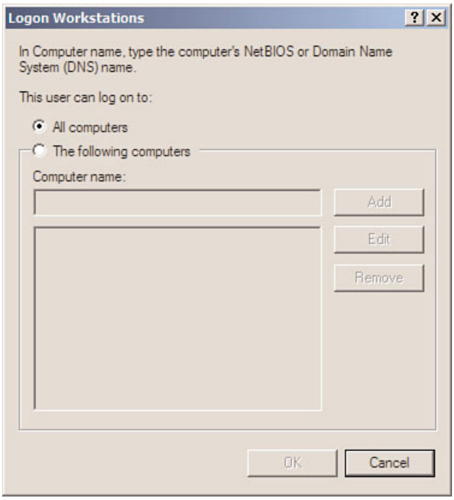
Modify the Computers a User Can Log On To

Scenario/Problem: You need to limit a particular user to log on to a single computer.

Solution: Modify the computers a user can log on to.

To modify the computers that a user can log on to, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify, and click Properties.
4. Click the Account tab.
5. Click Log On To. The Logon Workstations window will open, as shown in Figure 8.27.
6. To allow the user to log on to all computers, select All Computers and click OK.



Logon Workstations

In Computer name, type the computer's NetBIOS or Domain Name System (DNS) name.

This user can log on to:

● All computers

○ The following computers

Computer name:

FIGURE 8.27
Allowing a user to log on to all computers.

TIP By default, users are allowed to log on to all computers.

7. To restrict the user to log on to specific computers, select The following computers, type the computer name in the Computer name field, click Add, and then click OK.
8. Click OK to save the account changes.

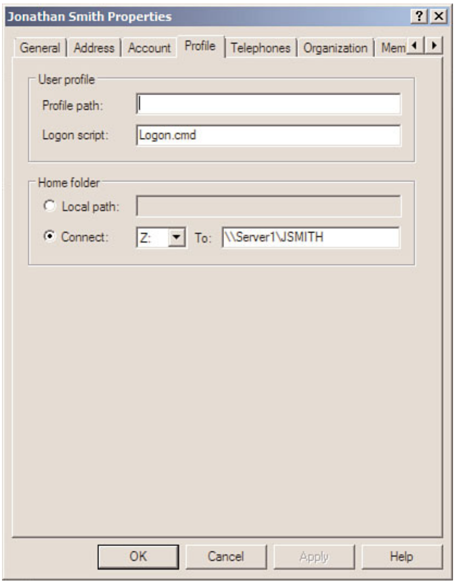
Modify a User Object's Profile Properties

Scenario/Problem: You created a logon script that should be run each time a user logs on.

Solution: Modify a user object's profile properties.

To modify a user object's profile properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the deails pane, right-click the user account you want to modify and click Properties.
4. Click the Profile tab, shown in Figure 8.28.



Jonathan Smith Properties

User profile

Profile path:

Logon script: Logon.cmd

Home folder

○ Local path:

● Connect: Z: To: \\Server1\JSMITH

FIGURE 8.28
Modifying a user's object profile properties.

5. Modify the applicable properties, and then click OK.

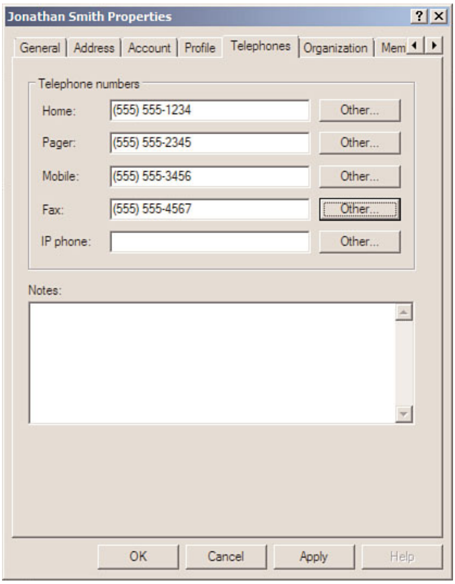
Modify a User's Object Telephone Properties

Scenario/Problem: The phone number for an employee was recently changed.

Solution: Modify a user object's telephone properties.

To modify a user object's telephone properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify and click Properties.
4. Click the Telephones tab, shown in Figure 8.29.



Home: (555) 555-1234

Pager: (555) 555-2345

Mobile: (555) 555-3456

Fax: (555) 555-4567

IP phone:

FIGURE 8.29
Modifyinjg a user's object telephone properties.

5. Modify the applicable properties, and then click OK.

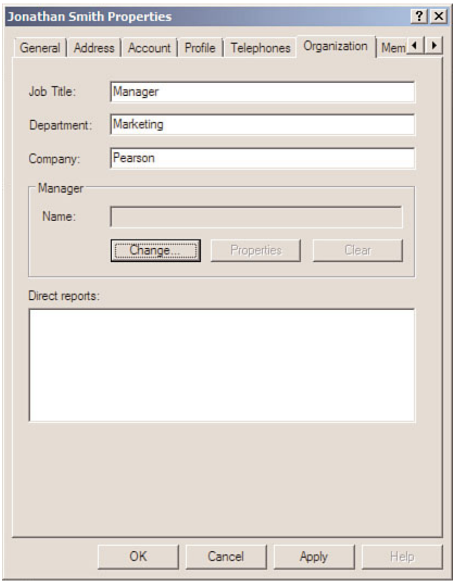
Modify a User's Object Organization Properties

Scenario/Problem: Your company stores job title information for each employee in AD DS. An employee recently changed jobs and has a new title.

Solution: Modify a user object's organization properties.

To modify a user object's organization properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the user account you want to modify; then click Properties.
4. Click the Organization tab, shown in Figure 8.30.


Jonathan Smith Properties

Job Title: Manager

Department: Marketing

Company: Pearson

FIGURE 8.30
Modifying a user's object organization properties.

5. Modify the applicable properties, and then click OK.

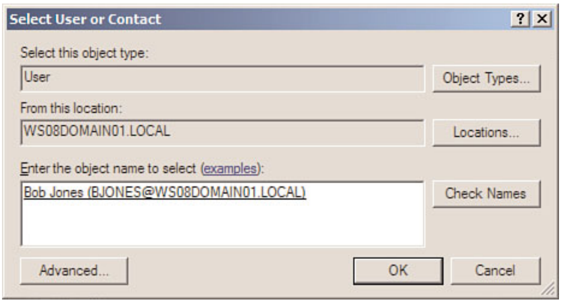
Modify a User's Manager

Scenario/Problem: Your company stores manager information for each employee using AD DS. An employee recently moved to another team and has a new manager.

Solution: Modify a user's manager.

To modify a user object's manager, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify and click Properties.
4. Click the Organization tab.
5. Click the Change button under the Manager section.
6. On the Select User or Contact window, shown in Figure 8.31, type the name of the user's manager, click Check Names, and click OK.


Select User or Contact

Select this object type:
User

From this location:
WS08DOMAIN01.LOCAL

Enter the object name to select (examples):
Bob Jones (BJONES@WS08DOMAIN01.LOCAL)

FIGURE 8.31
Modifying a user's manager.

7. Click OK to save the changes.

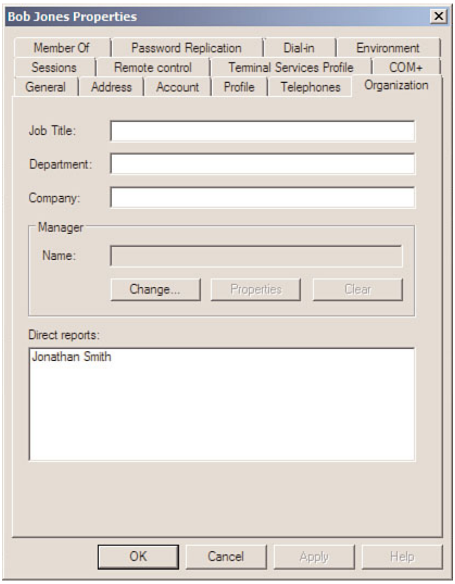
View a User Object's Direct Reports

Scenario/Problem: Your company stores manager information for each employee using AD DS. You need to determine all the individuals who report to a particular manager.

Solution: View a user object's direct reports.

To view a user object's direct reports, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to view and click Properties.
4. Click the Organization tab.
5. The user's direct reports are listed under the Direct Reports section, as shown in Figure 8.32.



Jonathan Smith

FIGURE 8.32
Viewing a user's direct reports.

6. Click OK to save the changes.

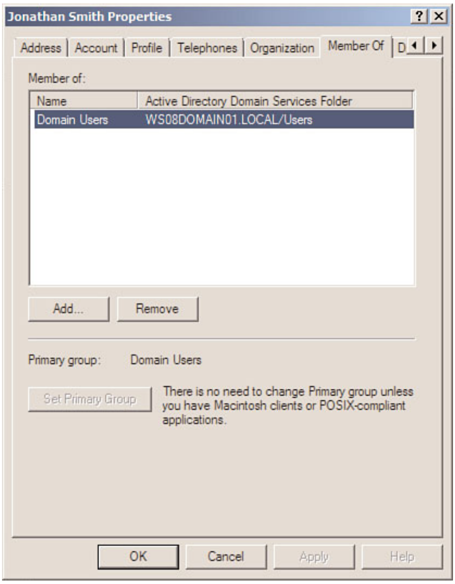
Modify a User's Group Membership

Scenario/Problem: Your company's applications use AD DS groups for authorization. You need to allow a particular user the ability to use an application.

Solution: Modify a user object's group membership.

To modify a user object's group membership, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify; then click Properties.
4. Click the Member Of tab, shown in Figure 8.33.



Member of:

Name	Active Directory Domain Services Folder
Domain Users	WS08DOMAIN01.LOCAL/Users

Primary group: Domain Users

There is no need to change Primary group unless you have Macintosh clients or POSIX-compliant applications.

FIGURE 8.33
Modifying a user's group membership.

5. To add the user to a group, click the Add button, type the name of the group in the Select Groups window, as shown in Figure 8.34, and then click OK.

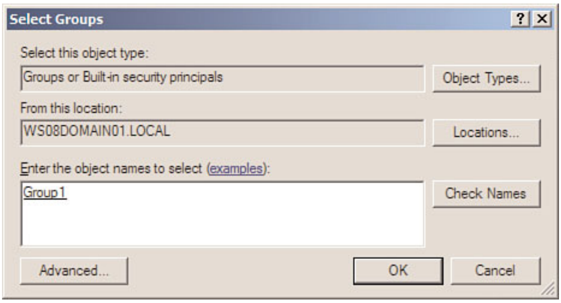
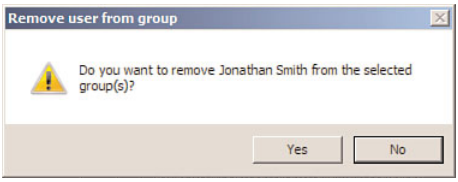


FIGURE 8.34
Adding a user to a group.

6. To remove a user from a group, select the group in the Member Of section and then click Remove.
7. On the Remove user from group confirmation screen, shown in Figure 8.35, click Yes.



Do you want to remove Jonathan Smith from the selected group(s)?

FIGURE 8.35
Removing a user from a group.

8. Click OK to save the changes.

Modify a User Object's Dial-in Properties

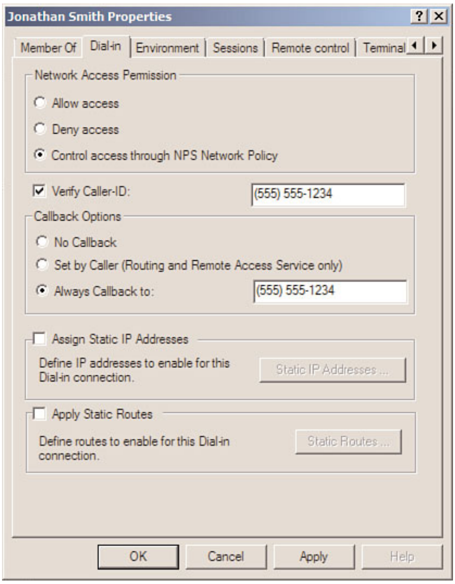
Scenario/Problem: Your company uses Network Access Protection to provide remote access. You need to prevent a particular employee from using your company's remote access solution.

Solution: Modify a user object's dial-in properties.

To modify a user object's dial-in properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.

3. In the details pane, right-click the user account you want to modify and click Properties.
4. Click the Dial-in tab, shown in Figure 8.36.



Network Access Permission

○ Allow access

○ Deny access

● Control access through NPS Network Policy

☑ Verify Caller-ID: (555) 555-1234

Callback Options

○ No Callback

○ Set by Caller (Routing and Remote Access Service only)

● Always Callback to: (555) 555-1234

□ Assign Static IP Addresses

Define IP addresses to enable for this Dial-in connection.

□ Apply Static Routes

Define routes to enable for this Dial-in connection.

FIGURE 8.36
Modifying a user object's dial-in properties.

5. Modify the applicable properties, and then click OK.

Modify a User Object's Environment Properties

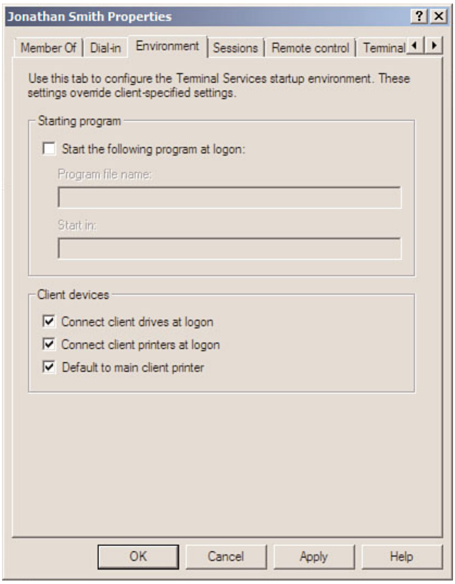
Scenario/Problem: Your company uses Terminal Services to provide remote desktop logon to servers. You need to ensure client drives are connected when users log on using Terminal Services.

Solution: Modify a user object's environment properties.

To modify a user object's environment properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.

3. In the details pane, right-click the user account you want to modify. Then click Properties.
4. Click the Environment tab, shown in Figure 8.37.



Use this tab to configure the Terminal Services startup environment. These settings override client-specified settings.

Starting program

□ Start the following program at logon:

Program file name:

Start in:

Client devices

☑ Connect client drives at logon

☑ Connect client printers at logon

☑ Default to main client printer

FIGURE 8.37
Modifying a user object's environment properties.

5. Modify the applicable properties, and then click OK.

Modify a User Object's Sessions Properties

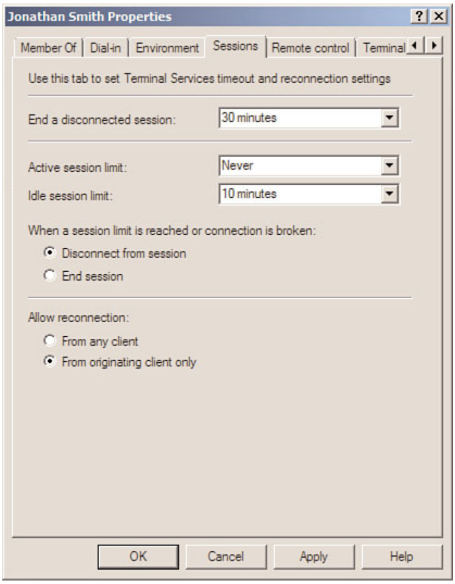
Scenario/Problem: Your company uses Terminal Services to provide remote desktop logon to servers. You need to ensure that sessions that are disconnected are automatically ended after 30 minutes.

Solution: Modify a user object's session properties.

To modify a user object's sessions properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.

3. In the details pane, right-click the user account you want to modify and click Properties.
4. Click the Sessions tab, shown in Figure 8.38.



Use this tab to set Terminal Services timeout and reconnection settings

End a disconnected session: 30 minutes

Active session limit: Never

Idle session limit: 10 minutes

When a session limit is reached or connection is broken:

● Disconnect from session

○ End session

Allow reconnection:

○ From any client

● From originating client only

FIGURE 8.38
Modifying a user object's sessions properties.

5. Modify the applicable properties, and then click OK.

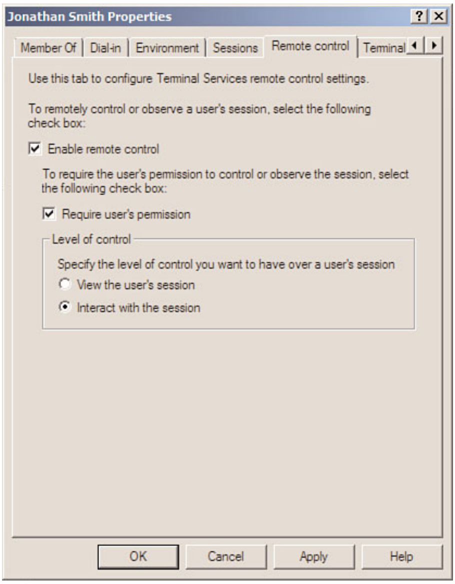
Modify a User Object's Remote Control Properties

Scenario/Problem: Your company uses Terminal Services to provide the help desk with the capability to log on to desktops using remote desktop. You need to ensure that the help desk is able to interact with the user's session.

Solution: Modify a user object's remote control properties.

To modify a user object's remote control properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify and click Properties.
4. Click the Remote Control tab, shown in Figure 8.39.



Use this tab to configure Terminal Services remote control settings.

To remotely control or observe a user's session, select the following check box:

☑ Enable remote control

To require the user's permission to control or observe the session, select the following check box:

☑ Require user's permission

Level of control

Specify the level of control you want to have over a user's session

○ View the user's session

● Interact with the session

FIGURE 8.39
Modifying a user object's remote control properties.

5. Modify the applicable properties; then click OK.

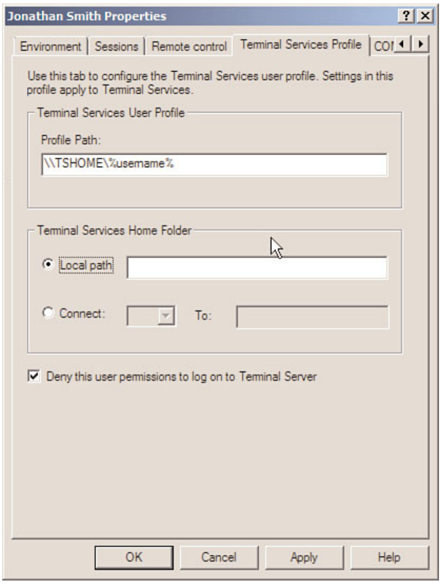
Modify a User Object's Terminal Services Properties

Scenario/Problem: Your company uses Terminal Services. You need to configure the Terminal Services profile for your employees.

Solution: Modify a user object's Terminal Services properties.

To modify a user object's Terminal Services properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify and click Properties.
4. Click the Terminal Services Profile tab, shown in Figure 8.40.



Use this tab to configure the Terminal Services user profile. Settings in this profile apply to Terminal Services.

Terminal Services User Profile

Profile Path: \\TSHOME\%username%

Terminal Services Home Folder

● Local path:

○ Connect: To:

☑ Deny this user permissions to log on to Terminal Server

FIGURE 8.40
Modifying a user object's Terminal Services properties.

5. Modify the applicable properties, and then click OK.

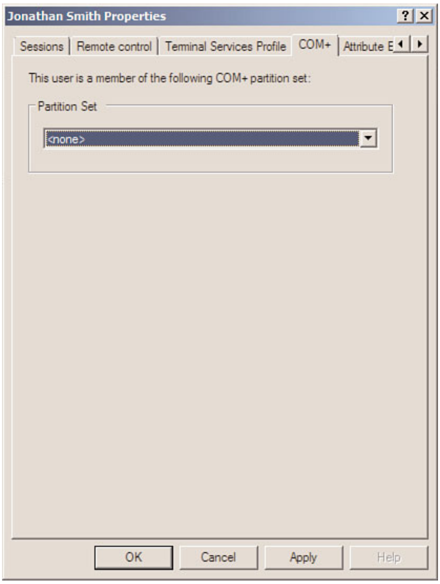
Modify a User Object's COM+ Properties

Scenario/Problem: Your company has a COM+ partition set in AD DS. You need to associate users with a COM+ partition set.

Solution: Modify a user object's COM+ properties.

To modify a user object's COM+ properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the user account you want to modify; then click Properties.
4. Click the COM+ tab, shown in Figure 8.41.
5. Modify the applicable properties, and then click OK.



This user is a member of the following COM+ partition set:

Partition Set

<none>

FIGURE 8.41
Modifying a user object's COM+ properties.

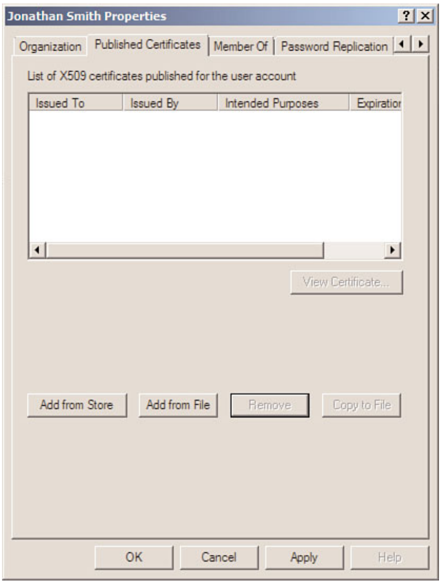
Modify a User Object's Published Certificates Properties

Scenario/Problem: Your company uses Active Directory Certificate Services to provide Encrypting File System (EFS) certificates to its employees. You need to view the certificates that are mapped to a particular user account.

Solution: Modify a user object's published certificates properties.

To modify a user object's published certificates properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the details pane, right-click the user account you want to modify and click Properties.
5. Click the Published Certificates tab, shown in Figure 8.42.

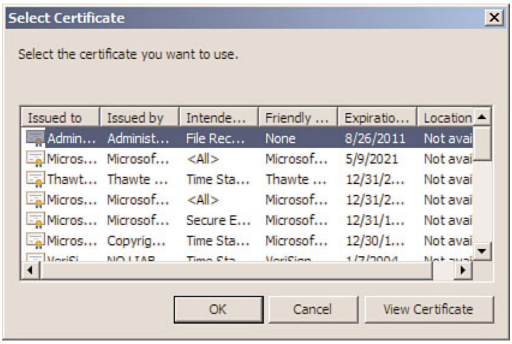


List of X509 certificates published for the user account

Issued To	Issued By	Intended Purposes	Expiratior

FIGURE 8.42
Modifying a user object's published certificates properties.

6. To add a certificate from the certificate store, click Add from Store, select the certificate to add in the Select Certificate window, shown in Figue 8.43, and then click OK.



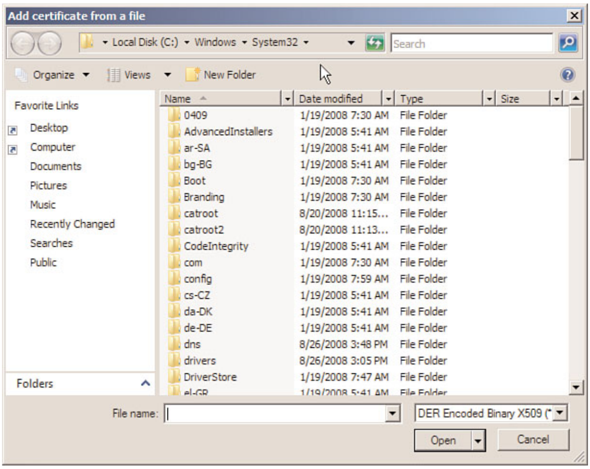
Select the certificate you want to use.

Issued to	Issued by	Intende...	Friendly ...	Expiratio...	Location
Admin...	Administ...	File Rec...	None	8/26/2011	Not avai
Micros...	Microsof...	<All>	Microsof...	5/9/2021	Not avai
Thawt...	Thawte ...	Time Sta...	Thawte ...	12/31/2...	Not avai
Micros...	Microsof...	<All>	Microsof...	12/31/2...	Not avai
Micros...	Microsof...	Secure E...	Microsof...	12/31/1...	Not avai
Micros...	Copyrig...	Time Sta...	Microsof...	12/30/1...	Not avai
VeriSi...	NO LIAB...	Time Sta...	VeriSign...	1/7/2004	Not avai

FIGURE 8.43
Adding a certificate from the store.

7. To add a certificate from a certificate file, click Add from File, select the certificate to add in the Add Certificate from a File window, shown in Figure 8.44, and then click OK.

8. To remove a certificate from a user object, select the certificate, and then click Remove. Click Yes in the Remove certificate confirmation window, shown in Figure 8.45.

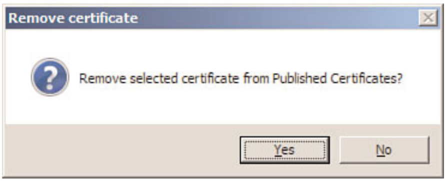


Name	Date modified	Type	Size
0409	1/19/2008 7:30 AM	File Folder	
AdvancedInstallers	1/19/2008 5:41 AM	File Folder	
ar-SA	1/19/2008 5:41 AM	File Folder	
bg-BG	1/19/2008 5:41 AM	File Folder	
Boot	1/19/2008 7:30 AM	File Folder	
Branding	1/19/2008 7:30 AM	File Folder	
catroot	8/20/2008 11:15...	File Folder	
catroot2	8/20/2008 11:13...	File Folder	
CodeIntegrity	1/19/2008 5:41 AM	File Folder	
com	1/19/2008 7:30 AM	File Folder	
config	1/19/2008 7:59 AM	File Folder	
cs-CZ	1/19/2008 5:41 AM	File Folder	
da-DK	1/19/2008 5:41 AM	File Folder	
de-DE	1/19/2008 5:41 AM	File Folder	
dns	8/26/2008 3:48 PM	File Folder	
drivers	8/26/2008 3:05 PM	File Folder	
DriverStore	1/19/2008 7:47 AM	File Folder	
el-GR	1/19/2008 5:41 AM	File Folder	

File name:

DER Encoded Binary X509 (*

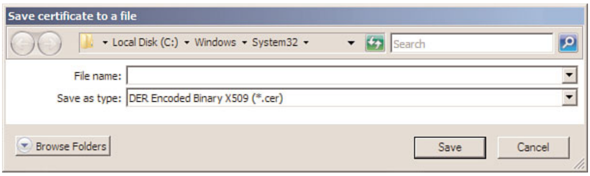
FIGURE 8.44
Adding a certificate from a file.



Remove selected certificate from Published Certificates?

FIGURE 8.45
The Remove certificate confirmation.

9. To export a certificate, select the certificate and click Copy to file. On the Save certificate to a file window, shown in Figure 8.46, enter a name for the certificate file in the File name field, select whether to save the certificate as a DER Encoded Binary X509 or PKCS #7 file, and click Save.


Save certificate to a file
Local Disk (C:) ▸ Windows ▸ System32
Search
Browse Folders
Save
Cancel

File name:

Save as type: DER Encoded Binary X509 (*.cer)

FIGURE 8.46
Exporting a certificate.

10. Click OK to save the changes.

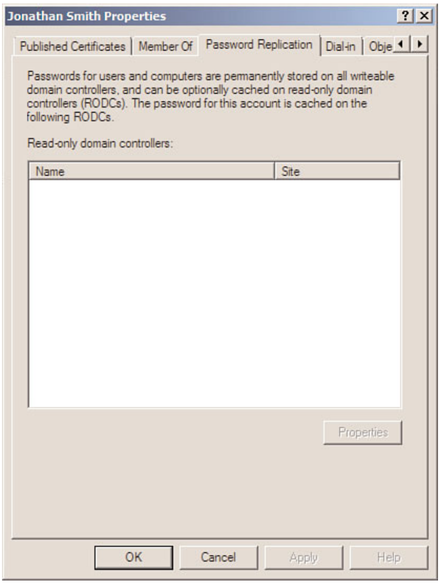
View the Password Replication Policies Applied to a User Object

Scenario/Problem: Your company has a number of read-only domain controllers (RODCs). Each RODC caches passwords for certain employees. You need to determine which RODCs have cached a password for a particular employee.

Solution: View a user object's password replication properties.

To view the password replication properties applied to a user object, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the details pane, right-click the user account you want to view and click Properties.
5. Click the Password Replication tab.
6. The password replication policies that are applied to the user account are listed, as shown in Figure 8.47.



Passwords for users and computers are permanently stored on all writeable domain controllers, and can be optionally cached on read-only domain controllers (RODCs). The password for this account is cached on the following RODCs.

Read-only domain controllers:

FIGURE 8.47

Viewing a user's password replication policies.

6. To view the properties of a password replication policy, select the password replication policy and click Properties.
7. Click OK to save the changes.

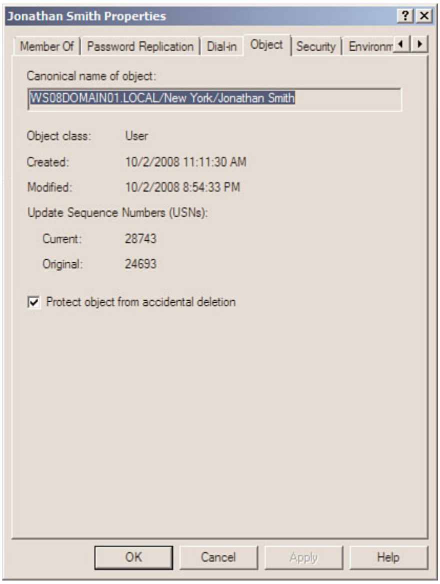
Modify a User Object’s Protection from Deletion Properties

Scenario/Problem: You need to prevent user accounts from being accidently deleted from AD DS.

Solution: Modify a user object’s accidental deletion properties.

To modify a user object’s protection from deletion properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the details pane, right-click the user account you want to modify; then click Properties.
5. Click the Object tab, shown in Figure 8.48.



Canonical name of object:
WS08DOMAIN01.LOCAL/New York/Jonathan Smith

Object class: User
Created: 10/2/2008 11:11:30 AM
Modified: 10/2/2008 8:54:33 PM
Update Sequence Numbers (USNs):
Current: 28743
Original: 24693

☑ Protect object from accidental deletion

FIGURE 8.48
Modifying a user object’s protection from deletion properties.

6. To protect a user object from accidental deletion, select Protect object from accidental deletion.
7. To unprotect a user object from accidental deletion, deselect Protect object from accidental deletion.
8. Click OK to save the changes.

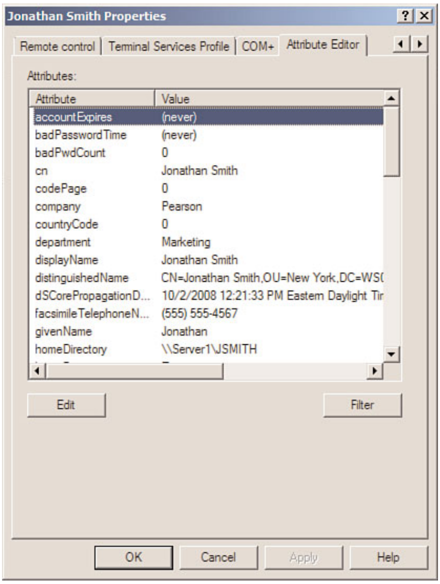
Modify a User Object’s Custom Attributes

Scenario/Problem: Your company has a number of custom attributes in its AD DS forest. You need to edit these attributes for a particular user account.

Solution: Modify a user object’s custom attributes.

To modify a user object’s custom attributes, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the details pane, right-click the user account you want to modify and click Properties.
5. Click the Attribute Editor tab, shown in Figure 8.49.



Attribute	Value
accountExpires	(never)
badPasswordTime	(never)
badPwdCount	0
cn	Jonathan Smith
codePage	0
company	Pearson
countryCode	0
department	Marketing
displayName	Jonathan Smith
distinguishedName	CN=Jonathan Smith,OU=New York,DC=WS(
dSCorePropagationD...	10/2/2008 12:21:33 PM Eastern Daylight Tir
facsimileTelephoneN...	(555) 555-4567
givenName	Jonathan
homeDirectory	\\Server1\JSMITH

FIGURE 8.49
Modifying a user object’s custom attributes.

6. Modify the applicable attributes, and then click OK.

Create a Group Object

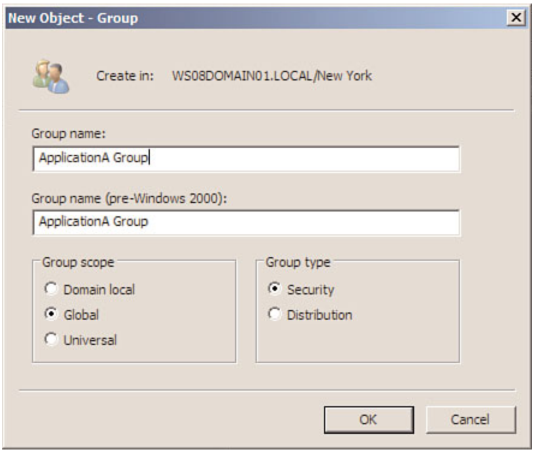
Scenario/Problem: Your company has a number of applications that use AD DS groups for authorization. You need to create a new AD DS group that can be used by an application.

Solution: Create a group by using the Windows interface or the command line.

Create Group Object by Using the Windows Interface

To create a group object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU or container where you want to store the group object, click New, and click Group.
4. Type the name of the group in the Group name field, select the group scope, select the group type, as shown in Figure 8.50, and click OK.


New Object - Group

Create in: WS08DOMAIN01.LOCAL/New York

Group name: ApplicationA Group

Group name (pre-Windows 2000): ApplicationA Group

Group scope: ○ Domain local ● Global ○ Universal

Group type: ● Security ○ Distribution

FIGURE 8.50
Creating a new group object by using the Windows interface.

TIP The Group name (pre-Windows 2000) field is automatically populated by the wizard. You can modify these fields if required.

Create Group Object by Using the Command Line

To create a group object by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   dsadd group "CN=GroupA,CN=Users,DC=WS08DOMAIN01,DC=local" -secgrp
   Yes -scope g -samid GroupA
   ```

   Table 8.3 lists each parameter used in the previous command.

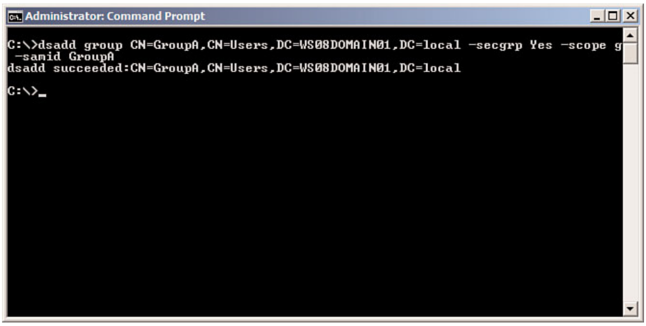
TABLE 8.3 **Parameters to Create Group Objects by Using the Command Line**

Parameter	Meaning

`"CN=GroupA,CN=Users,`
`DC=WS08DOMAIN01,DC=local"`
	Distinguished name

`-secgrp Yes`	Group will be a security group
`-scope g`	Group will be a global
`-samid GroupA`	The SAMID of the group (pre-Windows 2000 name)

4. Verify that the results of the `dsadd` command entered above returns `dsadd` succeeded, as shown in Figure 8.51.



```
C:\>dsadd group CN=GroupA,CN=Users,DC=WS08DOMAIN01,DC=local -secgrp Yes -scope g
 -samid GroupA
dsadd succeeded:CN=GroupA,CN=Users,DC=WS08DOMAIN01,DC=local

C:\>_
```

FIGURE 8.51
Creating a group object using the command line.

TIP For a full list of `dsadd` group parameters, go to http://technet.microsoft.com/en-us/library/cc754037.aspx.

Delete a Group Object

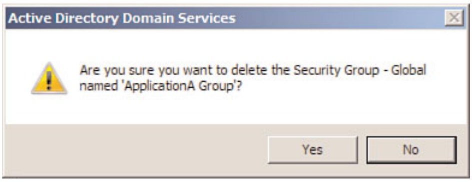
Scenario/Problem: Your company has a number of AD DS groups that are used for authorization. One of the AD DS groups is no longer required.

Solution: Delete the group by using the Windows interface or the command line.

Delete a Group Object by Using the Windows Interface

To delete a group object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group object you want to delete and click Delete.
4. Click Yes on the confirmation page, shown in Figure 8.52.



Are you sure you want to delete the Security Group - Global named 'ApplicationA Group'?

FIGURE 8.52
Deleting a group object using the Windows interface.

Delete a Group Object by Using the Command Line

To delete a group object by using the command line, perform the following steps:

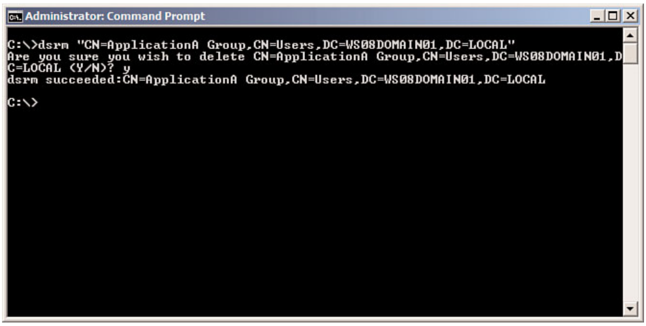
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

```
Dsrm "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL"
```

   (where "*CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL*" is the distinguished name of the group you want to delete).
4. Type **Y** to confirm the deletion and press Enter.

TIP For a full list of `dsrm` parameters, go to http://technet.microsoft.com/en-us/library/cc731865.aspx.

5. Verify that the results of the `dsrm` command entered above returns `dsrm` succeeded, as shown in Figure 8.53.



```
C:\>dsrm "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL"
Are you sure you wish to delete CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,D
C=LOCAL (Y/N)? y
dsrm succeeded:CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL

C:\>
```

FIGURE 8.53
Deleting a group object using the command line.

Rename a Group Object

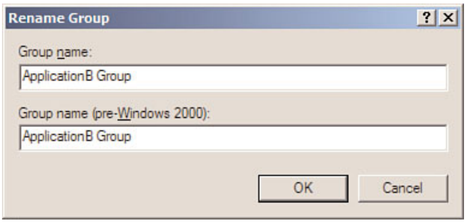
Scenario/Problem: Your company has a group that was named incorrectly.

Solution: Rename the group by using the Windows interface or the command line.

Rename a Group Object by Using the Windows Interface

To rename a group object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group object you want to rename and click Rename.
4. Type the new group name and press Enter.
5. On the Rename Group page, shown in Figure 8.54, modify the applicable name fields, and click OK.



Group name:
ApplicationB Group

Group name (pre-Windows 2000):
ApplicationB Group

FIGURE 8.54
The Rename Group Wizard.

Rename a Group Object by Using the Command Line

To rename a group object by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.

NOTE Renaming a group object by using the command line is a two phase process. The first step uses the `dsmod` command to modify the applicable name attributes for the object. The second step uses the `dsmove` command to modify the distinguished name of the object.

3. In the Command Prompt window, type the following command and press Enter:

```
Dsmod group "CN=ApplicationA
Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -samid "ApplicationB
Group"
```

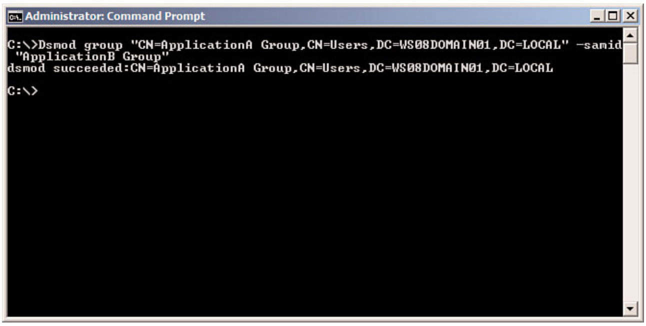
(where "*CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL*" is the distinguished name of the group you want to rename and "*ApplicationB Group*" is the new name).

TIP For a full list of `dsmod` group parameters, go to http://technet.microsoft.com/en-us/library/cc732423.aspx.

4. Verify that the results of the `dsmod` command entered above returns `dsmod` succeeded, as shown in Figure 8.55.
5. In the command Prompt window, type the following command and press Enter:

```
Dsmove  "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL"
-newname "ApplicationB Group"
```

(where "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" is the distinguished name of the group and "ApplicationB Group" is the new group name).

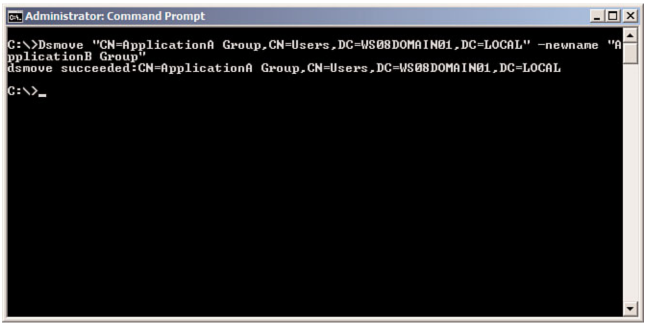


```
C:\>Dsmod group "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -samid
 "ApplicationB Group"
dsmod succeeded:CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL

C:\>
```

FIGURE 8.55
Modifying a group name using the command line.

6. Verify that the results of the `dsmove` command entered above returns `dsmove` succeeded, as shown in Figure 8.56.

TIP For a full list of `dsmove` parameters, go to http://technet.microsoft.com/en-us/library/cc731094.aspx.



```
C:\>Dsmove "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -newname "A
pplicationB Group"
dsmove succeeded:CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.56
Renaming a group using the command line.

Move a Group Object

Scenario/Problem: Your company's AD DS logical design uses OUs to group AD DS groups for administrative purposes. The management of a particular group is being moved to a different team.

Solution: Move an AD DS group account by using the Windows interface or the command line.

Move a Group Object by Using the Windows Interface

To move a group object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group object you want to move and click Move.
4. In the Move window, shown in Figure 8.57, select the OU or container to which you want to move the group object; then click OK.

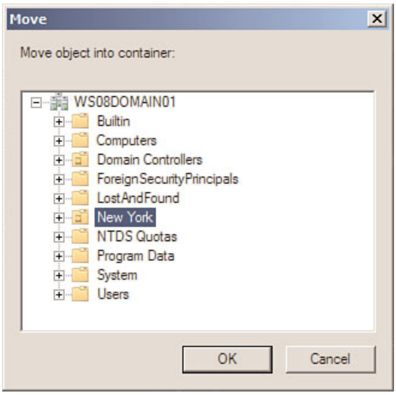


FIGURE 8.57
The Move window.

Move a Group Object by Using the Command Line

To move a group object by using the command line, perform the following steps:

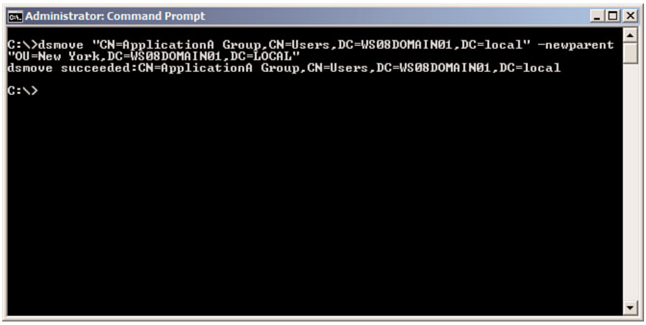
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

```
Dsmove "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=local"
-newparent "OU=New York,DC=WS08DOMAIN01,DC=LOCAL"
```

(where "*CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the group and "*OU=New York,DC=WS08DOMANI01,DC=local*" is the location to where you want to move the group).

4. Verify that the results of the `dsmove` command entered above returns `dsmove` succeeded, as shown in Figure 8.58.

TIP For a full list of `dsmove` parameters, go to http://technet.microsoft.com/en-us/library/cc731094.aspx.



```
C:\>dsmove "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=local" -newparent
"OU=New York,DC=WS08DOMAIN01,DC=LOCAL"
dsmove succeeded:CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=local

C:\>
```

FIGURE 8.58
Moving a group using the command line.

Add a Group to a Group

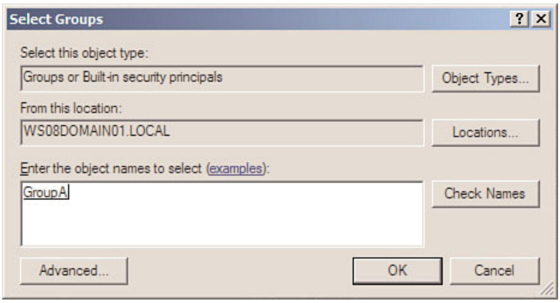
Scenario/Problem: Your company has a number of universal groups that are used to assign access to resources. You need to add a global group to one of these universal groups.

Solution: Add a group to a group by using the Windows Interface or the command line.

Add a Group to a Group by Using the Windows Interface

To add a group to a group by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group object you want to add to a group and click Properties.
4. Click the Member Of tab.
5. Click Add.
6. On the Select Groups window, shown in Figure 8.59, browse to or type the name of the group to which you want to add the group; then click OK.



Select this object type:
Groups or Built-in security principals

From this location:
WS08DOMAIN01.LOCAL

Enter the object names to select (examples):
GroupA

FIGURE 8.59
The Select Groups window.

Add a Group to a Group by Using the Command Line

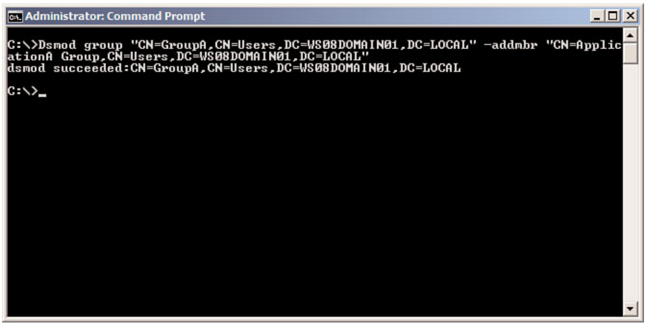
To add a group to a group by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   `Dsmod group "CN=GroupA,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -addmbr "CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL"`

   (where "*CN=ApplicationA Group,CN=Users,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the group and "*OU=New York,DC=WS08DOMANI01,DC=local*" is the location to which you want to move the group).
4. Verify that the results of the `dsmod` command entered above returns `dsmod` succeeded, as shown in Figure 8.60.

TIP For a full list of `dsmod` group parameters, go to http://technet.microsoft.com/en-us/library/cc732423.aspx.



```
C:\>Dsmod group "CN=GroupA,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -addmbr "CN=Applic
ationA Group,CN=Users,DC=WS08DOMAIN01,DC=LOCAL"
dsmod succeeded:CN=GroupA,CN=Users,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.60
Adding a group to a group using the command line.

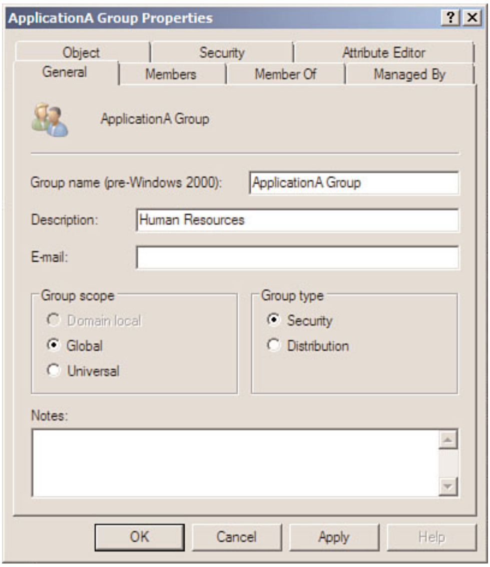
Modify a Group Object’s General Properties

Scenario/Problem: Your company uses the description field on AD DS group objects to identify to which business unit a group belongs.

Solution: Modify a group object’s general properties.

To modify a group object’s general properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group account you want to modify and click Properties.
4. Click the General tab, shown in Figure 8.61.



ApplicationA Group

Group name (pre-Windows 2000): ApplicationA Group

Description: Human Resources

E-mail:

Group scope
○ Domain local
● Global
○ Universal

Group type
● Security
○ Distribution

Notes:

FIGURE 8.61
Modifying a group object’s general properties.

5. Modify the applicable properties, and then click OK.

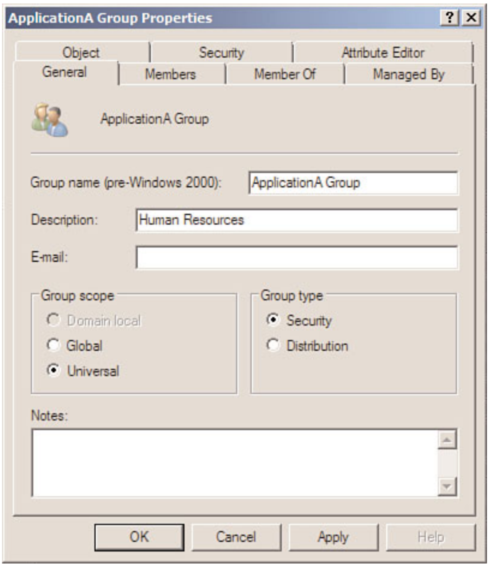
Modify a Group Object's Scope

Scenario/Problem: Your company uses AD DS groups for authorization. You need to ensure a group can contain users from all domains in your forest as members.

Solution: Modify a group object's scope.

To modify a group object's scope, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group account you want to modify and click Properties.
4. Click the General tab, shown in Figure 8.62.



Group name (pre-Windows 2000): ApplicationA Group

Description: Human Resources

E-mail:

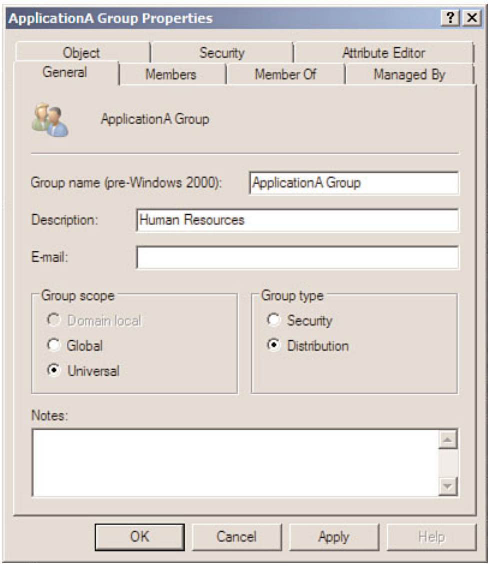
Group scope
○ Domain local
○ Global
● Universal

Group type
● Security
○ Distribution

Notes:

FIGURE 8.62
Modifying a group.

5. Select a group scope of Domain Local, Global, or Universal, as shown in Figure 8.63; then click OK.



ApplicationA Group Properties

ApplicationA Group

Group name (pre-Windows 2000): ApplicationA Group

Description: Human Resources

E-mail:

Group scope
○ Domain local
○ Global
● Universal

Group type
○ Security
● Distribution

Notes:

FIGURE 8.63
Modifying a group object's scope.

TIP The existing group scope dictates the scope that you can convert the group to. For example, if the existing group has a scope of Global, it can only be converted to a Universal group, which is why the Domain Local group scope option is not available in Figure 8.62. The following lists the group scope conversion paths:

The group scope for a group that has an existing group scope of Universal can be modified to Domain Local or Global. A Universal group can only be converted to a Global group if there are no other Universal groups as members.

The group scope for a group that has an existing group scope of Global can be modified to Universal. A Global group can only be converted to a Universal group if there are no other Global groups as members.

The group scope for a group that has an existing group scope of Domain Local can be modified to Universal. A Domain Local group can only be converted to a Universal group if there are no other Domain Local groups as members.

Modify a Group Object's Type

Scenario/Problem: Your company uses AD DS groups for authorization and email distribution lists. You need to ensure that a group can contain users to be used for email distribution and to apply security permissions.

Solution: Modify a group object's type.

To modify a group object's type, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group account you want to modify and click Properties.
4. Click the General tab.
5. Select a group type of Security or Distribution, as shown in Figure 8.63; then click OK.

Modify a Group Object's Members

Scenario/Problem: Your company uses AD DS groups for email distribution lists. You need to ensure that a particular user receives emails that are sent to the group.

Solution: Modify a group object's members.

To modify a group object's members, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group account you want to modify and click Properties.
4. Click the Members tab, shown in Figure 8.64.
5. To add a member to the group, click Add In the Select Users, Contacts, Computers, or Groups window, shown in Figure 8.65, type the name of the object you want to add and click OK.
6. To remove a member from a group, select the object in the Members tab click Remove, shown in Figure 8.66.

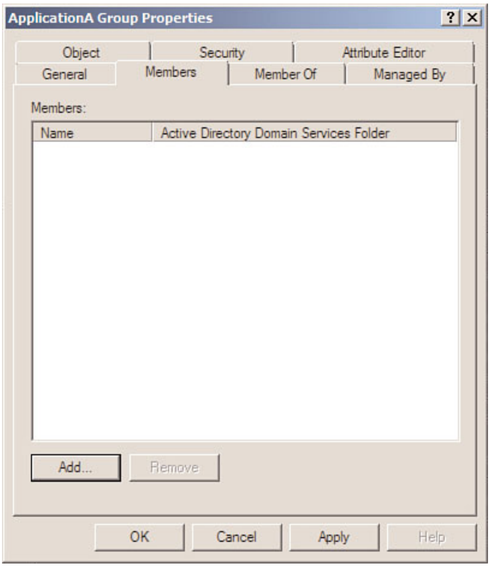
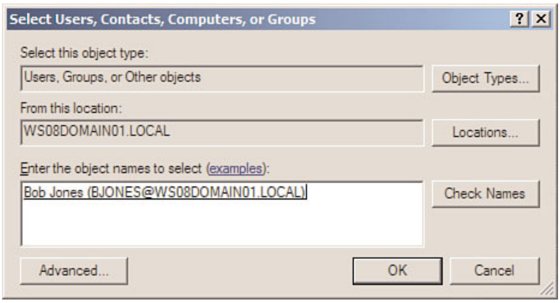


FIGURE 8.64
The group object Members tab.

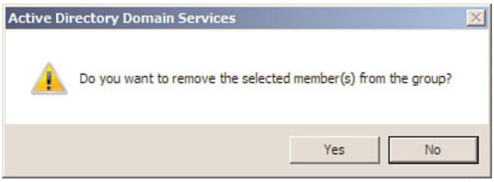


Select this object type:
Users, Groups, or Other objects

From this location:
WS08DOMAIN01.LOCAL

Enter the object names to select (examples):
Bob Jones (BJONES@WS08DOMAIN01.LOCAL)

FIGURE 8.65
The Select Users, Contacts, Computers, or Groups window.



Do you want to remove the selected member(s) from the group?

FIGURE 8.66
The Remove Member from Group confirmation.

7. Click Yes on the confirmation screen, shown in Figure 8.66, to remove the group member.

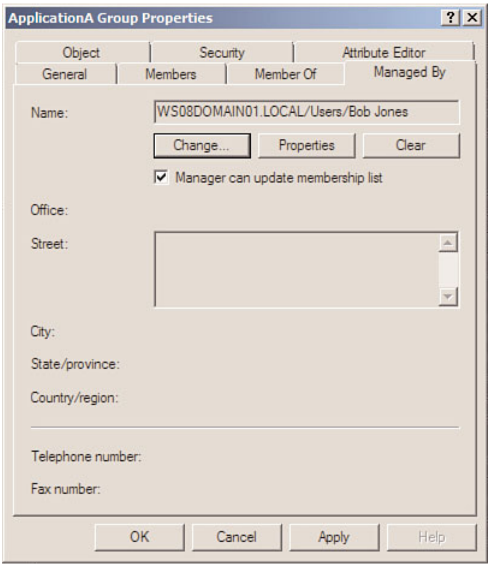
Modify a Group Object Managed By Properties

Scenario/Problem: Your company uses AD DS groups for email distribution. You need to assign owners to a group and grant them the ability to manage group membership by using Microsoft Office Outlook.

Solution: Modify a group object's Managed By properties.

To modify a group object's Managed By properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the group account you want to modify and click Properties.
4. Click the Managed By tab, shown in Figure 8.7



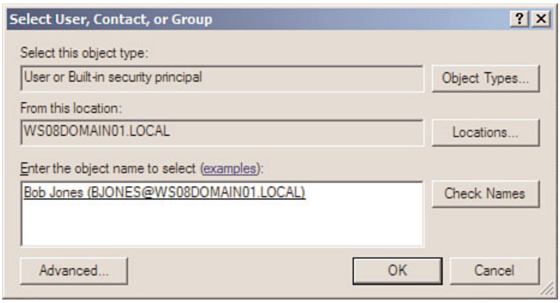
ApplicationA Group Properties

Name: WS08DOMAIN01.LOCAL/Users/Bob Jones

☑ Manager can update membership list

FIGURE 8.67
Modifying a group object's Managed By properties.

5. Click Change.
6. On the Select User, Contact, or Group window, type the name of the object you want to assign as the manager, and click OK.
7. To allow the manager to manage group membership, click the option Manager can update membership list, shown in Figure 8.68, and click OK.



Select User, Contact, or Group

Select this object type:
User or Built-in security principal

From this location:
WS08DOMAIN01.LOCAL

Enter the object name to select (examples):
Bob Jones (BJONES@WS08DOMAIN01.LOCAL)

FIGURE 8.68
The Manager Can Update Membership List check box.

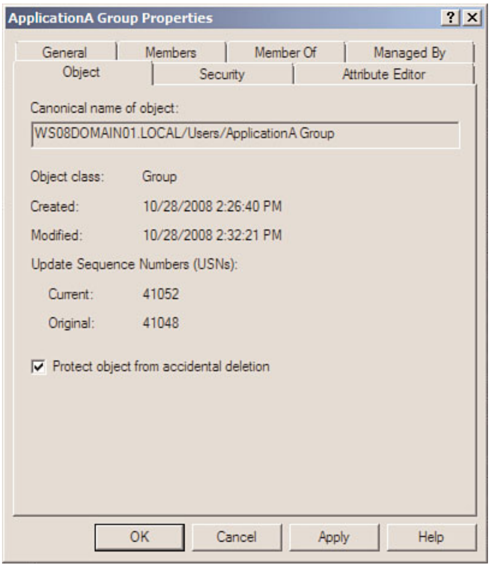
Modify a Group Object Protection from Deletion

Scenario/Problem: You need to prevent group accounts from being accidently deleted from AD DS.

Solution: Modify a group object's accidental deletion properties.

To modify a group object's protection from deletion properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the details pane, right-click the group account you want to modify and click Properties.
5. Click the Object tab, shown in Figure 8.69.
6. To protect a group object from accidental deletion, select Protect object from accidental deletion.
7. To unprotect a group object from accidental deletion, deselect Protect object from accidental deletion.
8. Click OK to save the changes.



Canonical name of object:
WS08DOMAIN01.LOCAL/Users/ApplicationA Group

Object class: Group
Created: 10/28/2008 2:26:40 PM
Modified: 10/28/2008 2:32:21 PM
Update Sequence Numbers (USNs):
Current: 41052
Original: 41048

☑ Protect object from accidental deletion

FIGURE 8.69
Modifying a group object's protection from deletion properties.

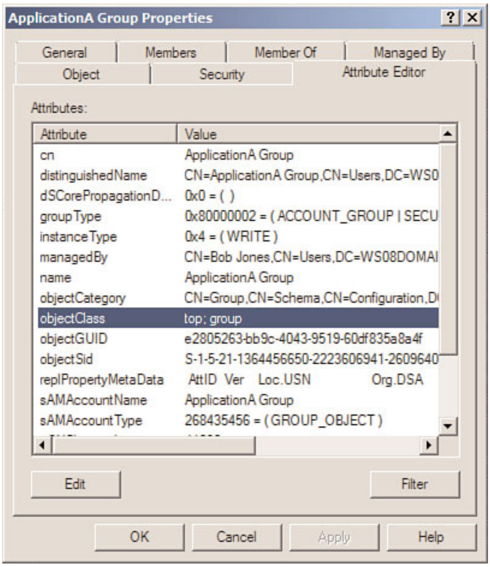
Modify a Group Object's Custom Attributes

Scenario/Problem: Your company has a number of custom attributes in its AD DS forest. You need to edit these attributes for a particular group account.

Solution: Modify a group object's custom attributes.

To modify a group object's custom attributes, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the details pane, right-click the group account you want to modify and click Properties.
5. Click the Attribute Editor tab, shown in Figure 8.70.
6. Modify the applicable attributes, and then click OK.



Attribute	Value
cn	ApplicationA Group
distinguishedName	CN=ApplicationA Group,CN=Users,DC=WS0
dSCorePropagationD...	0x0 = ( )
groupType	0x80000002 = (ACCOUNT_GROUP | SECU
instanceType	0x4 = (WRITE)
managedBy	CN=Bob Jones,CN=Users,DC=WS08DOMAI
name	ApplicationA Group
objectCategory	CN=Group,CN=Schema,CN=Configuration,D
objectClass	top; group
objectGUID	e2805263-bb9c-4043-9519-60df835a8a4f
objectSid	S-1-5-21-1364456650-2223606941-2609640
replPropertyMetaData	AttID Ver Loc.USN Org.DSA
sAMAccountName	ApplicationA Group
sAMAccountType	268435456 = (GROUP_OBJECT)

FIGURE 8.70
Modifying a group object's custom attributes.

Create a Computer Object

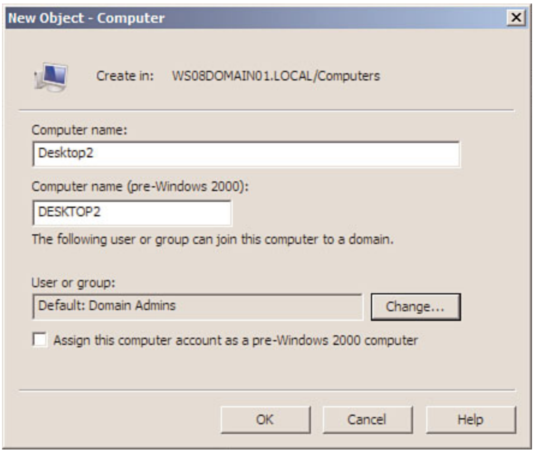
Scenario/Problem: Your company pre-creates computer objects in AD DS to allow nonadministrator users to join the computers to the domain.

Solution: Create a computer object by using the Windows interface or the command line.

Create a Computer Object by Using the Windows Interface

To create a computer object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU or container where you want to store the computer object, click New, and click Computer.
4. Type the name of the computer in the Computer name field, as shown in Figure 8.71.



New Object - Computer

Create in: WS08DOMAIN01.LOCAL/Computers

Computer name: Desktop2

Computer name (pre-Windows 2000): DESKTOP2

The following user or group can join this computer to a domain.

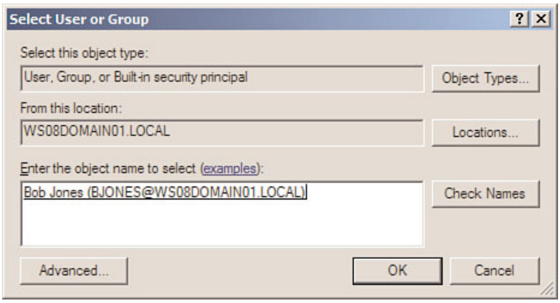
User or group: Default: Domain Admins

□ Assign this computer account as a pre-Windows 2000 computer

FIGURE 8.71
Creating a new computer object using the Windows interface.

TIP The Computer name (pre-Windows 2000) field is automatically populated by the wizard. You can modify this field if required.

5. If you want to permit someone other than the Domain Admins group to join the computer to AD DS, click the Change button.
6. In the Select User or Group window, shown in Figure 8.72, type the name of the user or group you want to permit to join this computer to the domain, and click OK.



Select User or Group

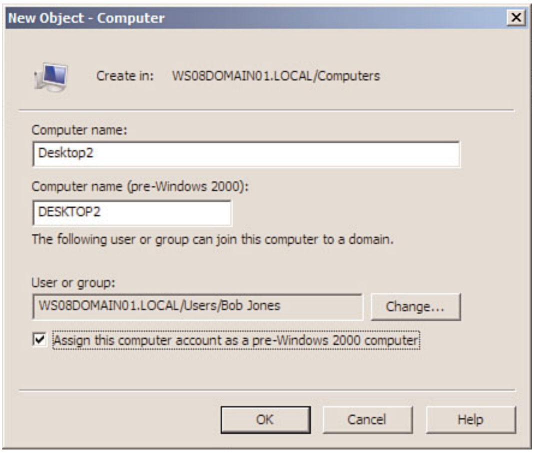
Select this object type: User, Group, or Built-in security principal

From this location: WS08DOMAIN01.LOCAL

Enter the object name to select (examples): Bob Jones (BJONES@WS08DOMAIN01.LOCAL)

FIGURE 8.72
Select User or Group window.

7. If the computer account is pre-Windows 2000, select the Assign this computer account as a pre-Windows 2000 computer option, as shown in Figure 8.73; then click OK.



New Object - Computer

Create in: WS08DOMAIN01.LOCAL/Computers

Computer name: Desktop2

Computer name (pre-Windows 2000): DESKTOP2

The following user or group can join this computer to a domain.

User or group: WS08DOMAIN01.LOCAL/Users/Bob Jones

☑ Assign this computer account as a pre-Windows 2000 computer

FIGURE 8.73
The Assign This Computer Account as a Pre-Windows 2000 Computer option.

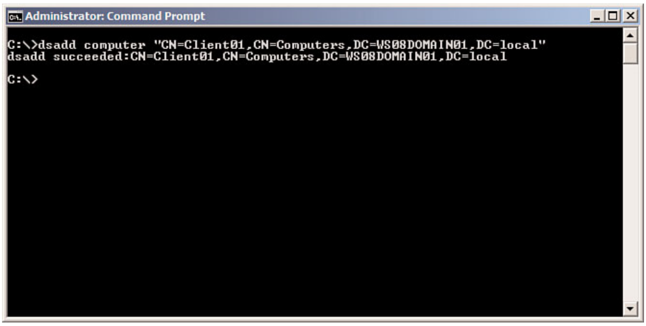
Create a Computer Object by Using the Command Line

To create a computer object by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   `dsadd computer "CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=local"`

   (where "*CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the new computer object).
4. Verify that the results of the `dsadd` command entered above returns `dsadd` succeeded, as shown in Figure 8.74.



Administrator: Command Prompt

```
C:\>dsadd computer "CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=local"
dsadd succeeded:CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=local

C:\>
```

FIGURE 8.74
Creating a computer object using the command line.

TIP For a full list of dsadd computer parameters, go to http://technet.microsoft.com/en-us/library/cc754539.aspx.

Delete a Computer Object

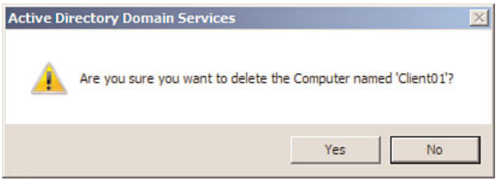
Scenario/Problem: A computer experienced a hardware failure and will not be repaired.

Solution: Delete the computer object by using the Windows interface or the command line.

Delete a Computer Object by Using the Windows Interface

To delete a computer object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer object you want to delete and click Delete.
4. On the confirmation screen to delete the computer object, shown in Figure 8.75, click Yes.



Active Directory Domain Services

Are you sure you want to delete the Computer named 'Client01'?

FIGURE 8.75
The confirmation to delete a computer account.

Delete a Computer Object by Using the Command Line

To delete a computer object by using the command line, perform the following steps:

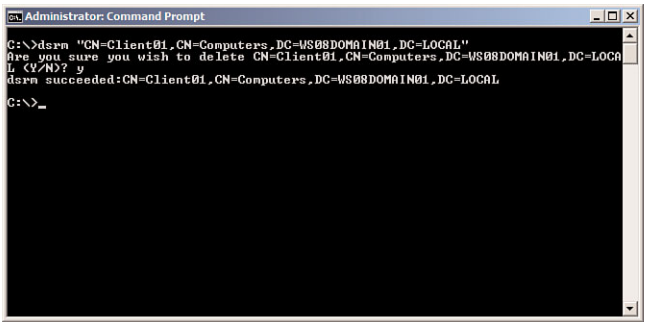
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.

3. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsrm "CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL"
   ```

   (where "*CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the computer object you want to delete).

4. Enter **Y** to confirm the deletion and press Enter.
5. Verify that the results of the `dsrm` command entered above returns `dsrm` succeeded, as shown in Figure 8.76.



```
C:\>dsrm "CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL"
Are you sure you wish to delete CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=LOCA
L (Y/N)? y
dsrm succeeded:CN=Client01,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.76
Deleting a computer object using the command line.

TIP For a full list of `dsrm` computer parameters, go to http://technet.microsoft.com/en-us/library/cc731865.aspx.

Move a Computer Object

Scenario/Problem: Your company's AD DS logical design uses OUs to group AD DS computers for group policy purposes. A computer object needs to be moved to an OU that has a different GPO.

Solution: Move an AD DS computer account by using the Windows interface or the command line.

Move a Computer Object by Using the Windows Interface

To move a computer object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.

2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer object you want to move and click Move.
4. On the Move window, shown in Figure 8.77, select the OU or container to which you want to move the computer object; then click OK.

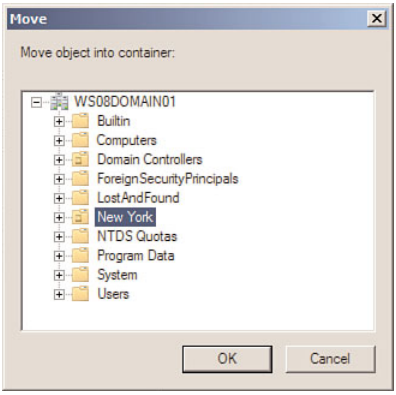


FIGURE 8.77
The Move window.

Move a Computer Object by Using the Command Line

To move a computer object by using the command line, perform the following steps:

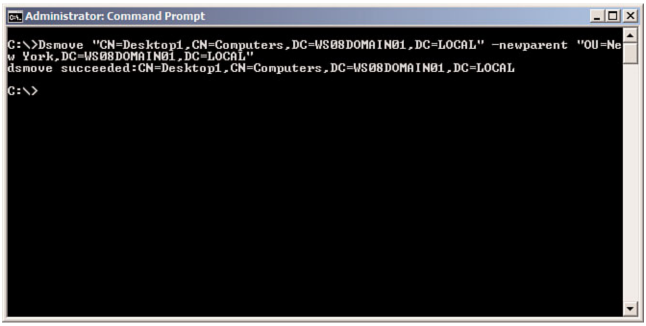
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

```
Dsmove "CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL"
-newparent "OU=New York,DC=WS08DOMAIN01,DC=LOCAL"
```

   (where "*CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL*" is the distinguished name of the computer and "*OU=New York,DC=WS08DOMANI01,DC=local*" is the location to which you want to move the computer).

4. Verify that the results of the `dsmove` command entered above returns `dsmove` succeeded, as shown in Figure 8.78.

TIP For a full list of `dsmove` parameters, go to http://technet.microsoft.com/en-us/library/cc731094.aspx.



```
C:\>Dsmove "CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL" -newparent "OU=Ne
w York,DC=WS08DOMAIN01,DC=LOCAL"
dsmove succeeded:CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL

C:\>
```

FIGURE 8.78
Moving a computer using the command line.

Add a Computer to a Group

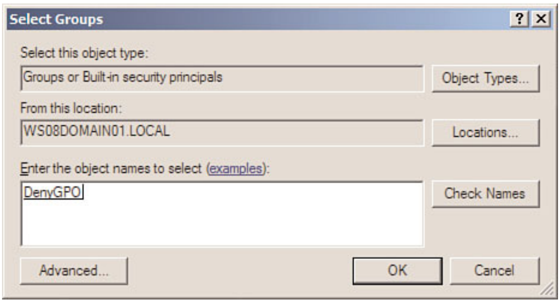
Scenario/Problem: Your company uses AD DS groups to filter the application of GPOs on computers.

Solution: Add a computer account to a group using the Windows interface or the command line.

Add a Computer to a Group by Using the Windows Interface

To add a computer object to a group by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer object you want to add to the group and click Add to a group.
4. In the Select Groups window, shown in Figure 8.79, enter the name of the group to which you want to add the user, click Check Names, and click OK.



Select this object type:
Groups or Built-in security principals
From this location:
WS08DOMAIN01.LOCAL
Enter the object names to select (examples):
DenyGPO

FIGURE 8.79
Adding a computer to a group using the Windows interface.

Add a Computer to a Group by Using the Command Line

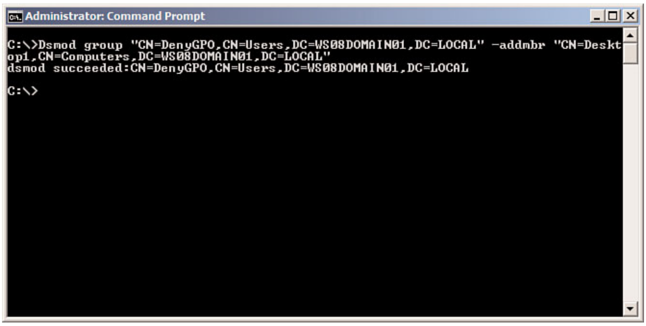
To add a computer object to a group by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   `Dsmod group "CN=DenyGPO,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -addmbr "CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL"`

   (WHERE *`"CN=DenyGPO,CN=Users,DC=WS08DOMAIN01,DC=LOCAL"`* is the distinguished name of the group and *`"CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL"`* is the distinguished name of the computer you want to add to the group).
4. Verify that the results of the `dsmod` group command entered above returns `dsmod` succeeded, as shown in Figure 8.80.

TIP For a full list of `dsmod` group parameters, go to http://technet.microsoft.com/en-us/library/cc732423.aspx.



```
C:\>Dsmod group "CN=DenyGPO,CN=Users,DC=WS08DOMAIN01,DC=LOCAL" -addmbr "CN=Deskt
op1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL"
dsmod succeeded:CN=DenyGPO,CN=Users,DC=WS08DOMAIN01,DC=LOCAL

C:\>
```

FIGURE 8.80
Adding a computer to a group using the command line.

Disable a Computer Object

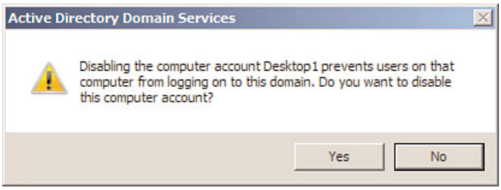
Scenario/Problem: You need to prevent users on a particular computer from logging on to AD DS.

Solution: Disable a computer account by using the Windows interface or the command line.

Disable a Computer Object by Using the Windows Interface

To disable a computer object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer object you want to disable and click Disable Account.
4. On the confirmation screen to disable the computer account, shown in Figure 8.81, click Yes.



Disabling the computer account Desktop1 prevents users on that computer from logging on to this domain. Do you want to disable this computer account?

FIGURE 8.81
Disabling a computer object using the Windows interface.

Disable a Computer Object by Using the Command Line

To disable a computer object by using the command line, perform the following steps:

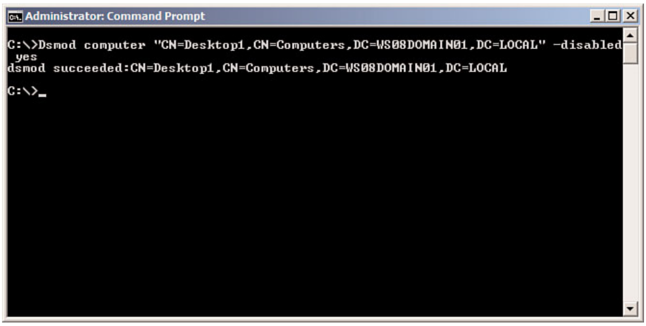
1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

```
Dsmod computer "CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL"
-disabled yes
```

   (where "*CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL*" is the distinguished name of the computer that you want to disable).

4. Verify that the results of the `dsmod` computer command entered above returns `dsmod` succeeded, as shown in Figure 8.82.

TIP For a full list of dsmod computer parameters, go to http://technet.microsoft.com/en-us/library/cc753733.aspx.



```
C:\>Dsmod computer "CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL" -disabled
 yes
dsmod succeeded:CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.82
Disabling a computer object using the command line.

Enable a Computer Object

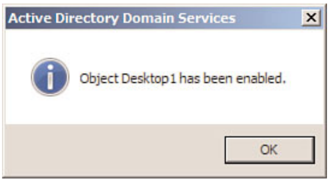
Scenario/Problem: You previously disabled a computer account and you need to allow users on that particular computer to log on to AD DS.

Solution: Enable a computer account by using the Windows interface or the command line.

Enable a Computer Object by Using the Windows Interface

To enable a computer object by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer object you want to disable and click Enable Account.
4. Verify the computer account was enabled, as shown in Figure 8.83, and click OK.



Object Desktop1 has been enabled.

FIGURE 8.83
Enabling a computer object using the Windows interface.

Enable a Computer Object by Using the Command Line

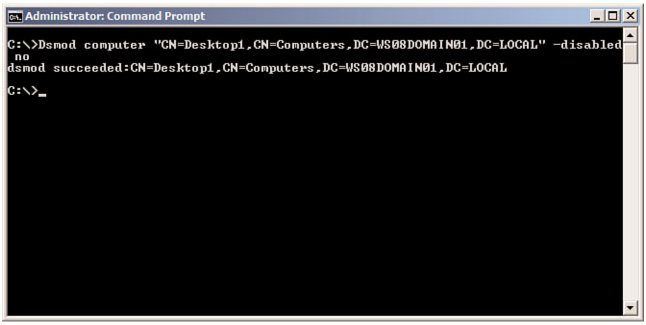
To enable a computer object by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsmod computer "CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL"
   -disabled no
   ```

   (where "*CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL*" is the distinguished name of the computer you want to disable).
4. Verify that the results of the dsmod computer command entered above returns dsmod succeeded, as shown in Figure 8.84.

TIP For a full list of dsmod computer parameters, go to http://technet.microsoft.com/en-us/library/cc753733.aspx.



```
C:\>Dsmod computer "CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL" -disabled
 no
dsmod succeeded:CN=Desktop1,CN=Computers,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.84
Enabling a computer object using the command line.

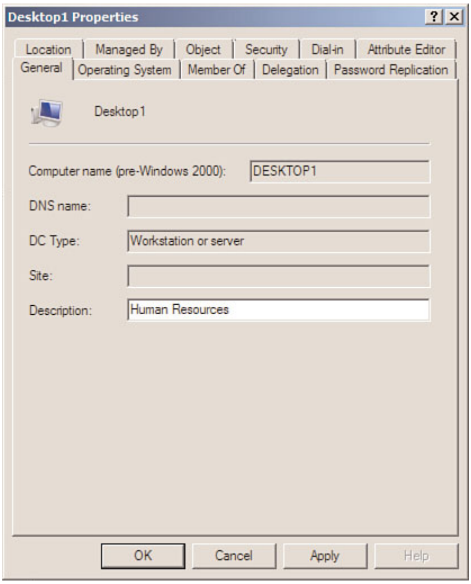
Modify a Computer Object's General Properties

Scenario/Problem: Your company uses the description field on AD DS computer objects to identify to which business unit a computer belongs.

Solution: Modify a computer object's general properties.

To modify a computer object's general properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer account you want to modify and click Properties.
4. Click the General tab, shown in Figure 8.85.



Computer name (pre-Windows 2000): DESKTOP1

DNS name:

DC Type: Workstation or server

Site:

Description: Human Resources

FIGURE 8.85
Modifying a computer object's general properties.

5. Modify the applicable properties, and then click OK.

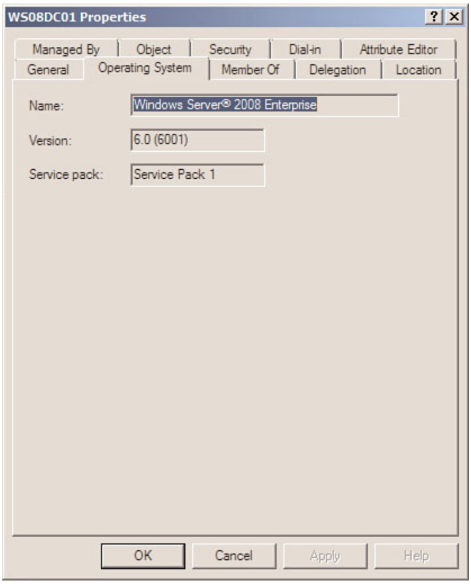
View a Computer Object's Operating System Properties

Scenario/Problem: You need to determine the operating system and service pack that is installed on a particular computer.

Solution: View a computer object's operating system properties.

To view a computer object's operating system properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer account you want to modify and click Properties.
4. Click the Operating System tab, shown in Figure 8.86.



Name: Windows Server® 2008 Enterprise

Version: 6.0 (6001)

Service pack: Service Pack 1

FIGURE 8.86
Viewing a computer object's operating system properties.

5. View the operating system properties and click OK.

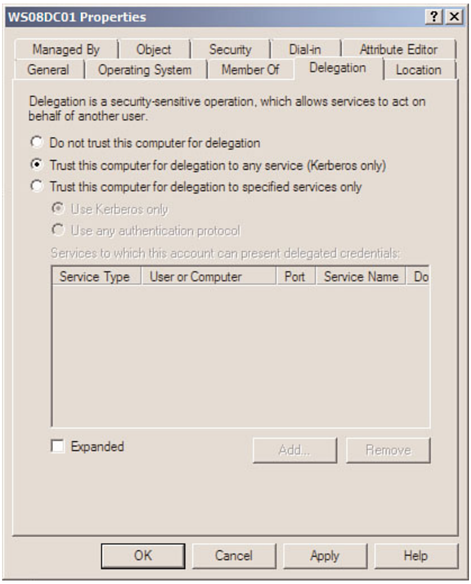
Modify a Computer Object’s Delegation Properties

Scenario/Problem: Your company has an application that uses Kerberos delegation.

Solution: Modify a computer object’s delegation properties.

To modify a computer object’s delegation properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer account you want to modify and click Properties.
4. Click the Delegation tab, shown in Figure 8.87.



Delegation is a security-sensitive operation, which allows services to act on behalf of another user.

○ Do not trust this computer for delegation
● Trust this computer for delegation to any service (Kerberos only)
○ Trust this computer for delegation to specified services only
● Use Kerberos only
○ Use any authentication protocol

Services to which this account can present delegated credentials:

□ Expanded

FIGURE 8.87
Modifying a computer object’s delegation properties.

5. Modify the applicable properties, and then click OK.

View the Password Replication Policies Applied to a Computer Object

Scenario/Problem: Your company has a number of RODCs. Each RODC caches passwords. You need to determine which RODCs have cached a password for a particular computer.

Solution: View a computers object's password replication properties.

To view the password replication policies applied to a computer object, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer account you want to view; then click Properties.
4. Click the Password Replication tab.
5. The password replication policies that are applied to the computer account are listed.
6. To view the properties of a password replication policy, select the password replication policy and click Properties.
7. Click OK to save the changes.

Modify a Computer Object's Location Properties

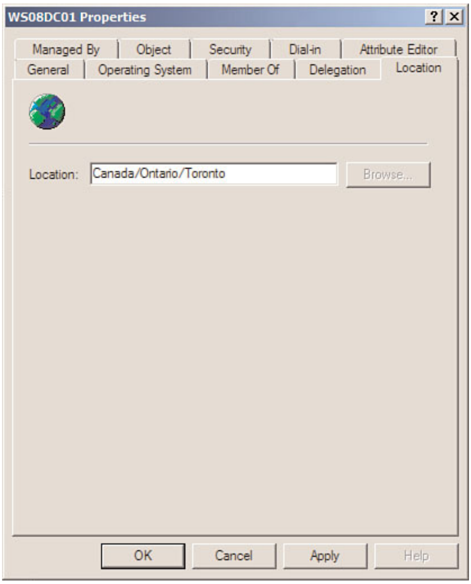
Scenario/Problem: Your company stores the physical locations of computer objects in AD DS. You need to configure the location for a particular computer.

Solution: Modify a computer object's location properties.

To modify a computer object's location properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.

3. In the details pane, right-click the computer account you want to view and click Properties.
4. Click the Location tab, shown in Figure 8.88.
5. Enter the location into the Location field; then click OK.



Location: Canada/Ontario/Toronto

FIGURE 8.88
Modifying a computer object's location properties.

Modify a Computer Object's Managed By Properties

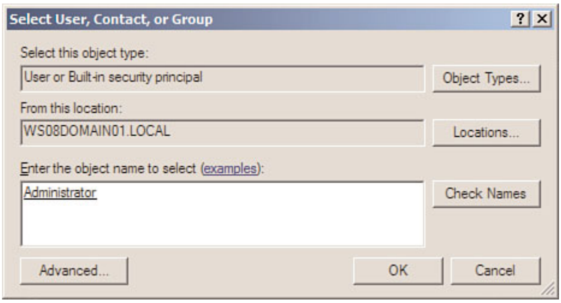
Scenario/Problem: Your company needs to record which IT administrator is responsible for the support of a particular computer.

Solution: Modify a computer object's Managed By properties.

To modify a computer object's Managed By properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the details pane, right-click the computer account you want to modify and click Properties.
4. Click the Managed By tab.

5. Click Change.
6. On the Select User, Contact, or Group window, shown in Figure 8.89, type the name of the object you want to assign as the manager and click OK.


Select User, Contact, or Group

Select this object type:
User or Built-in security principal

From this location:
WS08DOMAIN01.LOCAL

Enter the object name to select (examples):
Administrator

FIGURE 8.89
Modifying a computer object's Managed By properties.

7. Click OK.

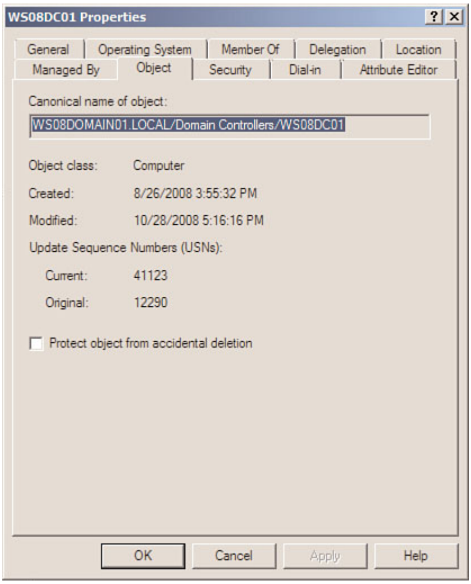
Modify a Computer Object's Protection from Deletion

Scenario/Problem: You need to prevent computer accounts from being accidently deleted from AD DS.

Solution: Modify a computer object's accidental deletion properties.

To modify a computer object's protection from deletion properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the details pane, right-click the computer account you want to modify and click Properties.
5. Click the Object tab, shown in Figure 8.90.
6. To protect a computer object from accidental deletion, select Protect object from accidental deletion.
7. To unprotect a computer object from accidental deletion, deselect Protect object from accidental deletion.



Canonical name of object: WS08DOMAIN01.LOCAL/Domain Controllers/WS08DC01

Object class: Computer

Created: 8/26/2008 3:55:32 PM

Modified: 10/28/2008 5:16:16 PM

Update Sequence Numbers (USNs):

Current: 41123

Original: 12290

□ Protect object from accidental deletion

FIGURE 8.90
Modifying a computer object's protection from deletion properties.

8. Click OK to save the changes.

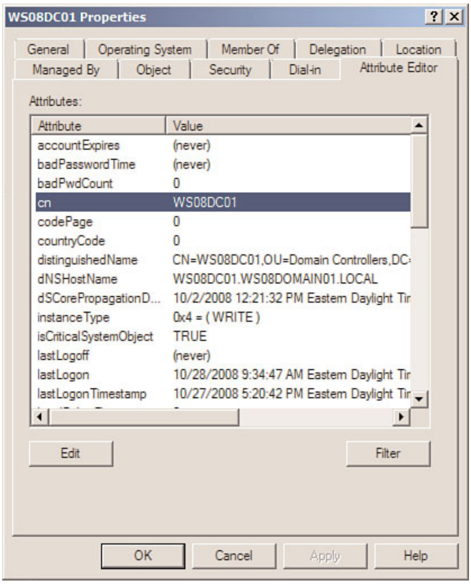
Modify a Computer Object's Custom Attributes

Scenario/Problem: Your company has a number of custom attributes in its AD DS forest. You need to edit these attributes for a particular computer account.

Solution: Modify a computer object's custom attributes.

To modify a computer object's custom attributes, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the details pane, right-click the computer account you want to modify and click Properties.
5. Click the Attribute Editor tab, shown in Figure 8.91.



Attribute	Value
accountExpires	(never)
badPasswordTime	(never)
badPwdCount	0
cn	WS08DC01
codePage	0
countryCode	0
distinguishedName	CN=WS08DC01,OU=Domain Controllers,DC=
dNSHostName	WS08DC01.WS08DOMAIN01.LOCAL
dSCorePropagationD...	10/2/2008 12:21:32 PM Eastern Daylight Tir
instanceType	0x4 = (WRITE)
isCriticalSystemObject	TRUE
lastLogoff	(never)
lastLogon	10/28/2008 9:34:47 AM Eastern Daylight Tir
lastLogonTimestamp	10/27/2008 5:20:42 PM Eastern Daylight Tir

FIGURE 8.91
Modifying a computer object’s custom attributes.

6. Modify the applicable attributes, and then click OK.

Create an Organizational Unit

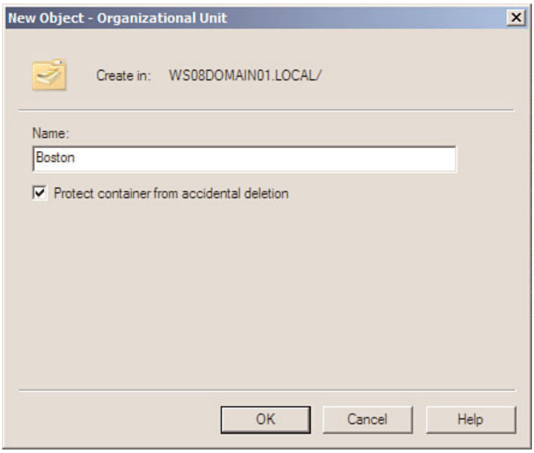
Scenario/Problem: Your company uses OUs to group objects based on their physical locations. Your company is opening a new office in Boston.

Solution: Create an OU by using the Windows interface or the command line.

Create an Organizational Unit by Using the Windows Interface

To create an OU by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the domain or OU where want to store the OU, click New, and click OU.
4. Type the name of the OU in the Name field, as shown in Figure 8.92.



New Object - Organizational Unit

Create in: WS08DOMAIN01.LOCAL/

Name: Boston

☑ Protect container from accidental deletion

FIGURE 8.92
Creating a new OU using the Windows interface.

5. If you do not want to protect the OU against accidental deletions, uncheck the Protect container from accidental deletions option and click OK.

Create an Organizational Unit by Using the Command Line

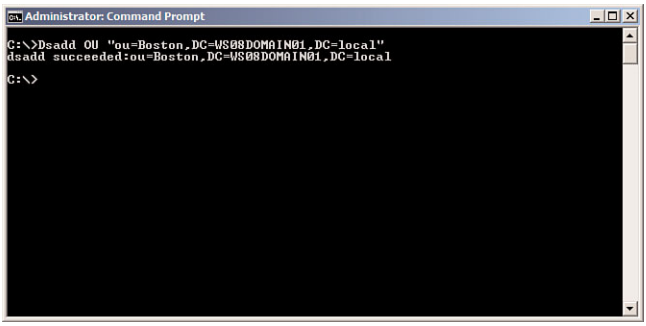
To create an OU by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsadd OU "OU=Boston,DC=WS08DOMAIN01,DC=local"
   ```

   (where "*OU=Boston,DC=WS08DOMAIN01,DC=local*" is the distinguished name of the new OU).
4. Verify that the results of the `dsadd` command entered above returns `dsadd` succeeded, as shown in Figure 8.93.

TIP For a full list of `dsadd` OU parameters, go to http://technet.microsoft.com/en-us/library/cc770883.aspx.



```
C:\>Dsadd OU "ou=Boston,DC=WS08DOMAIN01,DC=local"
dsadd succeeded:ou=Boston,DC=WS08DOMAIN01,DC=local

C:\>
```

FIGURE 8.93
Creating an OU using the command line.

Delete an Organizational Unit

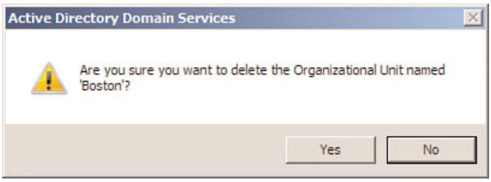
Scenario/Problem: Your company has an empty OU that is no longer required.

Solution: Delete an OU by using the Windows interface or the command line.

Delete an Organizational Unit by Using the Windows Interface

To delete an OU by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU you want to delete and select Delete.
4. On the confirmation screen to delete the OU, shown in Figure 8.94, click Yes.



Are you sure you want to delete the Organizational Unit named 'Boston'?

FIGURE 8.94
Deleting an OU using the Windows interface.

Deleting OUs in Windows Server 2008

In Windows Server 2008, the option to protect an OU from accidental deletion is selected by default when the OU is created using Active Directory Users and Computers. If you need to delete an OU, you must ensure that the object is not protected from accidental deletion before it can be deleted.

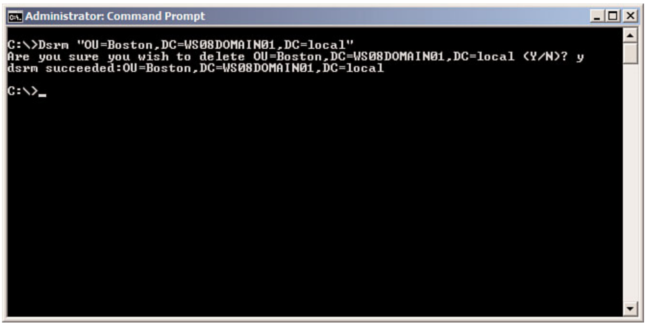
Delete an Organizational Unit by Using the Command Line

To delete an OU by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   `Dsrm "OU=Boston,DC=WS08DOMAIN01,DC=local"`

   (where *`"OU=Boston,DC=WS08DOMAIN01,DC=local"`* is the distinguished name of the OU you want to delete).
4. Type **`Y`** on the confirmation to delete the OU and press Enter.
5. Verify that the results of the `dsrm` command entered above returns `dsrm` succeeded, as shown in Figure 8.95.



```
C:\>Dsrm "OU=Boston,DC=WS08DOMAIN01,DC=local"
Are you sure you wish to delete OU=Boston,DC=WS08DOMAIN01,DC=local (Y/N)? y
dsrm succeeded:OU=Boston,DC=WS08DOMAIN01,DC=local

C:\>_
```

FIGURE 8.95
Deleting an OU using the command line.

TIP For a full list of `dsrm` OU parameters, go to http://technet.microsoft.com/en-us/library/cc731865.aspx.

Rename an Organizational Unit

Scenario/Problem: Your company has an OU that was named incorrectly.

Solution: Rename the OU by using the Windows Interface or the command line.

Rename an Organizational Unit by Using the Windows Interface

To rename an OU by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU you want to rename and click Rename.
4. Type the new OU name and press Enter.

Rename an Organizational Unit by Using the Command Line

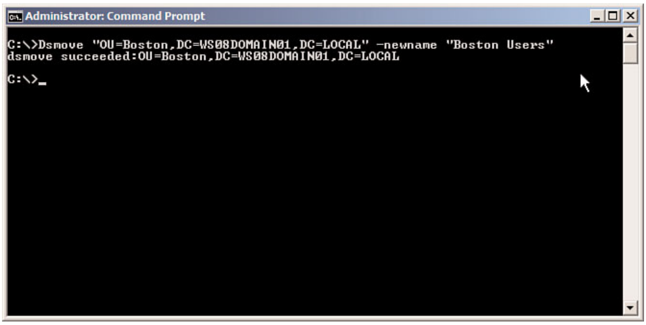
To rename an OU by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   Dsmove  "OU=Boston,DC=WS08DOMAIN01,DC=LOCAL" -newname "Boston
   Users"
   ```

   (where "*OU=Boston,DC=WS08DOMAIN01,DC=LOCAL*" is the distinguished name of the OU and "*Boston Users*" is the new OU name).
4. Verify that the results of the `dsmove` command entered above returns `dsmove` succeeded, as shown in Figure 8.96.

TIP For a full list of `dsmove` parameters, go to http://technet.microsoft.com/en-us/library/cc731094.aspx.



```
C:\>Dsmove "OU=Boston,DC=WS08DOMAIN01,DC=LOCAL" -newname "Boston Users"
dsmove succeeded:OU=Boston,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.96
Renaming an OU using the command line.

Move an Organizational Unit

Scenario/Problem: Your company is restructuring its AD DS logical design and requires OUs to be nested under other OUs.

Solution: Move an OU by using the Windows interface or the command line.

Move an Organizational Unit by Using the Windows Interface

To move an OU by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU you want to move and click Move.
4. On the Move window, select the location where you want to move the OU object; then click OK, shown in Figure 8.97

Move an Organizational Unit Object by Using the Command Line

1. Log on to a domain controller.
2. Click Start, and click Command Prompt.

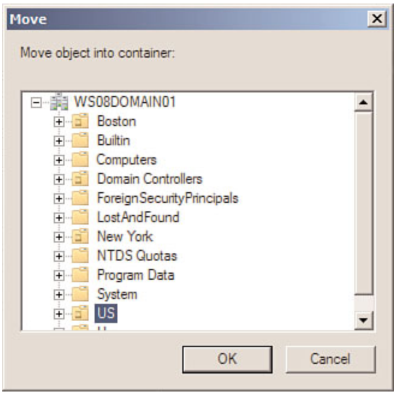


FIGURE 8.97
The Move window.

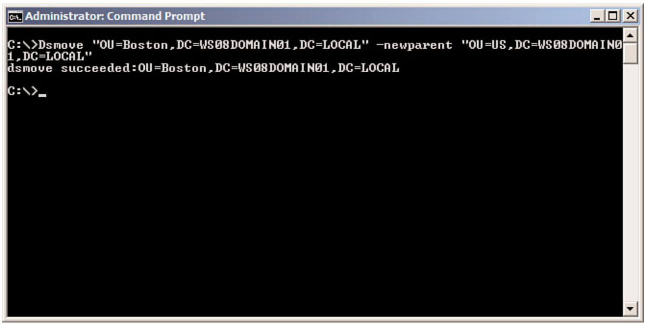
3. In the Command Prompt window, type the following command and press Enter:

   `Dsmove "OU=Boston,DC=WS08DOMAIN01,DC=LOCAL" -newparent "OU=US,DC=WS08DOMAIN01,DC=LOCAL"`

   (where "*OU=Boston,DC=WS08DOMAIN01,DC=LOCAL*" is the distinguished name of the OU to move and "*OU=US,DC=WS08DOMAIN01,DC=LOCAL*" is the location to which you want to move the OU).

4. Verify that the results of the `dsmove` command entered above returns `dsmove` succeeded, as shown in Figure 8.98

TIP For a full list of `dsmove` parameters, go to http://technet.microsoft.com/en-us/library/cc731094.aspx.



```
C:\>Dsmove "OU=Boston,DC=WS08DOMAIN01,DC=LOCAL" -newparent "OU=US,DC=WS08DOMAIN0
1,DC=LOCAL"
dsmove succeeded:OU=Boston,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 8.98
Moving an OU using the command line.

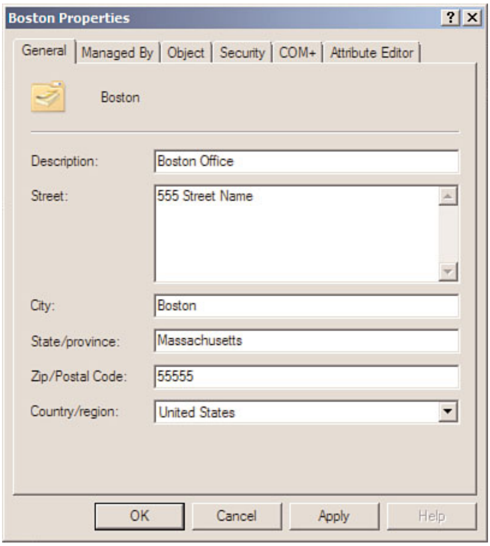
Modify an Organizational Unit’s General Properties

Scenario/Problem: Your company uses the description field on AD DS OUs to identify to which business unit an OU belongs.

Solution: Modify the general properties on an OU.

To modify an OU’s general properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU account you want to modify and click Properties.
4. Click the General tab, shown in Figure 8.99.



Boston

Description: Boston Office

Street: 555 Street Name

City: Boston

State/province: Massachusetts

Zip/Postal Code: 55555

Country/region: United States

FIGURE 8.99
Modifying an OU’s general properties.

5. Modify the applicable properties, and then click OK.

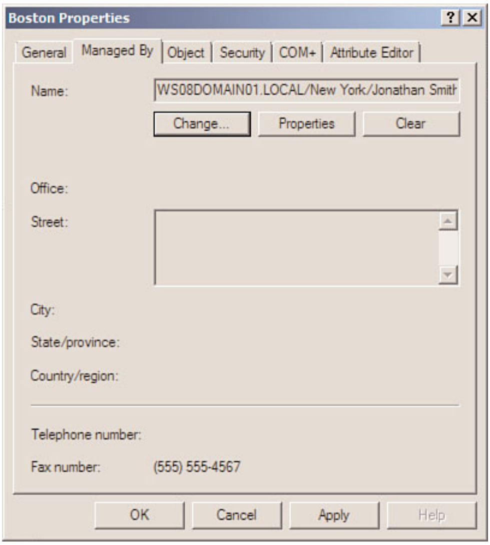
Modify an Organizational Unit’s Managed By Properties

Scenario/Problem: Your company needs to record which IT administrator is responsible for the support of a particular OU.

Solution: Modify the Managed By properties on an OU.

To modify an OU’s Managed By properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU you want to modify and click Properties.
4. Click the Managed By tab.
5. Click Change.
6. On the Select User, Contact, or Group window, shown in Figure 8.100, type the name of the object you want to assign as the manager; then click OK.


Boston Properties

Name: WS08DOMAIN01.LOCAL/New York/Jonathan Smitł

Fax number: (555) 555-4567

FIGURE 8.100
Modifying an OU’s Managed By properties.

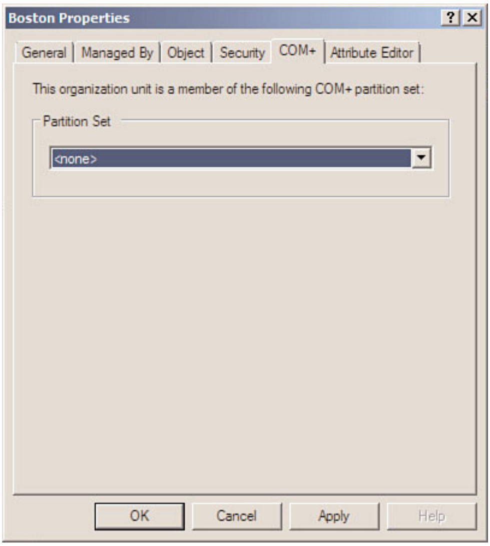
Modify an Organizational Unit's COM+ Properties

Scenario/Problem: Your company has a COM+ partition set in AD DS. You need to associate OUs with a COM+ partition set.

Solution: Modify the COM+ properties on an OU.

To modify an OU's COM+ properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the OU you want to modify and click Properties.
4. Click the COM+ tab, as shown in Figure 8.101.



This organization unit is a member of the following COM+ partition set:

Partition Set

<none>

FIGURE 8.101
Modifying an OU's COM+ properties.

5. Modify the applicable properties, and then click OK.

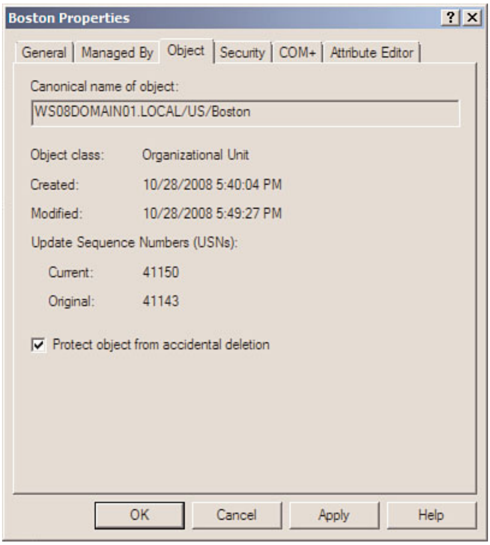
Modify an Organizational Unit's Protection from Deletion

Scenario/Problem: You need to prevent OUs from being accidently deleted from AD DS.

Solution: Modify the accidental deletion properties on an OU.

To modify an OU's protection from deletion properties, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the console tree, right-click the OU you want to modify and click Properties.
5. Click the Object tab, shown in Figure 8.102.


Boston Properties
? ×
General | Managed By | Object | Security | COM+ | Attribute Editor
OK | Cancel | Apply | Help

Canonical name of object:
WS08DOMAIN01.LOCAL/US/Boston

Object class: Organizational Unit
Created: 10/28/2008 5:40:04 PM
Modified: 10/28/2008 5:49:27 PM
Update Sequence Numbers (USNs):
Current: 41150
Original: 41143

☑ Protect object from accidental deletion

FIGURE 8.102
Modifying an OU's protection from deletion properties.

6. To protect an OU from accidental deletion, select Protect Object from Accidental Deletion.
7. To unprotect an OU from accidental deletion, deselect Protect Object from Accidental Deletion.
8. Click OK to save the changes.

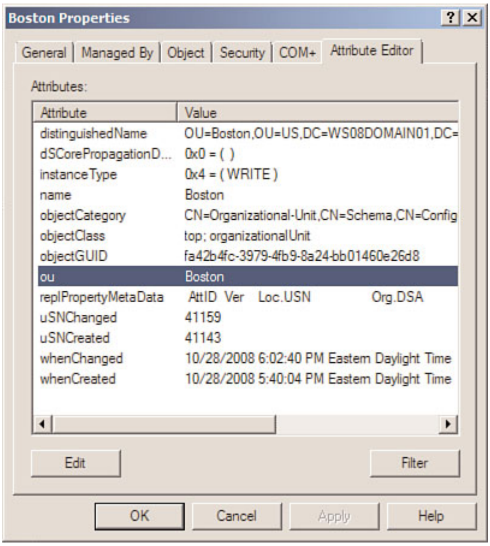
Modify an Organizational Unit's Custom Attributes

Scenario/Problem: Your company has a number of custom attributes in its AD DS forest. You need to edit these attributes for a particular OU.

Solution: Modify custom attributes on an OU.

To modify an OU's custom attributes, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Ensure that Advanced Features is selected in the View menu.
4. In the console tree, right-click the computer account you want to modify and click Properties.
5. Click the Attribute Editor tab, shown in Figure 8.103.



Attribute	Value
distinguishedName	OU=Boston,OU=US,DC=WS08DOMAIN01,DC=
dSCorePropagationD...	0x0 = ( )
instanceType	0x4 = (WRITE)
name	Boston
objectCategory	CN=Organizational-Unit,CN=Schema,CN=Config
objectClass	top; organizationalUnit
objectGUID	fa42b4fc-3979-4fb9-8a24-bb01460e26d8
ou	Boston
replPropertyMetaData	AttID Ver Loc.USN Org.DSA
uSNChanged	41159
uSNCreated	41143
whenChanged	10/28/2008 6:02:40 PM Eastern Daylight Time
whenCreated	10/28/2008 5:40:04 PM Eastern Daylight Time

FIGURE 8.103
Modifying an OU's custom attributes.

6. Modify the applicable attributes, and then click OK.

This page intentionally left blank

CHAPTER 9

Manage Group Policy

IN THIS CHAPTER:

- Create Group Policy Objects
- Delete Group Policy Objects
- Create Starter GPOs
- Delete Starter GPOs
- Create a New Group Policy Object from a Starter GPO
- Edit Group Policy Objects and Starter GPOs
- Copy Group Policy Objects and Starter GPOs
- Comment Group Policy Objects and Starter GPOs
- View, Print, and Save a Report for Group Policy Objects
- Back Up Group Policy Objects and Starter GPOs
- Restore Group Policy Objects and Starter GPOs
- Export a Starter GPO
- Import a Starter GPO
- Search Group Policy Objects
- Create a Migration Table
- Automatically Populate a Migration Table from a Group Policy Object
- Link a Group Policy Object
- Remove a Group Policy Object Link
- Disable a Group Policy Object Link
- Enable a Group Policy Object Link
- Enforce a Group Policy Object Link
- Remove the Enforcement of a Group Policy Object Link
- Block Inheritance of Group Policy Objects
- Remove Block Inheritance of Group Policy Objects

- Change the Order of Group Policy Object Links
- Filter Group Policy Object Scope by Using Security Groups
- Disable User Settings in a Group Policy Object
- Disable Computer Settings in a Group Policy Object
- Create a WMI Filter
- Import a WMI Filter
- Export a WMI Filter
- Copy a WMI Filter
- Link a WMI Filter to a Group Policy Object
- Determine a Resultant Set of Policy
- Simulate a Resultant Set of Policy Using Group Policy Modeling
- Delegate Permissions on a Group Policy Object
- Modify Delegated Permissions on a Group Policy Object
- Remove Delegated Permissions on a Group Policy Object
- Delegate Permissions to Link Group Policy Objects
- Modify Delegated Permissions to Link Group Policy Objects
- Remove Delegated Permissions to Link Group Policy Objects
- Delegate Permissions for Generating Group Policy Modeling Data
- Modify Delegated Permissions for Generating Group Policy Modeling Data
- Remove Delegated Permissions for Generating Group Policy Modeling Data
- Delegate Permissions for Generating Group Policy Results
- Modify Delegated Permissions for Generating Group Policy Results
- Remove Delegated Permissions for Generating Group Policy Results
- Delegate Permissions for WMI Filters
- Modify Delegated Permissions for WMI Filters
- Remove Delegated Permissions for WMI Filters

Group policy, when used in conjunction with Active Directory Domain Services (AD DS), enables automated management of multiple computers and users. Group policy can be applied to an AD DS site, a domain, or a range of organizational units (OUs). Group policy can be used to implement security settings, enforce IT policies, and implement software distribution.

This chapter describes the steps required to manage group policy.

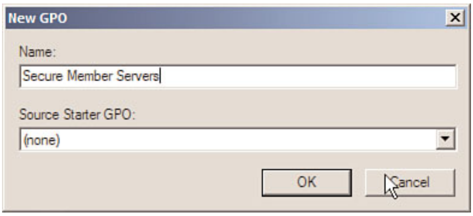
Create Group Policy Objects

Scenario/Problem: You need to enforce consistent security settings across a number of member servers.

Solution: Create a group policy object (GPO).

To create a group policy object, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain where you want to create the GPO, right-click the Group Policy Objects node, and click New.
4. In the New GPO window, shown in Figure 9.1, type a name for the GPO in the Name field and click OK.



Name: Secure Member Servers

Source Starter GPO: (none)

FIGURE 9.1
The New GPO window.

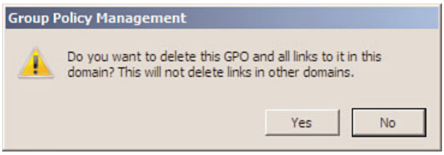
Delete Group Policy Objects

Scenario/Problem: You previously used a GPO to apply security settings. The GPO is no longer required.

Solution: Delete a GPO.

To delete a group policy object, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the GPO to delete; then select Group Policy Objects.
4. Right-click the GPO you want to delete, and select Delete.
5. Select Yes to confirm the deletion of the GPO on the confirmation window shown in Figure 9.2.


Group Policy Management

Do you want to delete this GPO and all links to it in this domain? This will not delete links in other domains.

FIGURE 9.2
The confirmation to delete a GPO.

Create Starter GPOs

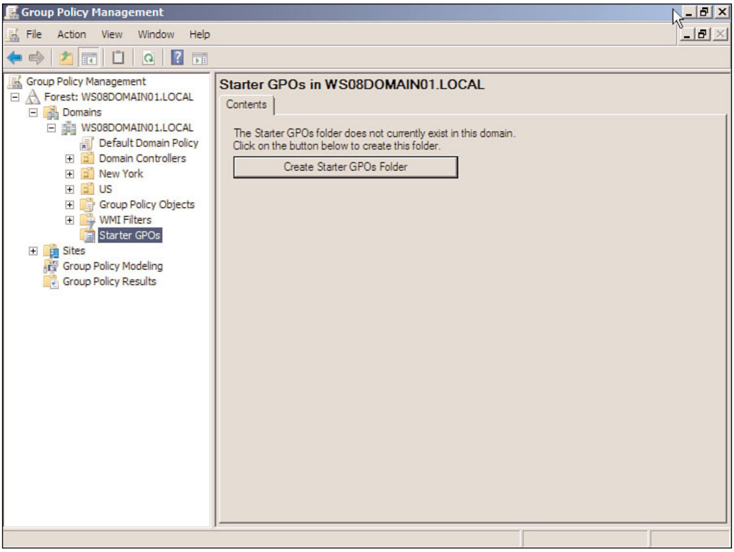
Scenario/Problem: Your company needs a baseline GPO that can be used to create incremental GPOs in your forest.

Solution: Create a starter GPO.

To create a starter GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.

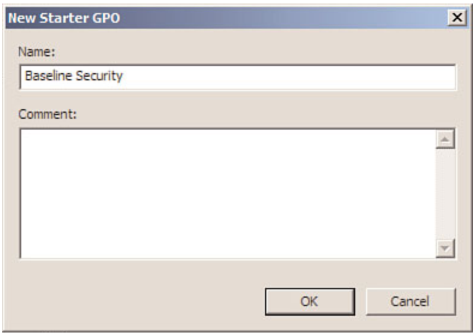
3. In the console tree, navigate to the domain in which you want to create the starter GPO, and select the Starter GPOs node.
4. If you have not previously created starter GPOs in this domain, you need to first create the Starter GPOs folder in the domain. In the details pane, click Create Starter GPOs Folder, shown in Figure 9.3.



The Starter GPOs folder does not currently exist in this domain.
Click on the button below to create this folder.

FIGURE 9.3
The Create Starter GPOs Folder button.

5. Right-click the Starter GPOs node in the console tree, and select New.
6. In the New Starter GPO window, shown in Figure 9.4, type a name for the starter GPO in the Name field; then click OK.



Name: Baseline Security

Comment:

FIGURE 9.4
The New Starter GPO window.

Delete Starter GPOs

Scenario/Problem: Your company previously created a starter GPO that is no longer required.

Solution: Delete a starter GPO.

To delete a starter GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain in which you want to delete the starter GPO, and select the Starter GPOs node.
4. Right-click the starter GPOs you want to delete, and click Delete.
5. Click OK to confirm the deletion of the GPO, shown in Figure 9.5.

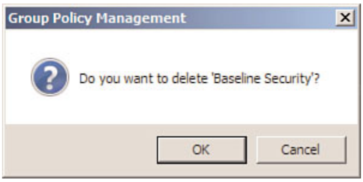

Do you want to delete 'Baseline Security'?

FIGURE 9.5
Deleting a starter GPO.

Create a New Group Policy Object from a Starter GPO

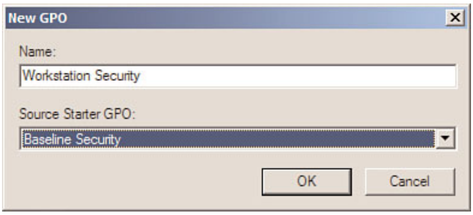
Scenario/Problem: Your company has a number of starter GPOs. You need to create a new GPO that is derived from a starter GPO.

Solution: Create a new GPO from a starter GPO.

To create a new GPO from a starter GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.

3. In the console tree, navigate to the domain where you want to create the GPO, right-click the Group Policy Objects node, and click New.
4. In the New GPO window, shown in Figure 9.6, type a name for the GPO in the Name field.
5. In the Source Starter GPO field, select the Starter GPO you want to use from the drop-down list and click OK.



Name: Workstation Security

Source Starter GPO: Baseline Security

FIGURE 9.6
Creating a new GPO from a starter GPO.

Edit Group Policy Objects and Starter GPOs

Scenario/Problem: You created a new GPO and need to use it to apply security settings to users.

Solution: Edit a GPO.

To edit a GPO, perform the following steps:

TIP These steps can be applied to a GPO and a starter GPO.

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the GPO or starter GPO you want to edit.
4. If you want to edit a GPO, select the Group Policy Objects node. If you want to edit a starter GPO, select the Starter GPOs node.
5. Right-click the GPO you want to edit, and select Edit.
6. In the Group Policy Management Editor, shown in Figure 9.7, modify the settings accordingly and then close the Group Policy Management Editor.

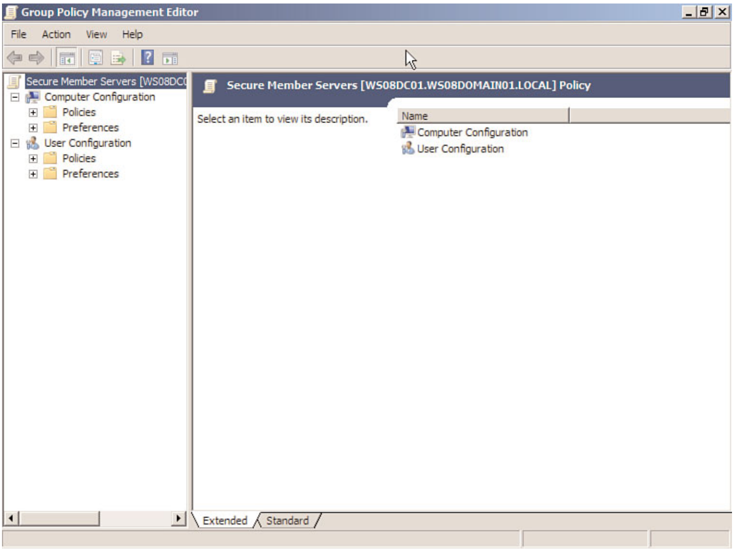

Group Policy Management Editor
File
Action
View
Help
Secure Member Servers [WS08DC0
Computer Configuration
Policies
Preferences
User Configuration
Policies
Preferences
Secure Member Servers [WS08DC01.WS08DOMAIN01.LOCAL] Policy
Select an item to view its description.
Name
Computer Configuration
User Configuration
Extended
Standard

FIGURE 9.7
Editing a GPO.

NOTE The majority of group policy settings are configured in one of two states: Not Defined or Defined. When a group policy setting is configured as Not Defined, the setting is not applied via the GPO. When a group policy setting is configured as Defined, it is applied via the GPO.

Furthermore, when a group policy setting is configured as defined, the way in which the setting is edited varies depending on the setting in question. For example, certain group policy settings can be set to be enabled or disabled, such as the Administrator Account Status. Certain group policy settings can be set to numerical values, such as the Password Policies. Some group policy settings can be set to security principals, such as User Rights Assignments.

Copy Group Policy Objects and Starter GPOs

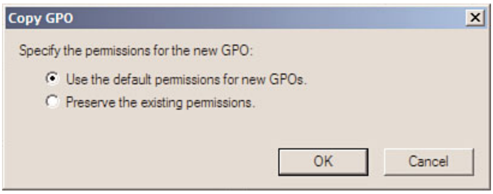
Scenario/Problem: You have an existing GPO and want to create a new GPO that has the exact same settings, but that you can alter independently.

Solution: Copy a GPO.

To copy a GPO or a starter GPO, perform the following tasks:

TIP These steps can be applied to a GPO and a starter GPO.

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the GPO or starter GPO you want to copy.
4. If you want to copy a GPO, select the Group Policy Objects node. If you want to copy a starter GPO, select the Starter GPOs node.
5. Right-click the GPO you want to copy, and select Copy.
6. If you are copying a GPO, right-click the Group Policy Objects node and click Paste. On the Copy GPO window, select how you want permissions for the new GPO to be handled, as shown in Figure 9.8, and click OK.


Copy GPO

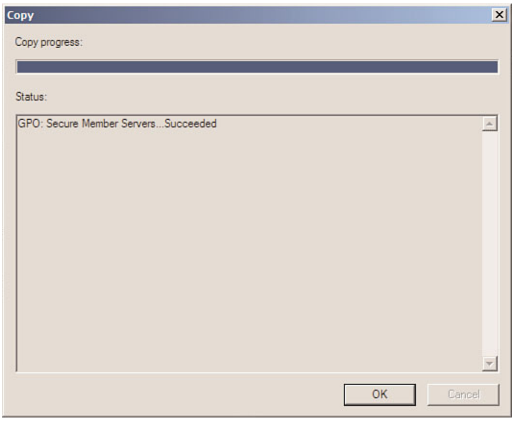
Specify the permissions for the new GPO:

● Use the default permissions for new GPOs.

○ Preserve the existing permissions.

FIGURE 9.8
Copying GPO permissions.

7. If you are copying a starter GPO, right-click the Starter GPOs node and click Paste.
8. Verify that the copy progress succeeded, as shown in Figure 9.9, and click OK.


Copy

Copy progress:

Status:

GPO: Secure Member Servers...Succeeded

FIGURE 9.9
Verifying the progress of copying the GPO.

9. Rename the GPO accordingly.

Comment Group Policy Objects and Starter GPOs

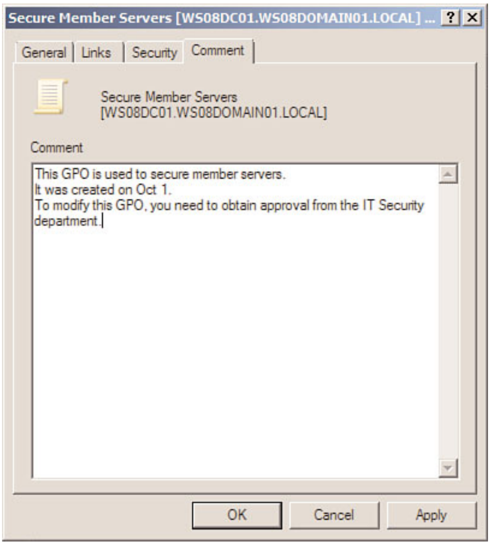
Scenario/Problem: You need to add text to GPOs so that other administrators know who needs to approve changes to each GPO.

Solution: Comment a GPO.

To comment a GPO or a starter GPO, perform the following tasks:

TIP These steps can be applied to a GPO and a starter GPO.

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the GPO or starter GPO you want to comment.
4. If you want to comment a GPO, select the Group Policy Objects node. If you want to comment a starter GPO, select the Starter GPOs node.
5. Right-click the GPO you want to comment, and select Edit.
6. In the Group Policy Management Editor, right-click the name of the GPO or starter GPO in the console tree; then select Properties.
7. On the properties page for the GPO or starter GPO, click the Comment tab, shown in Figure 9.10.
8. Type a comment in the Comment field, and then click OK.


Secure Member Servers [WS08DC01.WS08DOMAIN01.LOCAL] ...
?
General
Links
Security
Comment
Secure Member Servers
[WS08DC01.WS08DOMAIN01.LOCAL]
Comment
OK
Cancel
Apply

This GPO is used to secure member servers.
It was created on Oct 1.
To modify this GPO, you need to obtain approval from the IT Security department.

FIGURE 9.10
Commenting a GPO.

View, Print, and Save a Report for Group Policy Objects

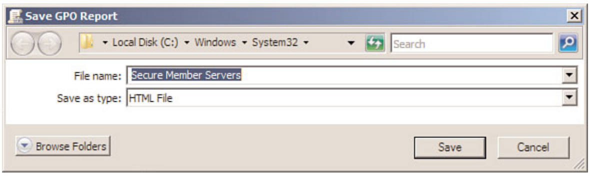
Scenario/Problem: You need to produce a report of the settings defined by a GPO.

Solution: View a report for a GPO and save the report.

To view, print, and save a report for a GPO or a starter GPO, perform the following tasks:

TIP These steps can be applied to a GPO and a starter GPO.

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the GPO or starter GPO you want to produce the report for.
4. If you want to produce a report for a GPO, select the Group Policy Objects node. If you want to produce a report for a starter GPO, select the Starter GPOs node.
5. Click the GPO or starter GPO for which you want to produce a report, and click the Settings tab. If you are presented with an Internet Explorer Enhanced Security Configuration Error, click Add.
6. To save the report, right-click the details pane, select Save Report, and browse to the location in which you want to store the saved report, as shown in Figure 9.11.



File name: Secure Member Servers

Save as type: HTML File

FIGURE 9.11
Saving a GPO report.

7. To print the report, right-click the details pane and select Print.

Back Up Group Policy Objects and Starter GPOs

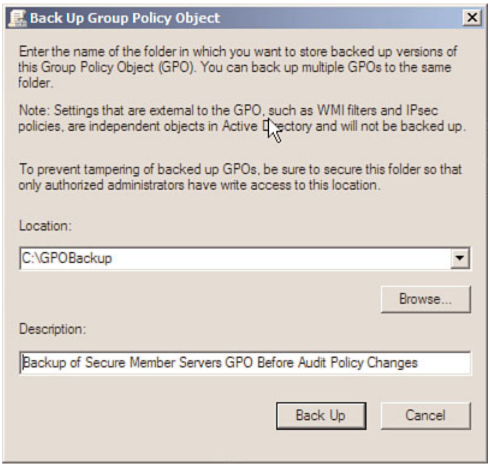
Scenario/Problem: You plan to modify the settings in a GPO. You want to ensure you can reverse the changes you make in case something goes wrong.

Solution: Back up a GPO.

To backup a GPO or a starter GPO, perform the following steps:

TIP These steps can be applied to a GPO and a starter GPO.

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the GPO or starter GPO you want to back up.
4. If you want to back up all GPOs, right-click the Group Policy Objects node and then select Back Up All. If you want to back up all starter GPOs, right-click the Starter GPOs node and then select Back Up All. Proceed to Step 7.
5. If you want to back up a single GPO, select the Group Policy Objects node. If you want to back up a single starter GPO, select the Starter GPOs node.
6. Right-click the GPO you want to back up, and select Backup.
7. On the Back Up Group Policy Object window, shown in Figure 9.12, type or browse to a location to which you want to store the backup in the Location field, enter a description for the backup, and click Back Up.
8. Verify that the backup progress bar shows that it succeeded, as shown in Figure 9.13, and click OK.



Back Up Group Policy Object

Enter the name of the folder in which you want to store backed up versions of this Group Policy Object (GPO). You can back up multiple GPOs to the same folder.

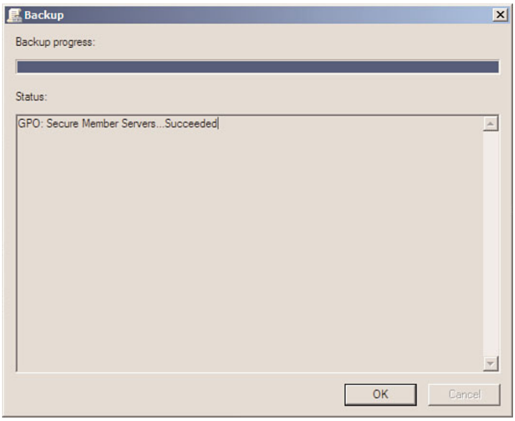
Note: Settings that are external to the GPO, such as WMI filters and IPsec policies, are independent objects in Active Directory and will not be backed up.

To prevent tampering of backed up GPOs, be sure to secure this folder so that only authorized administrators have write access to this location.

Location: C:\GPOBackup

Description: Backup of Secure Member Servers GPO Before Audit Policy Changes

FIGURE 9.12
The Back Up Group Policy Object window.



Backup

Backup progress:

Status:

GPO: Secure Member Servers...Succeeded

FIGURE 9.13
Backing up a GPO.

Restore Group Policy Objects and Starter GPOs

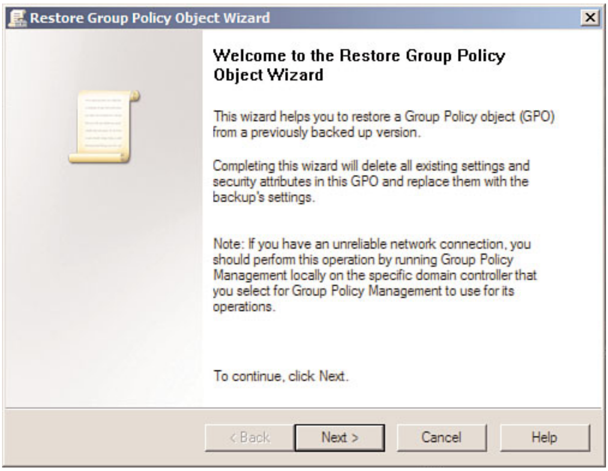
Scenario/Problem: You modified the settings in a GPO. The new settings had a negative impact on your environment. You need to reverse the changes made to the GPO.

Solution: Restore a GPO.

To restore a GPO or a starter GPO, perform the following steps:

TIP These steps can be applied to a GPO and a starter GPO.

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the GPO or starter GPO you want to restore.
4. If you want to restore a GPO, select the Group Policy Objects node. If you want to restore a starter GPO, select the Starter GPOs node.
5. Right-click the GPO you want to restore, and select Restore from Backup.
6. Click Next on the Restore Group Policy Object Wizard window, shown in Figure 9.14.



Welcome to the Restore Group Policy Object Wizard

This wizard helps you to restore a Group Policy object (GPO) from a previously backed up version.

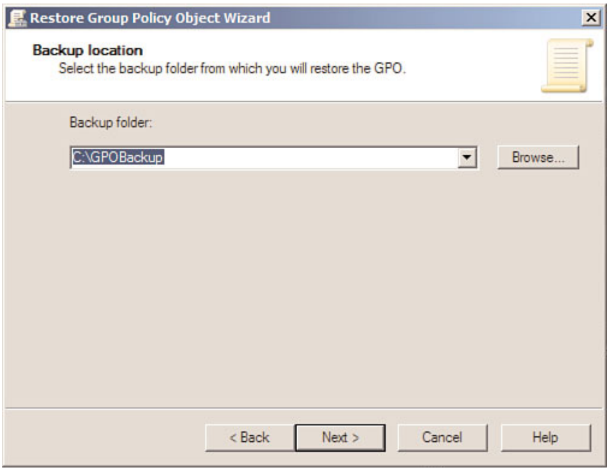
Completing this wizard will delete all existing settings and security attributes in this GPO and replace them with the backup's settings.

Note: If you have an unreliable network connection, you should perform this operation by running Group Policy Management locally on the specific domain controller that you select for Group Policy Management to use for its operations.

To continue, click Next.

FIGURE 9.14
The Restore Group Policy Object Wizard.

7. On the Backup Location page, shown in Figure 9.15, type or browse to the location of the backup files.
8. On the Source GPO page, shown in Figure 9.16, select the GPO or starter GPO you want to restore and click Next.

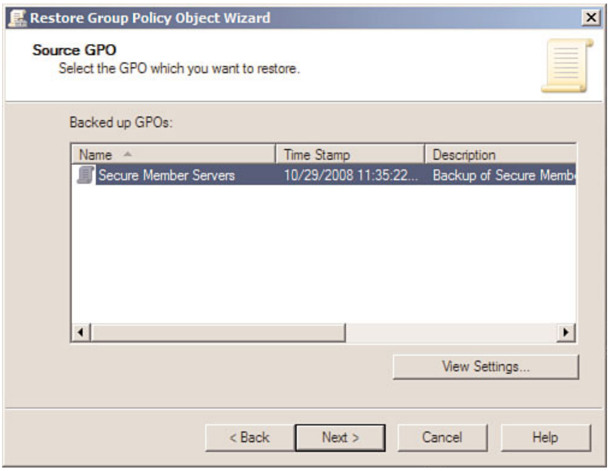

Restore Group Policy Object Wizard

Backup location

Select the backup folder from which you will restore the GPO.

Backup folder: C:\GPOBackup

FIGURE 9.15
The Backup Location page.


Restore Group Policy Object Wizard

Source GPO

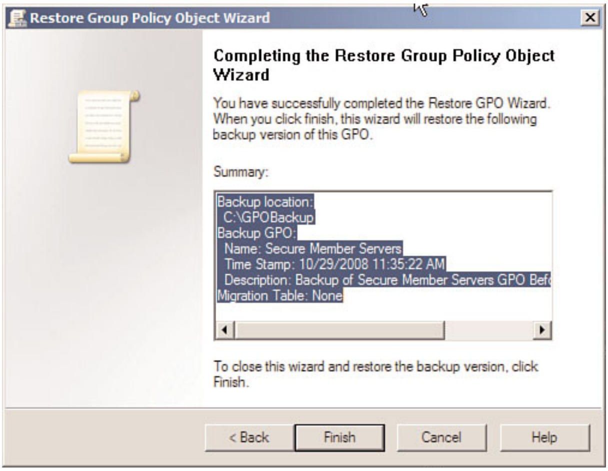
Select the GPO which you want to restore.

Backed up GPOs:

Name	Time Stamp	Description
Secure Member Servers	10/29/2008 11:35:22...	Backup of Secure Memb

FIGURE 9.16
The Source GPO page.

9. On the Completing the Restore Group Policy Object Wizard page, shown in Figure 9.17, click Finish.
10. Verify that the restore progress bar shows it succeeded, as shown in Figure 9.18; then click OK.



Completing the Restore Group Policy Object Wizard

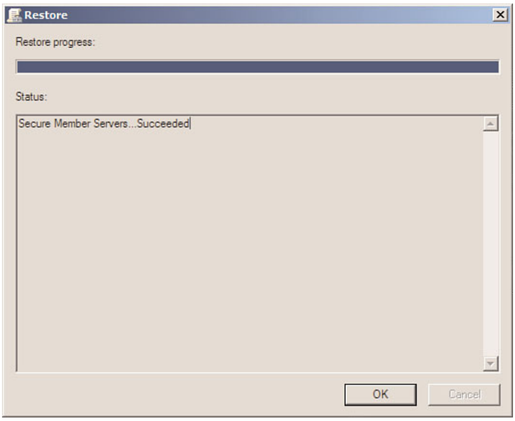
You have successfully completed the Restore GPO Wizard. When you click finish, this wizard will restore the following backup version of this GPO.

Summary:

```
Backup location:
  C:\GPOBackup
Backup GPO:
  Name: Secure Member Servers
  Time Stamp: 10/29/2008 11:35:22 AM
  Description: Backup of Secure Member Servers GPO Bef
Migration Table: None
```

To close this wizard and restore the backup version, click Finish.

FIGURE 9.17
The Completing the Restore Group Policy Object Wizard page.



Status:

```
Secure Member Servers...Succeeded
```

FIGURE 9.18
The progress bar for restoring a GPO.

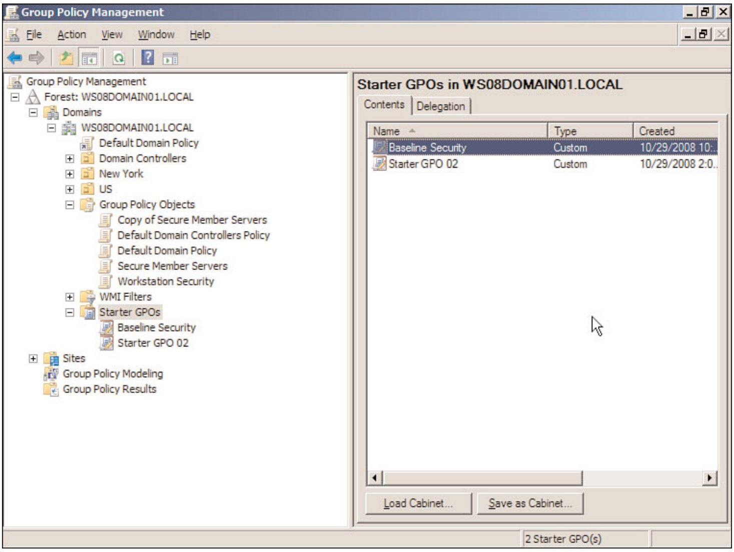
Export a Starter GPO

Scenario/Problem: You have a number of starter GPOs in your AD DS domain. You need to copy one of these starter GPOs to a domain in another AD DS forest.

Solution: Export the starter GPO.

To export a starter GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the starter GPO you want to export.
4. Select the Starter GPOs node.
5. In the details pane, shown in Figure 9.19, select the starter GPO you want to export and click Save as Cabinet.



Name	Type	Created
Baseline Security	Custom	10/29/2008 10:..
Starter GPO 02	Custom	10/29/2008 2:0..

FIGURE 9.19
Exporting a starter GPO.

6. In the Save Starter GPO as Cabinet window, type the name and location to which to export the starter GPO; then click Save.

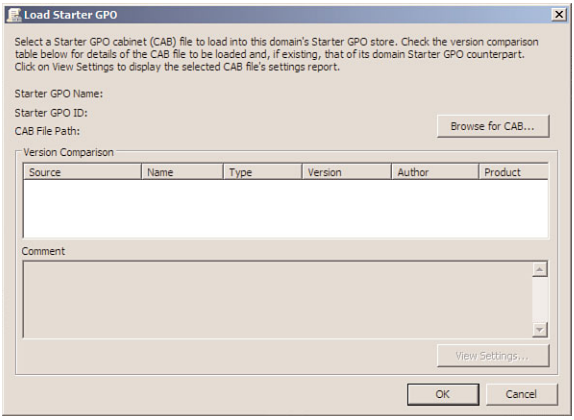
Import a Starter GPO

Scenario/Problem: You have an export of a starter GPO that you need to import into your AD DS domain.

Solution: Import the starter GPO.

To import a starter GPO, perform the following steps:

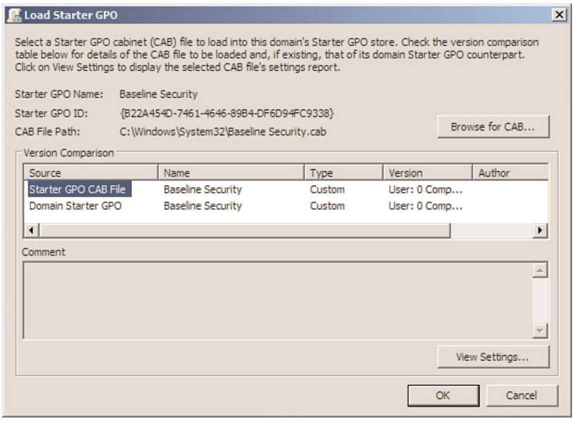
1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, navigate to the domain that contains the starter GPO you want to import.
4. Select the Starter GPOs node.
5. In the details pane, select Load Cabinet.
6. In the Load Starter GPO Wizard, shown in Figure 9.20, click Browse for CAB.



Select a Starter GPO cabinet (CAB) file to load into this domain's Starter GPO store. Check the version comparison table below for details of the CAB file to be loaded and, if existing, that of its domain Starter GPO counterpart. Click on View Settings to display the selected CAB file's settings report.

FIGURE 9.20
The Load Starter GPO Wizard.

7. Type the name and location of the starter GPO cabinet file you want to import, and click Open.
8. Click OK to import the starter GPO, as shown in Figure 9.21.



Load Starter GPO

Select a Starter GPO cabinet (CAB) file to load into this domain's Starter GPO store. Check the version comparison table below for details of the CAB file to be loaded and, if existing, that of its domain Starter GPO counterpart. Click on View Settings to display the selected CAB file's settings report.

Starter GPO Name: Baseline Security

Starter GPO ID: {B22A454D-7461-4646-89B4-DF6D94FC9338}

CAB File Path: C:\Windows\System32\Baseline Security.cab

Version Comparison

Source	Name	Type	Version	Author
Starter GPO CAB File	Baseline Security	Custom	User: 0 Comp...	
Domain Starter GPO	Baseline Security	Custom	User: 0 Comp...	

Comment

FIGURE 9.21
Importing a starter GPO.

NOTE If you have an existing starter GPO that has the same name as the starter GPO you are importing, you will receive a message that the existing starter GPO will be overwritten.

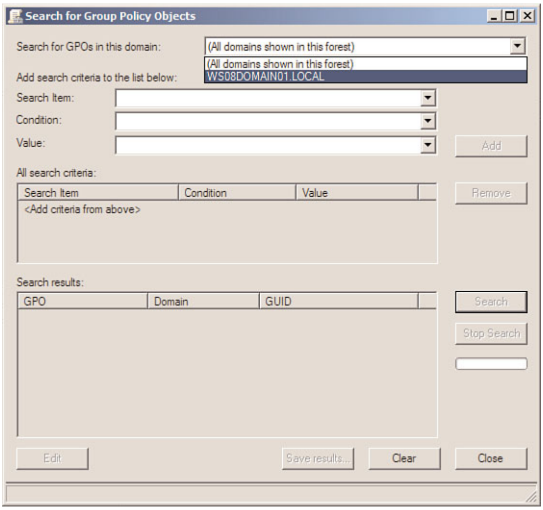
Search Group Policy Objects

Scenario/Problem: You have a number of GPOs in your AD DS forest. You need to determine which GPOs have computer scripts defined.

Solution: Search a GPO.

To search GPOs, perform the following steps:

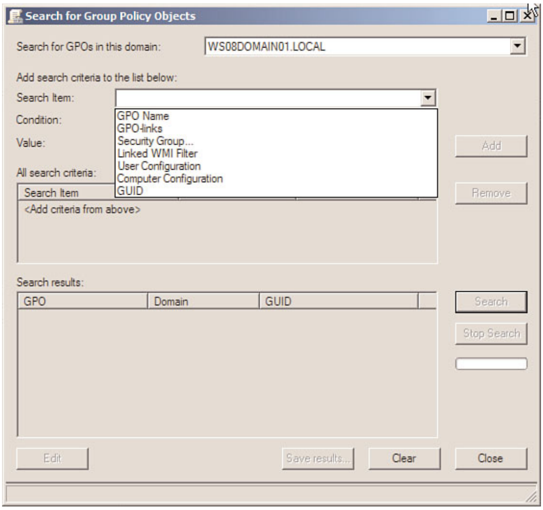
1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. Right-click the forest node and select Search.
4. In the Search for Group Policy Objects window, shown in Figure 9.22, select the scope of your search by choosing a particular domain or the all domains shown in this forest option in the Search for GPOs in this domain field.



Search for GPOs in this domain: (All domains shown in this forest)

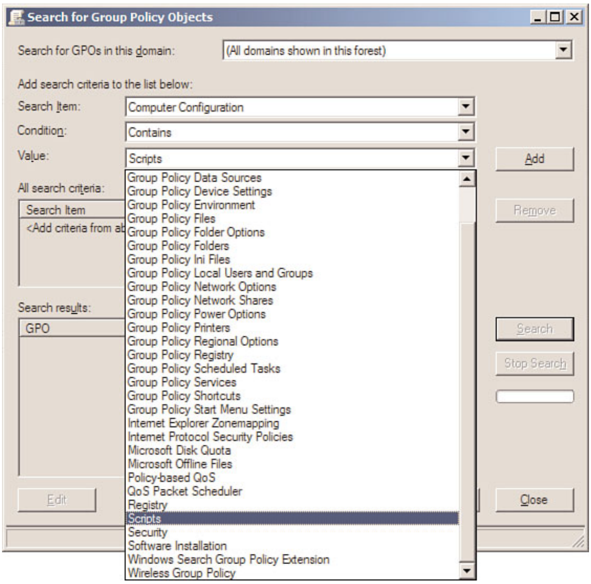
FIGURE 9.22
Selecting the search scope.

5. Select the item you want to search using the Search Item drop down. You can search the following items, as shown in Figure 9.23:
   - GPO Name
   - GPO-links
   - Security Group
   - Linked WMI Filter
   - User Configuration
   - Computer Configuration
   - GUID
6. In the Conditions field, select Contains or Does not Contain.
7. In the Value field, shown in Figure 9.24, select the value you want the condition to match.
8. Click Add.
9. If you want to add more criteria, repeat steps 5–8.



Search for GPOs in this domain: WS08DOMAIN01.LOCAL

FIGURE 9.23
Selecting the search item.



Search for GPOs in this domain: (All domains shown in this forest)

Search Item: Computer Configuration

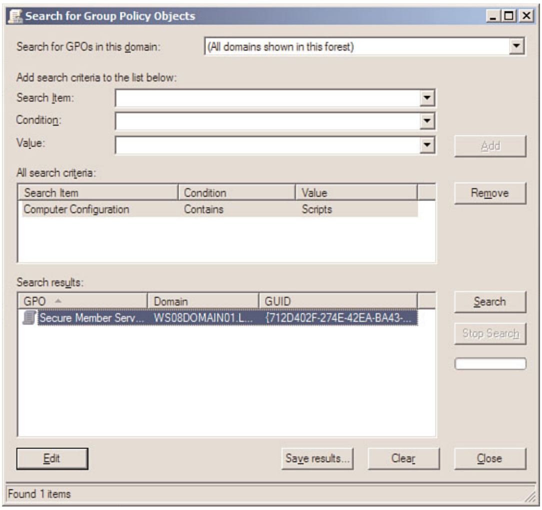
Condition: Contains

Value: Scripts

Search for Group Policy Objects
Add search criteria to the list below:
Group Policy Data Sources
Group Policy Device Settings
Group Policy Environment
Group Policy Files
Group Policy Folder Options
Group Policy Folders
Group Policy Ini Files
Group Policy Local Users and Groups
Group Policy Network Options
Group Policy Network Shares
Group Policy Power Options
Group Policy Printers
Group Policy Regional Options
Group Policy Registry
Group Policy Scheduled Tasks
Group Policy Services
Group Policy Shortcuts
Group Policy Start Menu Settings
Internet Explorer Zonemapping
Internet Protocol Security Policies
Microsoft Disk Quota
Microsoft Offline Files
Policy-based QoS
QoS Packet Scheduler
Registry
Scripts
Security
Software Installation
Windows Search Group Policy Extension
Wireless Group Policy
All search criteria:
Search Item
<Add criteria from ab
Search results:
GPO
Add
Remove
Search
Stop Search
Edit
Close

FIGURE 9.24
Selecting a value to search.

10. To open the GPOs that matched your search criteria, click Edit, as shown in Figure 9.25.



Search for GPOs in this domain: (All domains shown in this forest)

All search criteria:

Search Item	Condition	Value
Computer Configuration	Contains	Scripts

Search results:

GPO	Domain	GUID
Secure Member Serv...	WS08DOMAIN01.L...	{712D402F-274E-42EA-BA43-...

Found 1 items

FIGURE 9.25
Opening a GPO.

Create a Migration Table

Scenario/Problem: You have a GPO in your forest that you need to migrate to another forest. The GPO assigns a number of user rights assignments to a group in your forest. You need to ensure that these user rights assignments are migrated to a group in the other forest.

Solution: Create a migration table.

To create a migration table, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, right-click the domains node and click Open Migration Table Editor. The Migration Table Editor, shown in Figure 9.26, will open.
4. Right-click the cell below the Source Name column and click Browse.
5. On the Select User, Computer, or Group window, shown in Figure 9.27, type the name of the user, computer, or group in the source domain; then click OK.

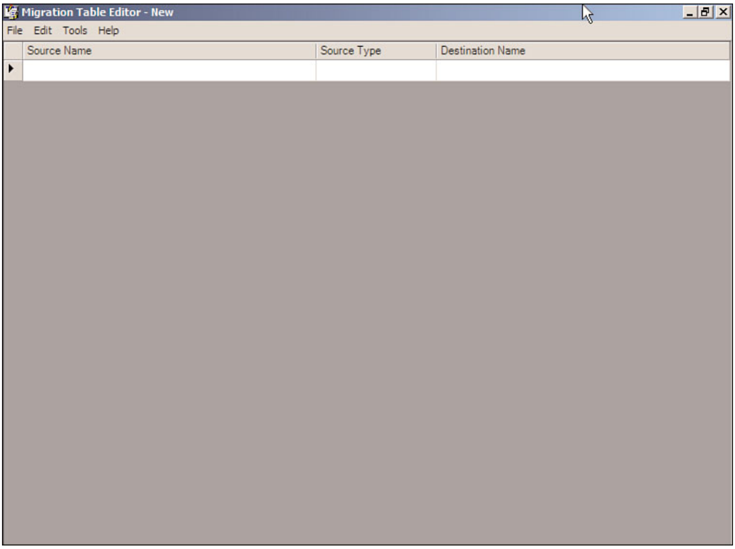
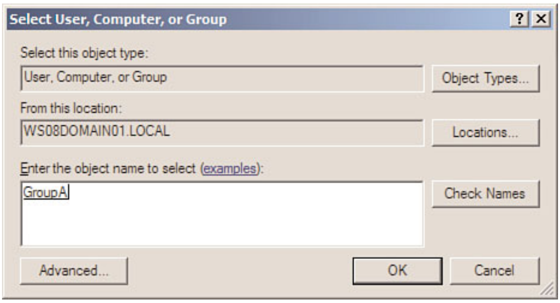


FIGURE 9.26
The Migration Table Editor.



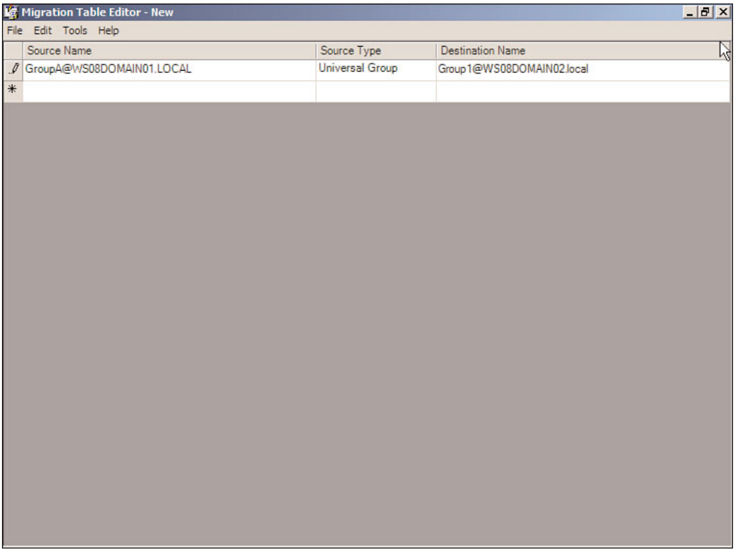
Select this object type:
User, Computer, or Group

From this location:
WS08DOMAIN01.LOCAL

Enter the object name to select (examples):
GroupA

FIGURE 9.27
The Select User, Computer, or Group window.

6. If required, modify the type of object by using the drop-down list in the Source Type column.
7. Type the name of the destination object in the Destination Name column, as shown in Figure 9.28.
8. Select File from the menu, and click Save.
9. Enter a name to use to save the migration table, and click Save.



Source Name	Source Type	Destination Name
GroupA@WS08DOMAIN01.LOCAL	Universal Group	Group1@WS08DOMAIN02.local

FIGURE 9.28
The Migration Table.

Automatically Populate a Migration Table from a Group Policy Object

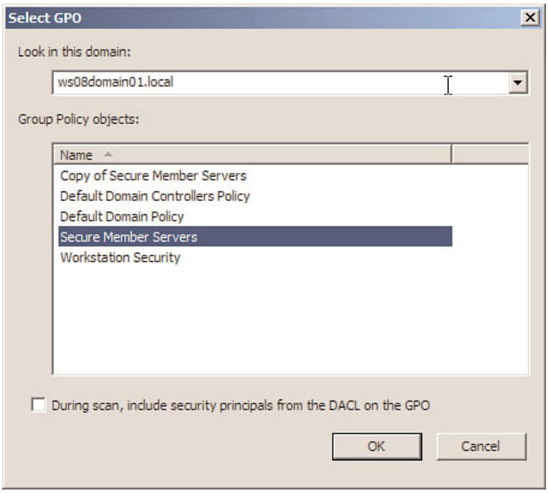
Scenario/Problem: You have a GPO in your forest that you need to migrate to another forest. The GPO assigns a number of user rights assignments to groups in your forest. You are unsure which groups are used in the GPO. You need to ensure that these user rights assignments are migrated to a group in the other forest.

Solution: Automatically populate a migration table from a GPO.

To automatically populate a migration table from a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, right-click the domains node and click, Open Migration Table Editor.
4. Select Tools from the menu, and click Populate from GPO.

5. On the Select GPO window, shown in Figure 9.29, select the GPO you want to use to populate the migration and click OK.



Look in this domain: ws08domain01.local

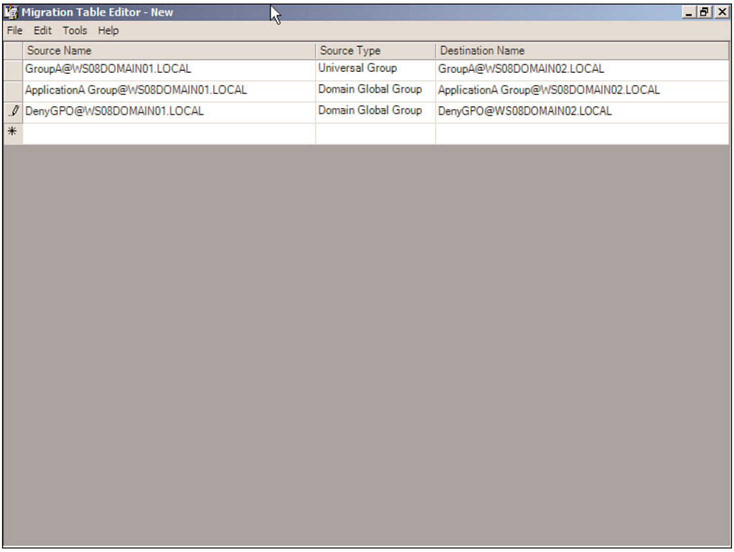
Group Policy objects:

Name
Copy of Secure Member Servers
Default Domain Controllers Policy
Default Domain Policy
Secure Member Servers
Workstation Security

□ During scan, include security principals from the DACL on the GPO

FIGURE 9.29
Selecting a GPO.

6. In the Destination Name column, shown in Figure 9.30, type the name of each group in the destination forest.



Source Name	Source Type	Destination Name
GroupA@WS08DOMAIN01.LOCAL	Universal Group	GroupA@WS08DOMAIN02.LOCAL
ApplicationA Group@WS08DOMAIN01.LOCAL	Domain Global Group	ApplicationA Group@WS08DOMAIN02.LOCAL
DenyGPO@WS08DOMAIN01.LOCAL	Domain Global Group	DenyGPO@WS08DOMAIN02.LOCAL

FIGURE 9.30
Automatically populating a migration table from a GPO.

7. Select File from the menu, and click Save.
8. Enter a name to use to save the migration table, and click Save.

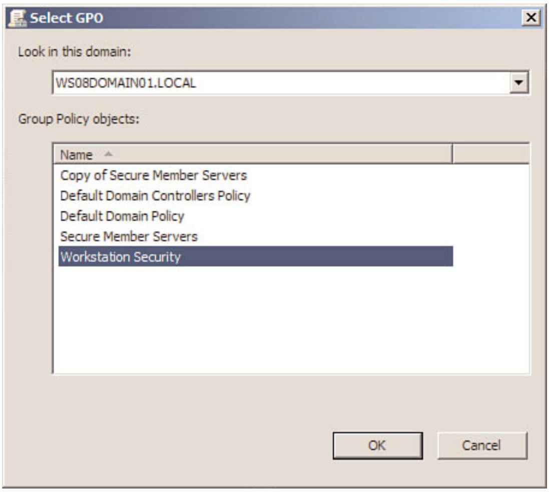
Link a Group Policy Object

Scenario/Problem: You recently created a GPO and modified the settings based on your needs. You need to ensure that this GPO is applied to objects in an OU.

Solution: Link the GPO.

To link a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, right-click the site, domain, or OU you want to link the GPO to and click Link an Existing GPO.
4. On the Select GPO window, shown in Figure 9.31, select the GPO you want to link and click OK.



Look in this domain: WS08DOMAIN01.LOCAL

Group Policy objects:

Copy of Secure Member Servers
Default Domain Controllers Policy
Default Domain Policy
Secure Member Servers
Workstation Security

FIGURE 9.31
Selecting a GPO.

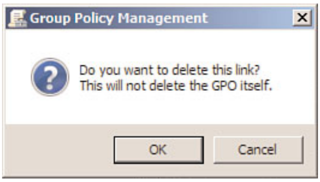
Remove a Group Policy Object Link

Scenario/Problem: You accidently linked a GPO to the wrong OU.

Solution: Remove the GPO link.

To remove a GPO link, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the site, domain, or OU from which you want to remove the GPO link.
4. Right-click the GPO for which you want to remove the link, and click Delete.
5. Select OK on the confirmation screen, shown in Figure 9.32, to delete the GPO link.



Group Policy Management

Do you want to delete this link?
This will not delete the GPO itself.

FIGURE 9.32
Removing a GPO link.

Disable a Group Policy Object Link

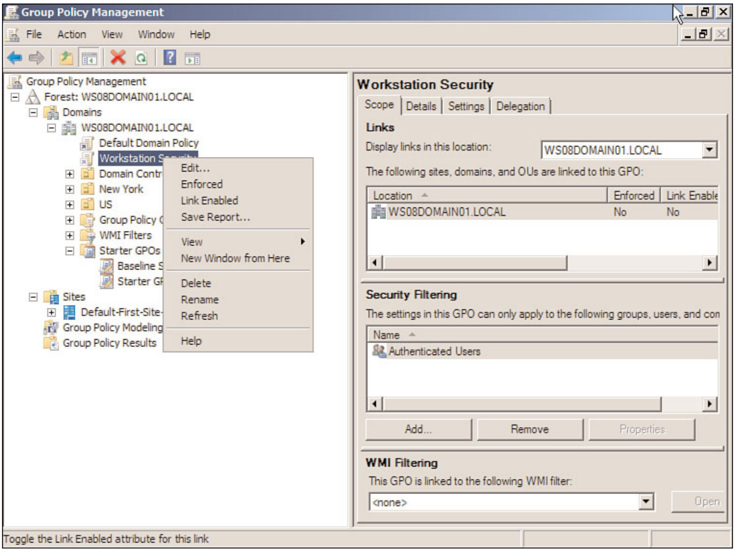
Scenario/Problem: You have a GPO that is linked to an OU. You suspect the GPO might be causing an issue to computers located in the OU. You need to temporarily prevent the GPO settings from being applied to computers in the OU.

Solution: Disable a GPO link.

To disable a GPO link, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.

2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the site, domain, or OU for which you want to disable the GPO link.
4. Right-click the GPO for which you want to disable the link, and click Link Enabled.
5. Ensure there is not a check next to Link Enabled, as shown in Figure 9.33.



Display links in this location: WS08DOMAIN01.LOCAL

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enable
WS08DOMAIN01.LOCAL	No	No

The settings in this GPO can only apply to the following groups, users, and con

Name
Authenticated Users

This GPO is linked to the following WMI filter: <none>

Toggle the Link Enabled attribute for this link

FIGURE 9.33
Disabling a GPO link.

Enable a Group Policy Object Link

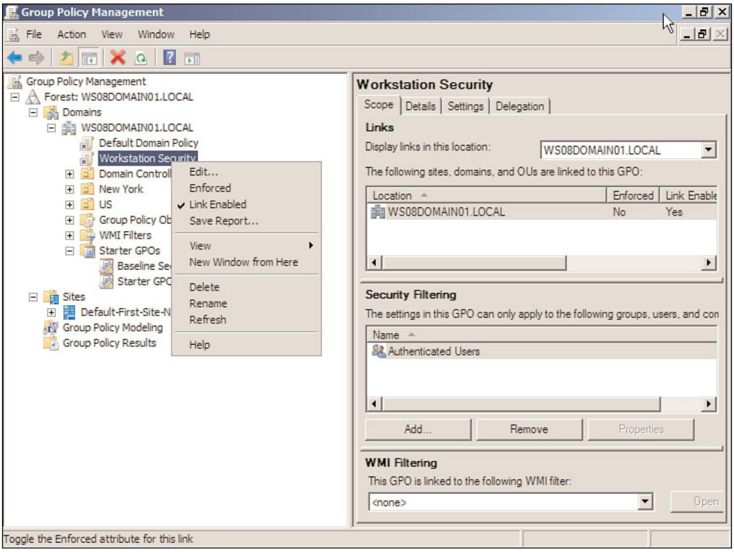
Scenario/Problem: You previously disabled a GPO link and need to reenable it.

Solution: Enable a GPO link.

To enable a GPO link, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.

3. In the console tree, expand the site, domain, or OU for which you want to enable the GPO link.
4. Right-click the GPO for which you want to enable the link, and click Link Enabled.
5. Ensure there is a check next to Link Enabled, as shown in Figure 9.34.



Display links in this location: WS08DOMAIN01.LOCAL

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enable
WS08DOMAIN01.LOCAL	No	Yes

The settings in this GPO can only apply to the following groups, users, and con

Name
Authenticated Users

This GPO is linked to the following WMI filter: <none>

FIGURE 9.34
Enabling a GPO link.

Enforce a Group Policy Object Link

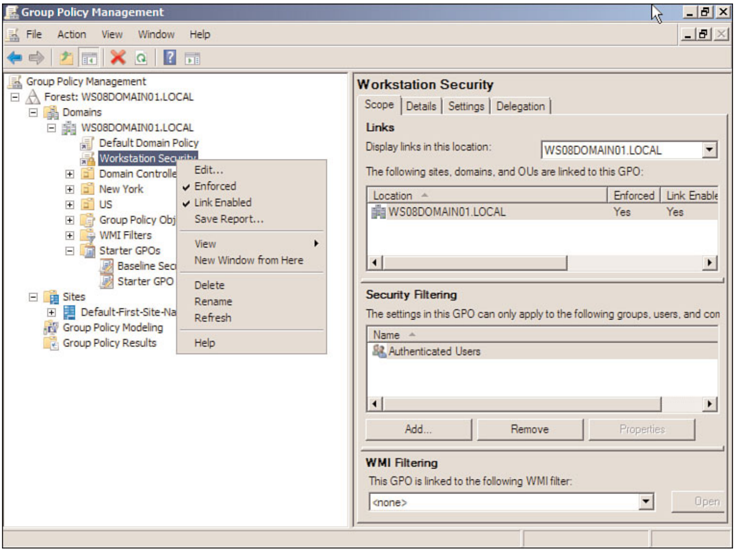
Scenario/Problem: You need to ensure the settings that are in a GPO that is linked to a parent OU are not overwritten by settings in GPOs linked to child OUs.

Solution: Enforce a GPO link.

To enforce a GPO link, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.

3. In the console tree, expand the site, domain, or OU for which you want to enforce the GPO link.
4. Right-click the GPO for which you want to enforce the link, and click Enforced.
5. Ensure there is a check next to Enforced, as shown in Figure 9.35.



Display links in this location: WS08DOMAIN01.LOCAL

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enable
WS08DOMAIN01.LOCAL	Yes	Yes

The settings in this GPO can only apply to the following groups, users, and con

Name
Authenticated Users

This GPO is linked to the following WMI filter: <none>

FIGURE 9.35
Enforcing a GPO link.

Remove the Enforcement of a Group Policy Object Link

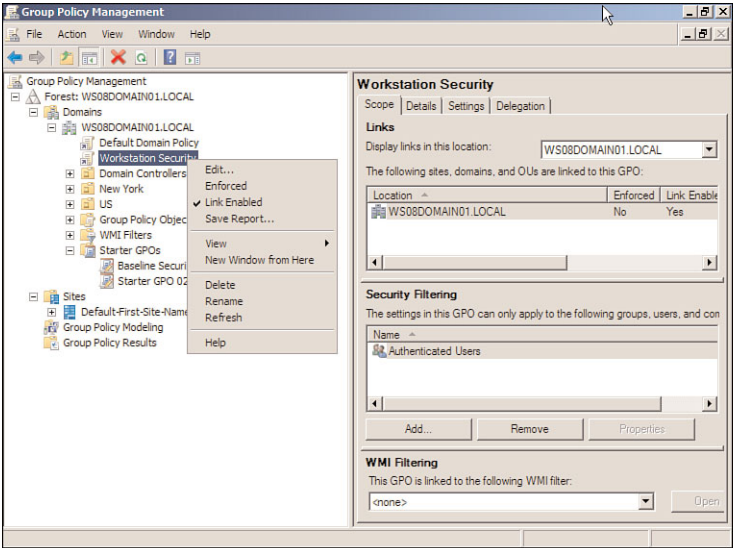
Scenario/Problem: You previously enabled the enforcement of a GPO link. You no longer require this GPO link to be enforced.

Solution: Remove the enforcement of a GPO link.

To remove the enforcement of a GPO link, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.

3. In the console tree, expand the site, domain, or OU for which you want to remove the GPO link enforcement.
4. Right-click the GPO for which you want to remove the GPO link enforcement, and click Enforced.
5. Ensure there is not a check next to Enforced, as shown in Figure 9.36.



Links

Display links in this location: WS08DOMAIN01.LOCAL

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enable
WS08DOMAIN01.LOCAL	No	Yes

Security Filtering

The settings in this GPO can only apply to the following groups, users, and con

Name
Authenticated Users

WMI Filtering

This GPO is linked to the following WMI filter:

<none>

FIGURE 9.36
Removing the enforcement of a GPO link.

Block Inheritance of Group Policy Objects

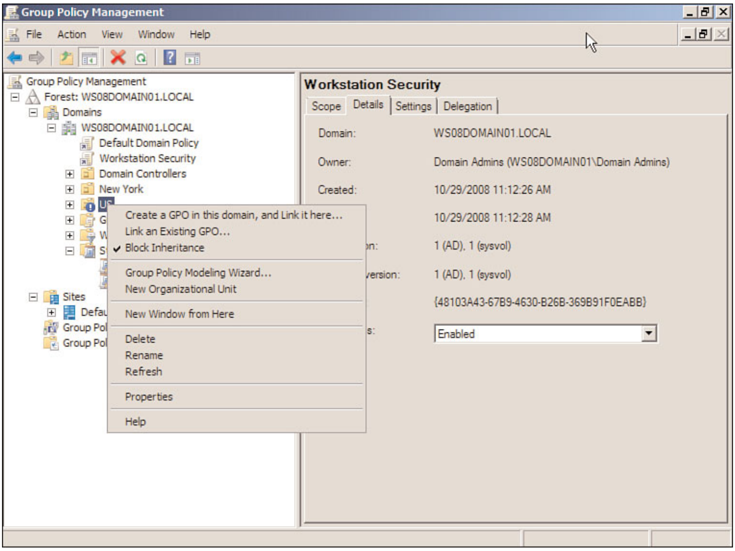
> **Scenario/Problem:** You need to prevent GPO settings defined in a GPO linked to the parent OU from being inherited to servers in a child OU.

Solution: Block inheritance of GPOs.

To block inheritance of a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.

3. In the console tree, select the site, domain, or OU on which you want to block inheritance, and click Block Inheritance.
4. Ensure there is a check next to Block Inheritance, as shown in Figure 9.37.



Domain: WS08DOMAIN01.LOCAL

Owner: Domain Admins (WS08DOMAIN01\Domain Admins)

Created: 10/29/2008 11:12:26 AM

10/29/2008 11:12:28 AM

on: 1 (AD), 1 (sysvol)

ersion: 1 (AD), 1 (sysvol)

{48103A43-67B9-4630-B26B-369B91F0EABB}

s: Enabled

FIGURE 9.37
Blocking the inheritance of GPOs.

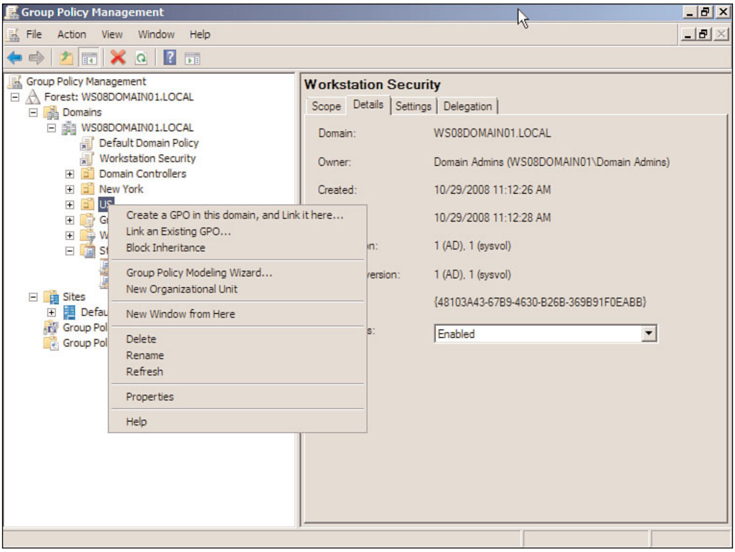
Remove Block Inheritance of Group Policy Objects

Scenario/Problem: You previously enabled block inheritance of GPOs. You no longer require this.

Solution: Remove block inheritance of GPOs.

To remove block inheritance of a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, select the site, domain, or OU from which you want to remove block inheritance, and click Block Inheritance.
4. Ensure there is not a check next to Block Inheritance, as shown in Figure 9.38.



Workstation Security

Domain: WS08DOMAIN01.LOCAL

Owner: Domain Admins (WS08DOMAIN01\Domain Admins)

Created: 10/29/2008 11:12:26 AM

10/29/2008 11:12:28 AM

n: 1 (AD), 1 (sysvol)

ersion: 1 (AD), 1 (sysvol)

{48103A43-67B9-4630-B26B-369B91F0EABB}

s: Enabled

FIGURE 9.38

Removing the block inheritance of GPOs.

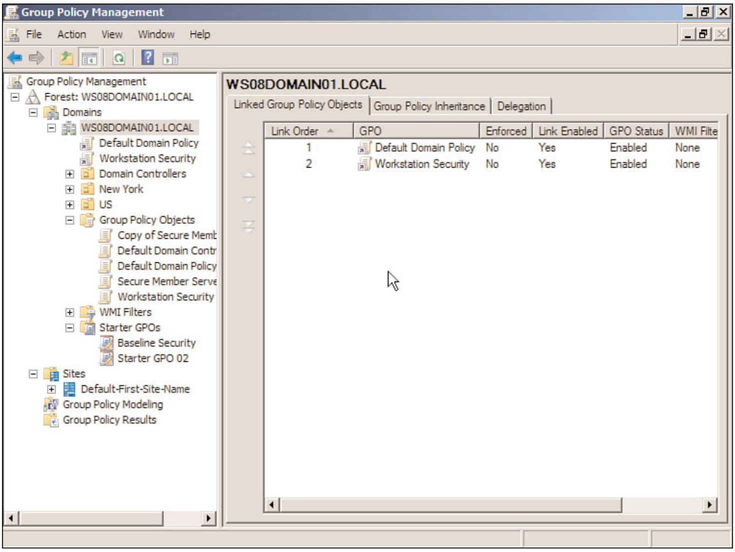
Change the Order of Group Policy Object Links

Scenario/Problem: You have multiple GPOs that are linked to an OU. You need to ensure one of these GPOs is applied last.

Solution: Change the link order of GPO links.

To change the order of GPO links, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, select the site, domain, or OU for which you want to change the link order.
4. In the details pane, select the GPO for which you want to change the link order and use the arrows on the left side of the details pane to move the GPO higher or lower in order, as shown in Figure 9.39.



Link Order	GPO	Enforced	Link Enabled	GPO Status	WMI Filte
1	Default Domain Policy	No	Yes	Enabled	None
2	Workstation Security	No	Yes	Enabled	None

FIGURE 9.39
Changing the order of GPO links.

Filter Group Policy Object Scope by Using Security Groups

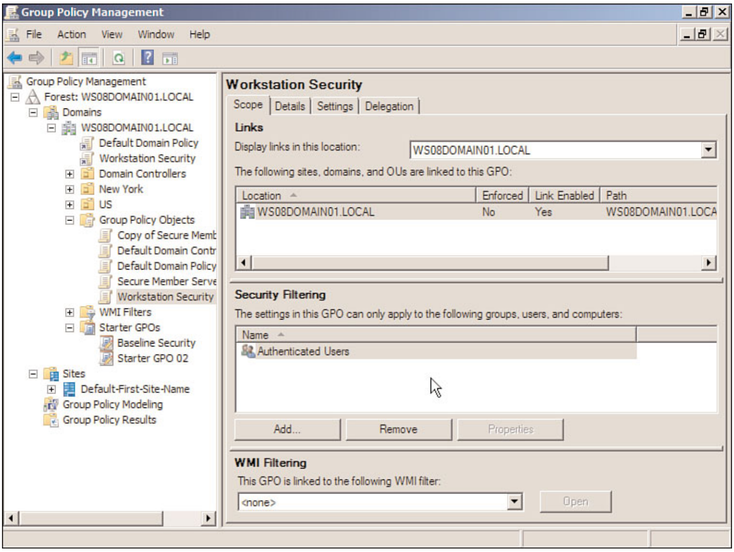
Scenario/Problem: You have a GPO linked to an OU. The OU contains user accounts. You need to limit the GPO to be applied only to a subset of the user accounts located in the OU.

Solution: Create an AD DS group. Place the user accounts in the AD DS group. Filter the GPO scope by the AD DS group.

To filter group policy scope by using security groups, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, select the Group Policy Objects node.

4. In the details pane, select the GPO on which you want to use group filtering.
5. On the Scope tab, shown in Figure 9.40, click Add.



Display links in this location: WS08DOMAIN01.LOCAL

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
WS08DOMAIN01.LOCAL	No	Yes	WS08DOMAIN01.LOCA

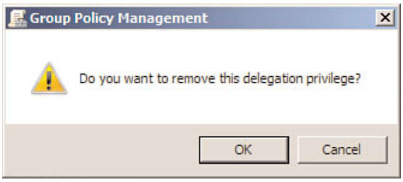
The settings in this GPO can only apply to the following groups, users, and computers:

Name
Authenticated Users

This GPO is linked to the following WMI filter: <none>

FIGURE 9.40
The GPO Scope tab.

6. On the Select User, Computer, or Group window, type the name of the group with which you want to filter the GPO scope; then click OK.
7. Select Authenticated Users under the Security Filtering section of the Scope tab, and click Remove.
8. Click OK on the remove delegation privilege confirmation screen, as shown in Figure 9.41.



Do you want to remove this delegation privilege?

FIGURE 9.41
The confirmation page for removing delegation privilege.

Disable User Settings in a Group Policy Object

Scenario/Problem: You have a GPO linked to an OU. The GPO is used to apply computer configuration. You want to prevent user configuration from being read during group policy processing.

Solution: Disable user settings in a GPO.

To disable user settings in a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, select the Group Policy Objects node.
4. Right-click the GPO on which you want to disable user settings, select GPO Status, and click User Configuration Settings Disabled, as shown in Figure 9.42.

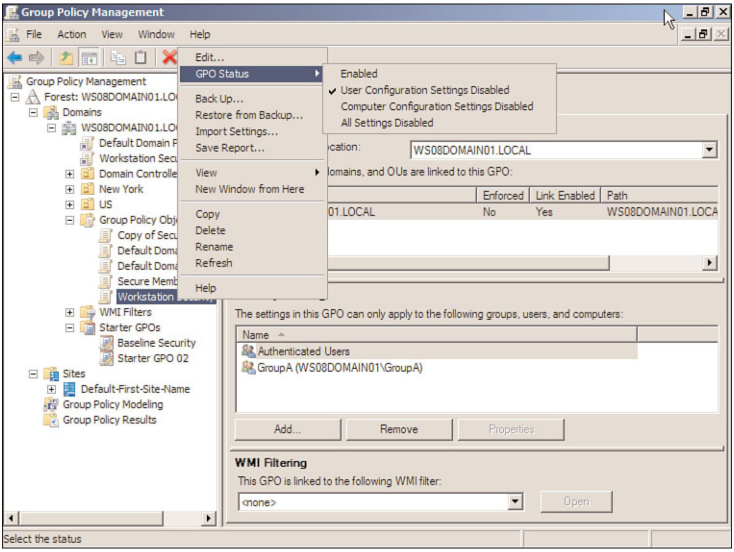


FIGURE 9.42
The User Configuration Settings Disabled option.

Disable Computer Settings in a Group Policy Object

Scenario/Problem: You have a GPO linked to an OU. The GPO is used to apply user configuration. You want to prevent computer configuration from being read during group policy processing.

Solution: Disable computer settings in a GPO.

To disable computer settings in a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, select the Group Policy Objects node.
4. Right-click the GPO on which you want to disable computer settings, select GPO Status, and click Computer Configuration Settings Disabled, as shown in Figure 9.43.

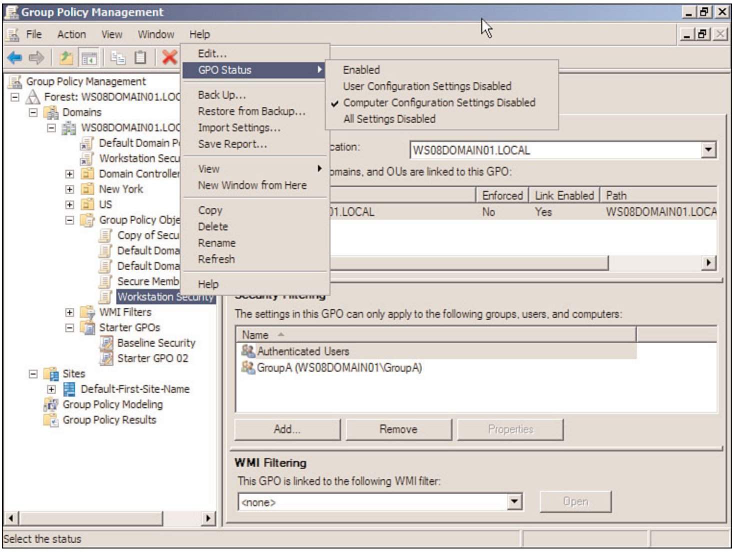


FIGURE 9.43

The Computer Configuration Settings Disabled option.

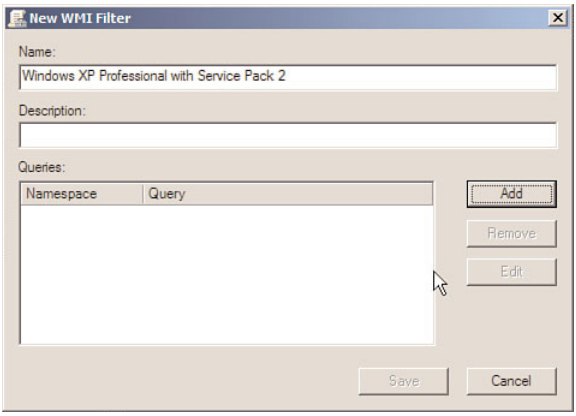
Create a WMI Filter

Scenario/Problem: You have a GPO in your domain. You want to ensure that the GPO is applied only to computers that have Microsoft Windows XP Professional with Service Pack 2 installed.

Solution: Create a WMI filter.

To create a WMI filter, perform the following steps:

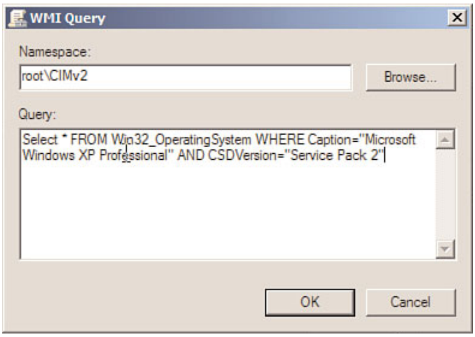
1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the domains node, right-click the WMI Filters node and click New.
4. In the New WMI Filter window, shown in Figure 9.44, enter a name for the WMI filter in the Name field and click Add.



Name: Windows XP Professional with Service Pack 2

FIGURE 9.44
The New WMI Filter window.

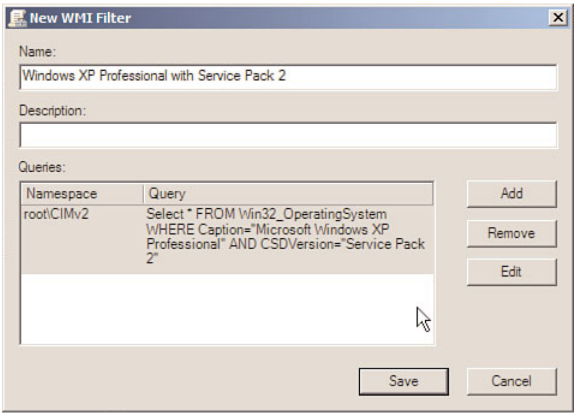
5. On the WMI Query window, shown in Figure 9.45, use the default namespace or type a new one. Type your WMI query into the Query field, and click OK.
6. Click Save on the New WMI Filter window to save the WMI filter, as shown in Figure 9.46.



Namespace: root\CIMv2

Query: Select * FROM Win32_OperatingSystem WHERE Caption="Microsoft Windows XP Professional" AND CSDVersion="Service Pack 2"

FIGURE 9.45
The WMI Query window.



Name: Windows XP Professional with Service Pack 2

Description:

Queries:

Namespace	Query
root\CIMv2	Select * FROM Win32_OperatingSystem WHERE Caption="Microsoft Windows XP Professional" AND CSDVersion="Service Pack 2"

FIGURE 9.46
Creating a WMI filter.

Import a WMI Filter

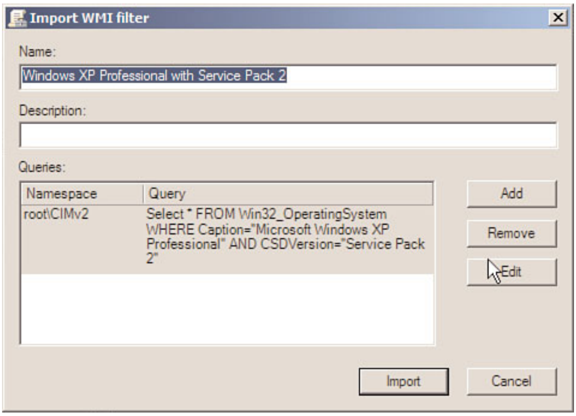
Scenario/Problem: You created a WMI filter in your test AD DS environment. You want to import this WMI filter into your production environment.

Solution: Import a WMI filter.

To import a WMI filter, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, right-click the WMI Filters node and click Import.

4. On the Import WMI Filter window, type the name and location of the file to import; then click Open.
5. On the Import WMI Filter window, shown in Figure 9.47, verify the settings and click Import.



Name: Windows XP Professional with Service Pack 2

Description:

Queries:

Namespace	Query
root\CIMv2	Select * FROM Win32_OperatingSystem WHERE Caption="Microsoft Windows XP Professional" AND CSDVersion="Service Pack 2"

FIGURE 9.47
The Import WMI Filter window.

Export a WMI Filter

Scenario/Problem: You created a WMI filter in your test AD DS environment. You want to export this WMI filter so you can import it into other environments.

Solution: Export a WMI filter.

To export a WMI filter, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the WMI Filters node, right-click the WMI filter you want to export, and click Export.
4. On the Export WMI Filter window, type the name and location of the file to export and click Save.

Copy a WMI Filter

Scenario/Problem: You have an existing WMI filter. You want to make a copy of the WMI filter so it can be modified independently of the original.

Solution: Copy a WMI filter.

To copy a WMI filter, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the WMI Filters node, right-click the WMI filter you want to copy, and click Copy.
4. Right-click the WMI Filters node and click Paste.
5. Rename the new WMI filter accordingly.

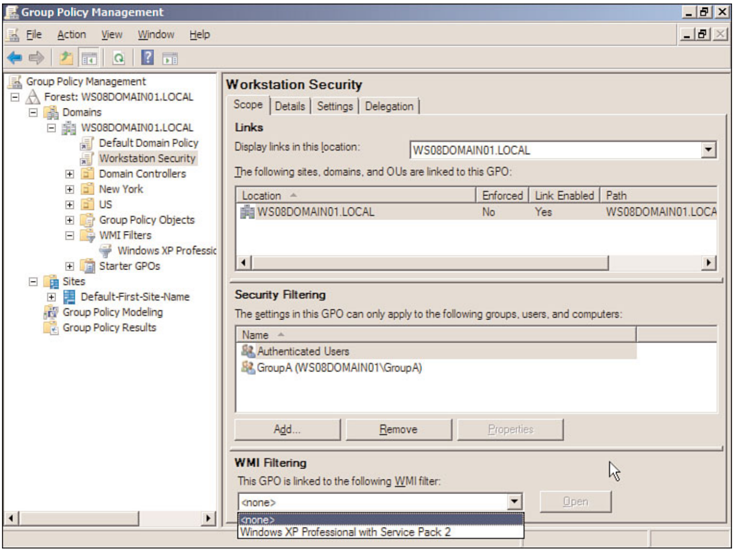
Link a WMI Filter to a Group Policy Object

Scenario/Problem: You created a WMI filter that queries for computers that have Windows XP Professional with Service Pack 2 installed. You need to filter the application of a GPO to computers that have Windows XP Professional with Service Pack 2 installed.

Solution: Link a WMI filter to a GPO.

To link a WMI filter to a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the Group Policy Objects node and select the GPO to which you want to link the WMI filter.
4. In the Scope tab, select the WMI filter from the drop-down list under the WMI Filtering section, as shown in Figure 9.48.



Workstation Security

Links

Display links in this location: WS08DOMAIN01.LOCAL

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
WS08DOMAIN01.LOCAL	No	Yes	WS08DOMAIN01.LOCA

Security Filtering

The settings in this GPO can only apply to the following groups, users, and computers:

Name
Authenticated Users
GroupA (WS08DOMAIN01\GroupA)

WMI Filtering

This GPO is linked to the following WMI filter:

<none>

<none>
Windows XP Professional with Service Pack 2

FIGURE 9.48
Linking a WMI filter to a GPO.

Determine a Resultant Set of Policy

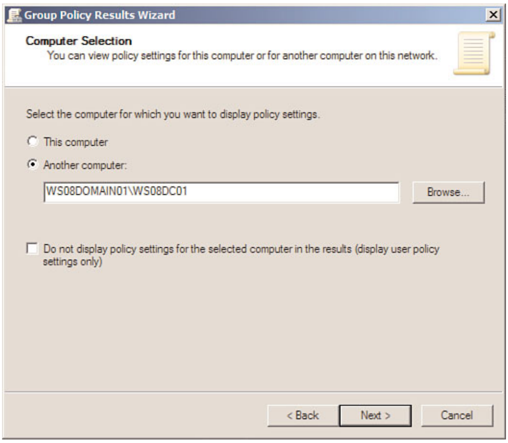
Scenario/Problem: You have a computer account that is receiving incorrect settings from group policy. You need to determine which GPO is causing this issue for the computer.

Solution: Determine resultant set of policy.

To determine resultant set of policy, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, right-click the Group Policy Results node and click Group Policy Results Wizard.
4. Click Next on the Welcome to the Group Policy Results Wizard page.
5. If you want to determine the resultant set of policy on the local computer, select This Computer on the Computer Selection page and click Next.

6. If you want to determine the resultant set of policy on another computer, select Another Computer on the Computer Selection page, enter the computer name, as shown in Figure 9.49, and click Next.



Group Policy Results Wizard

Computer Selection

You can view policy settings for this computer or for another computer on this network.

Select the computer for which you want to display policy settings.

○ This computer

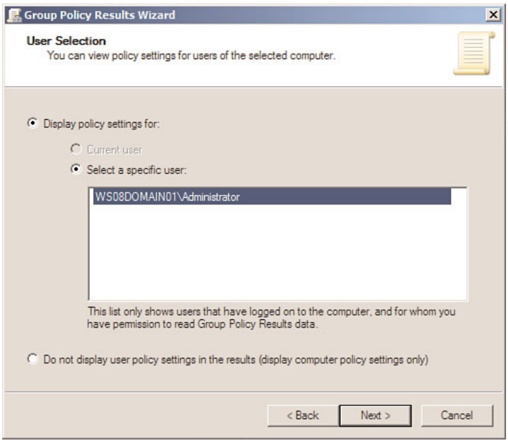
● Another computer:

WS08DOMAIN01\WS08DC01

□ Do not display policy settings for the selected computer in the results (display user policy settings only)

FIGURE 9.49 The Computer Selection page.

7. If you do not want to determine the resultant set of policy for a user account, select Do not display user policy settings in the results on the User Selection page.
8. If you want to determine the resultant set of policy for a user account, select the user on the User Selection page as, shown in Figure 9.50, and click Next.



Group Policy Results Wizard

User Selection

You can view policy settings for users of the selected computer.

● Display policy settings for:

○ Current user

● Select a specific user:

WS08DOMAIN01\Administrator

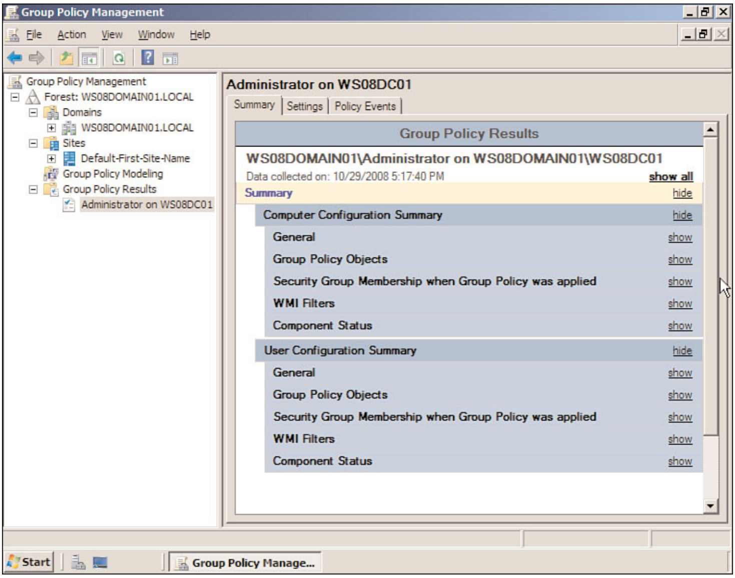
This list only shows users that have logged on to the computer, and for whom you have permission to read Group Policy Results data.

○ Do not display user policy settings in the results (display computer policy settings only)

FIGURE 9.50 The User Selection page.

9. Click Next on the Summary of Selections page.
10. Click Finish on the Completing the Group Policy Results Wizard page.

11. In the details pane, click the Summary tab, shown in Figure 9.51, to view a summary of the Group Policy results, click the Settings tab to view the settings that are applied, or click the Policy Events tab to view any Group Policy related events on the target system.



Administrator on WS08DC01

Group Policy Results

WS08DOMAIN01\Administrator on WS08DOMAIN01\WS08DC01

Data collected on: 10/29/2008 5:17:40 PM — show all

Summary — hide

Computer Configuration Summary — hide

- General — show
- Group Policy Objects — show
- Security Group Membership when Group Policy was applied — show
- WMI Filters — show
- Component Status — show

User Configuration Summary — hide

- General — show
- Group Policy Objects — show
- Security Group Membership when Group Policy was applied — show
- WMI Filters — show
- Component Status — show

FIGURE 9.51
Group policy results.

Simulate a Resultant Set of Policy Using Group Policy Modeling

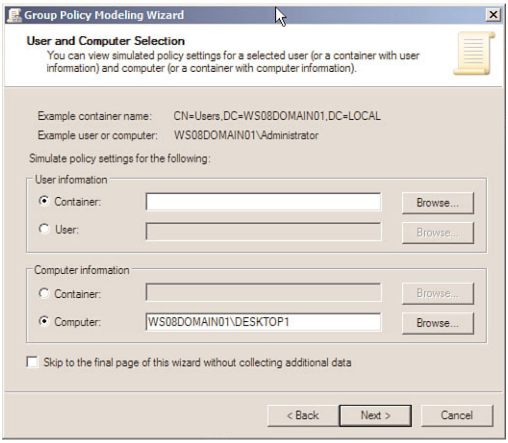
Scenario/Problem: You need to assess the group policy impact of moving a computer account to another OU.

Solution: Simulate a resultant set of policy using group policy modeling.

To simulate a resultant set of policy using group policy modeling, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.

3. In the console tree, right-click the Group Policy Modeling node and click Group Policy Modeling Wizard.
4. On the Domain Controller Selection page, click Next.
5. On the User and Computer Selection page, shown in Figure 9.52, enter a username and/or computer name; then click Next.



Group Policy Modeling Wizard

User and Computer Selection

You can view simulated policy settings for a selected user (or a container with user information) and computer (or a container with computer information).

Example container name: CN=Users,DC=WS08DOMAIN01,DC=LOCAL

Example user or computer: WS08DOMAIN01\Administrator

Simulate policy settings for the following:

User information

● Container:

○ User:

Computer information

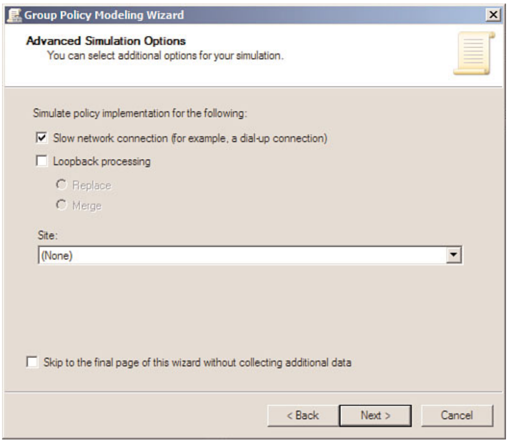
○ Container:

● Computer: WS08DOMAIN01\DESKTOP1

□ Skip to the final page of this wizard without collecting additional data

FIGURE 9.52
The User and Computer Selection page.

6. On the Advanced Simulation Options page, shown in Figure 9.53, select the advanced simulation options you desire and click Next.



Group Policy Modeling Wizard

Advanced Simulation Options

You can select additional options for your simulation.

Simulate policy implementation for the following:

☑ Slow network connection (for example, a dial-up connection)

□ Loopback processing

○ Replace

○ Merge

Site:

(None)

□ Skip to the final page of this wizard without collecting additional data

FIGURE 9.53
The Advanced Simulation Options page.

7. On the Alternate Active Directory Paths page, shown in Figure 9.54, enter the new locations to simulate policy settings and click Next.

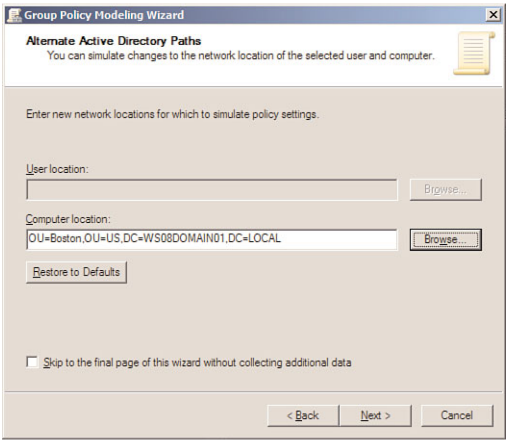

Group Policy Modeling Wizard
Alternate Active Directory Paths
You can simulate changes to the network location of the selected user and computer.
Enter new network locations for which to simulate policy settings.
User location:
Browse...
Computer location:
OU=Boston,OU=US,DC=WS08DOMAIN01,DC=LOCAL
Browse...
Restore to Defaults
□ Skip to the final page of this wizard without collecting additional data
< Back
Next >
Cancel

FIGURE 9.54
The Alternate Active Directory Paths page.

8. On the Computer Security Groups page, shown in Figure 9.55, add or remove any security groups you want to include in the simulation and click Next.

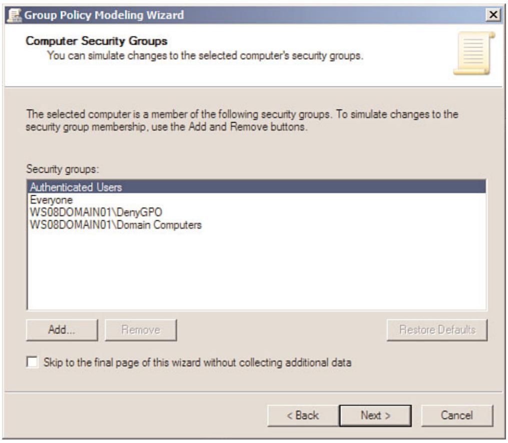
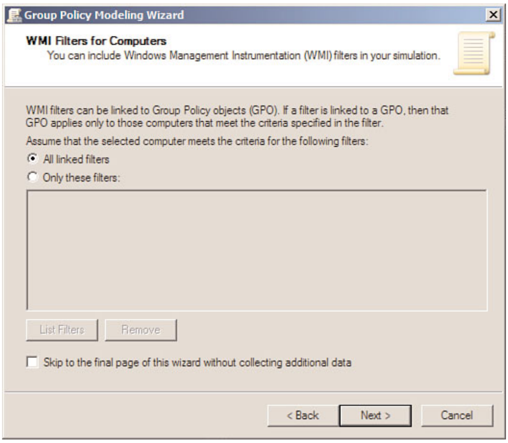

Group Policy Modeling Wizard
Computer Security Groups
You can simulate changes to the selected computer's security groups.
The selected computer is a member of the following security groups. To simulate changes to the security group membership, use the Add and Remove buttons.
Security groups:
Authenticated Users
Everyone
WS08DOMAIN01\DenyGPO
WS08DOMAIN01\Domain Computers
Add...
Remove
Restore Defaults
□ Skip to the final page of this wizard without collecting additional data
< Back
Next >
Cancel

FIGURE 9.55
The Computer Security Groups page.

9. On the WMI Filters for Computers page, shown in Figure 9.56, select All linked filters or Only these filters and click Next.
10. On the Summary of Selections page, click Next.
11. Click Finish on the Completing the Group Policy Modeling Wizard page.
12. In the details pane, click the Summary tab, shown in Figure 9.57, to view a summary of the group policy results, click the Settings tab to view the settings that are applied, or click the Policy Events tab to view any group policy–related events on the target system.



Group Policy Modeling Wizard

WMI Filters for Computers

You can include Windows Management Instrumentation (WMI) filters in your simulation.

WMI filters can be linked to Group Policy objects (GPO). If a filter is linked to a GPO, then that GPO applies only to those computers that meet the criteria specified in the filter.

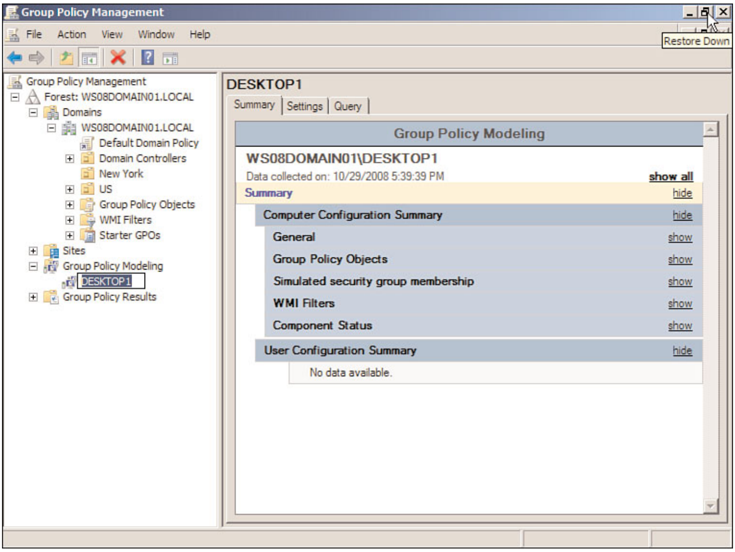
Assume that the selected computer meets the criteria for the following filters:

● All linked filters

○ Only these filters:

□ Skip to the final page of this wizard without collecting additional data

FIGURE 9.56
The WMI Filters for Computers page.



Group Policy Modeling

WS08DOMAIN01\DESKTOP1

Data collected on: 10/29/2008 5:39:39 PM — show all

Summary — hide

Computer Configuration Summary — hide

General — show

Group Policy Objects — show

Simulated security group membership — show

WMI Filters — show

Component Status — show

User Configuration Summary — hide

No data available.

FIGURE 9.57
Group policy modeling.

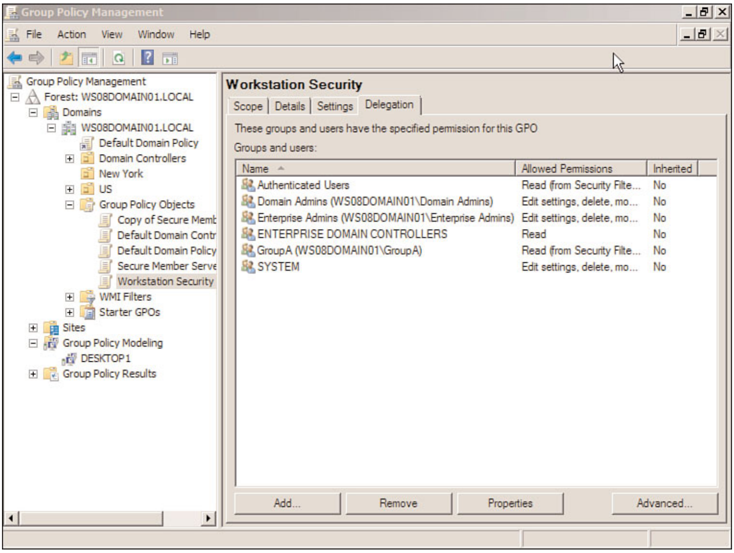
Delegate Permissions on a Group Policy Object

Scenario/Problem: You created a GPO and linked it to an OU. You need to provide members of a group the capability to edit the settings in the GPO.

Solution: Delegate the permissions on the GPO.

To delegate permissions on a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the Group Policy Objects node and select the GPO on which you want delegate permissions.
4. Click the Delegation tab, shown in Figure 9.58.



Workstation Security

These groups and users have the specified permission for this GPO

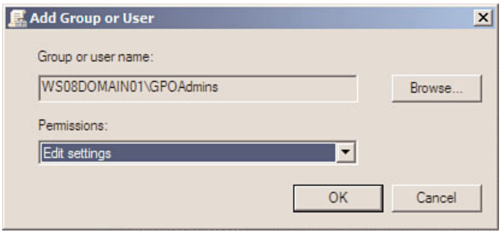
Groups and users:

Name	Allowed Permissions	Inherited
Authenticated Users	Read (from Security Filte...	No
Domain Admins (WS08DOMAIN01\Domain Admins)	Edit settings, delete, mo...	No
Enterprise Admins (WS08DOMAIN01\Enterprise Admins)	Edit settings, delete, mo...	No
ENTERPRISE DOMAIN CONTROLLERS	Read	No
GroupA (WS08DOMAIN01\GroupA)	Read (from Security Filte...	No
SYSTEM	Edit settings, delete, mo...	No

FIGURE 9.58
The Delegation tab.

5. Click Add.
6. In the Select User, Computer, or Group window, type the name of the group to which you want to delegate permissions; then click OK.

7. On the Add Group or User window, shown in Figure 9.59, select the permission you want to delegate and click OK.



Add Group or User

Group or user name: WS08DOMAIN01\GPOAdmins

Permissions: Edit settings

FIGURE 9.59
The Add Group or User window.

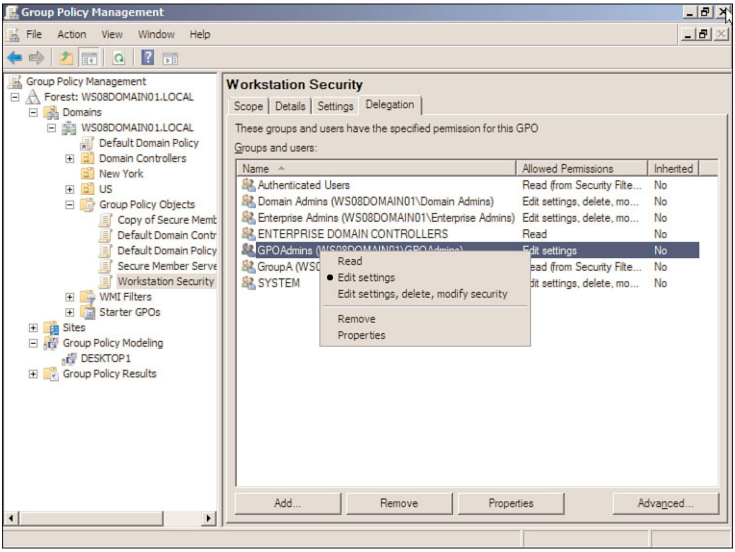
Modify Delegated Permissions on a Group Policy Object

Scenario/Problem: A group was previously delegated the permission to edit a GPO. You need to also allow the group to modify security on a GPO.

Solution: Modify delegated permissions on a GPO.

To modify delegated permissions on a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the Group Policy Objects node and select the GPO on which you want to modify delegated permissions.
4. Click the Delegation tab.
5. In the details pane, right-click the group for which you want to modify delegated permissions; then select the permission you want to delegate, as shown in Figure 9.60.
6. Click OK on the confirmation to change permissions.



These groups and users have the specified permission for this GPO

Groups and users:

Name	Allowed Permissions	Inherited
Authenticated Users	Read (from Security Filte...	No
Domain Admins (WS08DOMAIN01\Domain Admins)	Edit settings, delete, mo...	No
Enterprise Admins (WS08DOMAIN01\Enterprise Admins)	Edit settings, delete, mo...	No
ENTERPRISE DOMAIN CONTROLLERS	Read	No
GPOAdmins (WS08DOMAIN01\GPO Admins)	Edit settings	No
GroupA (WS0	ead (from Security Filte...	No
SYSTEM	dit settings, delete, mo...	No

FIGURE 9.60

Selecting the permission to delegate on a GPO.

Remove Delegated Permissions on a Group Policy Object

Scenario/Problem: A group was previously delegated the permission to edit a GPO. This group no longer requires the permissions to edit the GPO.

Solution: Remove delegated permissions on a GPO.

To remove delegated permissions on a GPO, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, expand the Group Policy Objects node and select the GPO on which you want remove delegate permissions.
4. Click the Delegation tab.
5. In the details pane, right-click the group for which you want to remove delegated permissions and click Remove.

6. Click OK on the confirmation to remove the delegated permissions, shown in Figure 9.61.

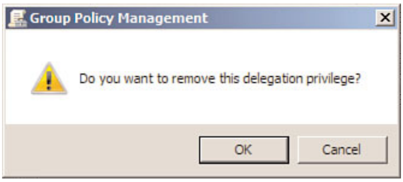


FIGURE 9.61
Removing delegated permissions on a GPO.

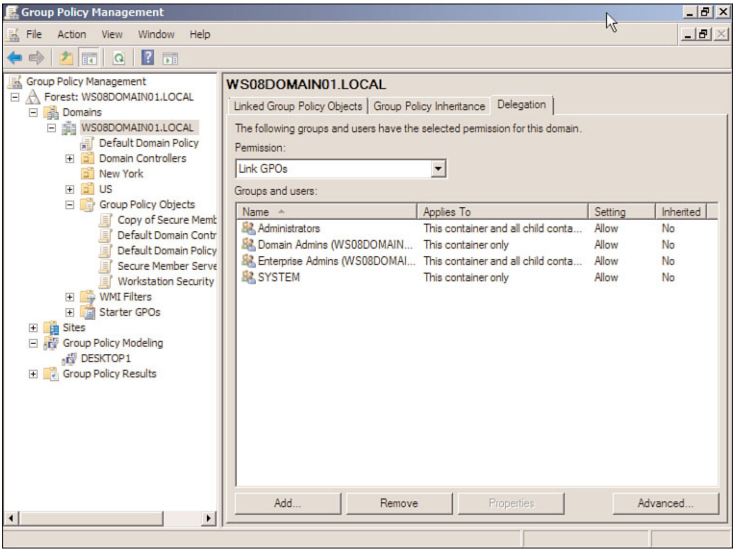
Delegate Permissions to Link Group Policy Objects

Scenario/Problem: A team that has the permission to create GPOs requires the capability to link the GPOs to any OU in the domain.

Solution: Delegate the permission to link GPOs.

To delegate permissions to link GPOs, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to delegate the permission to link GPOs on the domain level, select the domain node in the console tree.
4. If you want to delegate the permission to link GPOs on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Link GPOs, as shown in Figure 9.62. Click Add.
6. On the Select User, Computer, or Group window, enter the name of the group to which you want to delegate the capability to link GPOs and click OK.
7. On the Add Group or User window, shown in Figure 9.63, select the inheritance settings and click OK.



WS08DOMAIN01.LOCAL

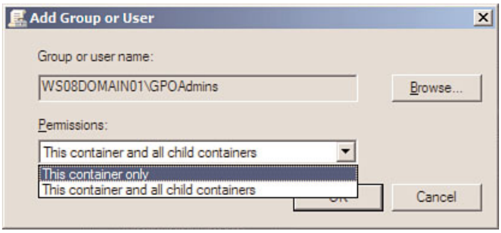
The following groups and users have the selected permission for this domain.

Permission: Link GPOs

Groups and users:

Name	Applies To	Setting	Inherited
Administrators	This container and all child conta...	Allow	No
Domain Admins (WS08DOMAIN...	This container only	Allow	No
Enterprise Admins (WS08DOMAI...	This container and all child conta...	Allow	No
SYSTEM	This container only	Allow	No

FIGURE 9.62
The Delegation tab.



Group or user name: WS08DOMAIN01\GPOAdmins

Permissions: This container and all child containers

This container only
This container and all child containers

FIGURE 9.63
The Add Group or User window.

Modify Delegated Permissions to Link Group Policy Objects

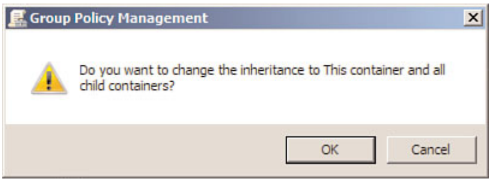
Scenario/Problem: A team was previously granted the capability to link GPOs at the domain level. They now need this permission at every OU in the domain.

Solution: Modify delegated permissions to link GPOs.

To modify delegated permissions to link GPOs, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.

2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to modify delegated permissions to link GPOs on the domain level, select the domain node in the console tree.
4. If you want to modify delegated permissions to link GPOs on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Link GPOs.
6. In the details pane, right-click the group for which you want to modify delegated permissions; then select This container only or This container and children.
7. Click OK on the confirmation screen to change inheritance, as shown in Figure 9.64.


Group Policy Management

Do you want to change the inheritance to This container and all child containers?

FIGURE 9.64
The confirmation to change inheritance.

Remove Delegated Permissions to Link Group Policy Objects

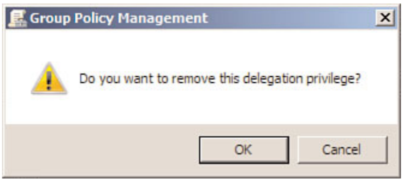
Scenario/Problem: A team was previously granted the capability to link GPOs at the domain level. They no longer require these permissions.

Solution: Remove delegated permissions to link GPOs.

To remove delegated permissions to link GPOs, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to remove delegated permissions to link GPOs on the domain level, select the domain node in the console tree.
4. If you want to remove delegated permissions to link GPOs on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Link GPOs.

6. In the details pane, right-click the group for which you want to remove delegated permissions and select Remove.
7. Click OK on the confirmation screen to remove delegated permissions, as shown in Figure 9.65.



Do you want to remove this delegation privilege?

FIGURE 9.65
The confirmation screen to remove delegated permissions.

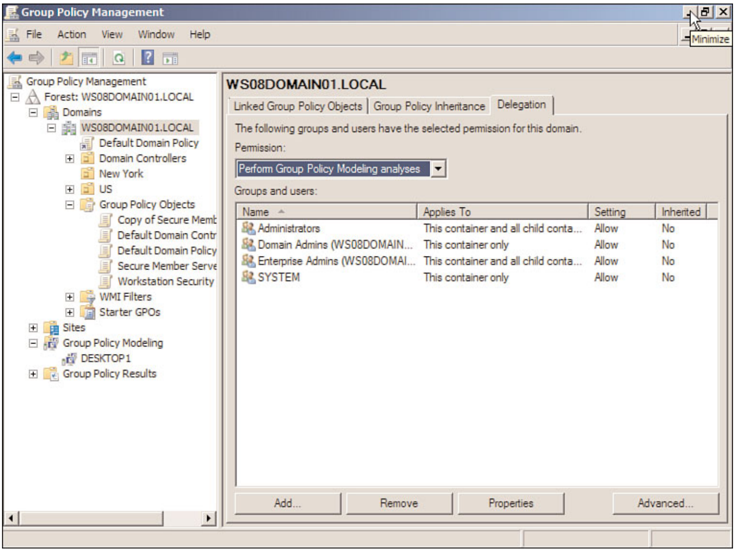
Delegate Permissions for Generating Group Policy Modeling Data

Scenario/Problem: A team requires the capability to generate group policy modeling data for computers and users located in a particular OU.

Solution: Delegate the permissions to generate group policy modeling data.

To delegate permissions for generating group policy modeling data, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to delegate the permission to generate group policy modeling data on the domain level, select the domain node in the console tree.
4. If you want to delegate the permission to generate group policy modeling data on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Perform Group Policy Modeling Analyses, as shown in Figure 9.66. Click Add.
6. On the Select User, Computer, or Group window, enter the name of the group to which you want to delegate the capability to generate group policy modeling data; then click OK.
7. On the Add Group or User window, shown in Figure 9.67, select the inheritance settings and click OK.



WS08DOMAIN01.LOCAL

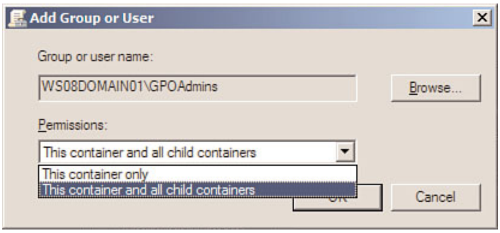
The following groups and users have the selected permission for this domain.

Permission: Perform Group Policy Modeling analyses

Groups and users:

Name	Applies To	Setting	Inherited
Administrators	This container and all child conta...	Allow	No
Domain Admins (WS08DOMAIN...	This container only	Allow	No
Enterprise Admins (WS08DOMAI...	This container and all child conta...	Allow	No
SYSTEM	This container only	Allow	No

FIGURE 9.66
The Delegation tab.



Group or user name: WS08DOMAIN01\GPOAdmins

Permissions: This container and all child containers

FIGURE 9.67
The Add Group or User page.

Modify Delegated Permissions for Generating Group Policy Modeling Data

Scenario/Problem: A team was previously granted the capability to generate group policy modeling data at the domain level. They now need this permission at every OU in the domain.

Solution: Modify delegated permissions for generating group policy modeling data.

To modify delegated permissions for generating group policy modeling data, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.

2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to modify delegated permissions to generate group policy modeling data on the domain level, select the domain node in the console tree.
4. If you want to modify delegated permissions to generate group policy modeling data on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Perform Group Policy Modeling Analyses.
6. In the details pane, right-click the group for which you want to modify delegated permissions; then select This container only or This container and children.
7. Click OK on the confirmation to change inheritance.

Remove Delegated Permissions for Generating Group Policy Modeling Data

Scenario/Problem: A team was previously granted the capability to generate group policy modeling data at the domain level. They no longer require this permission.

Solution: Remove delegated permissions for generating group policy modeling data.

To remove delegated permissions for generating group policy modeling data, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to remove delegated permissions to generate group policy modeling data on the domain level, select the domain node in the console tree.
4. If you want to remove delegated permissions to generate group policy modeling data on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Perform Group Policy Modeling Analyses.
6. In the details pane, right-click the group for which you want to remove delegated permissions and select Remove.
7. Click OK on the confirmation to remove the delegated permissions.

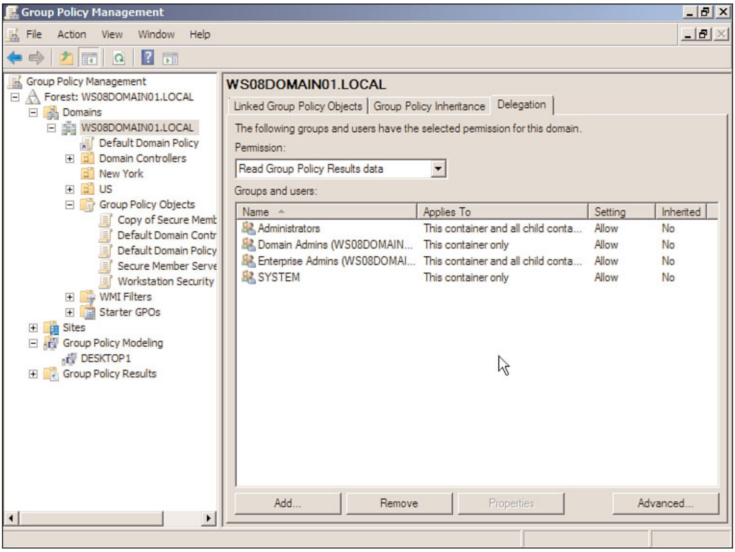
Delegate Permissions for Generating Group Policy Results

Scenario/Problem: A team requires the capability to generate group policy results data for computers and users located in a particular OU.

Solution: Delegate the permissions to generate group policy results data.

To delegate permissions to generate group policy results data, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to delegate the permission to generate group policy results data on the domain level, select the domain node in the console tree.
4. If you want to delegate the permission to generate group policy results data on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Read Group Policy Results data, as shown in Figure 9.68. Click Add.



WS08DOMAIN01.LOCAL

The following groups and users have the selected permission for this domain.

Permission: Read Group Policy Results data

Groups and users:

Name	Applies To	Setting	Inherited
Administrators	This container and all child conta...	Allow	No
Domain Admins (WS08DOMAIN...	This container only	Allow	No
Enterprise Admins (WS08DOMAI...	This container and all child conta...	Allow	No
SYSTEM	This container only	Allow	No

FIGURE 9.68
The Delegation tab.

6. On the Select User, Computer, or Group window, enter the name of the group to which you want to delegate the capability to generate group policy results and click OK.
7. On the Add Group or User window, select the inheritance settings and click OK.

Modify Delegated Permissions for Generating Group Policy Results

Scenario/Problem: A team was previously granted the capability to generate group policy results data at the domain level. They now need this permission at every OU in the domain.

Solution: Modify delegated permissions for generating group policy results data.

To modify delegated permissions for generating group policy results, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to modify delegated permissions to generate group policy results data on the domain level, select the domain node in the console tree.
4. If you want to modify delegated permissions to generate group policy results data on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Read Group Policy Results Data.
6. In the details pane, right-click the group for which you want to modify delegated permissions; then select This container only or This container and children.
7. Click OK on the confirmation screen to change inheritance.

Remove Delegated Permissions for Generating Group Policy Results

Scenario/Problem: A team was previously granted the capability to generate group policy results data at the domain level. They no longer require this permission.

Solution: Remove delegated permissions for generating group policy results data.

To remove delegated permissions for generating group policy results, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. If you want to remove delegated permissions to generate group policy results data on the domain level, select the domain node in the console tree.
4. If you want to remove delegated permissions to generate group policy results data on an OU, select the OU in the console tree.
5. Click the Delegation tab. Ensure that the Permission field contains Read Group Policy Results Data.
6. In the details pane, right-click the group for which you want to remove delegated permissions and select Remove.
7. Click OK on the confirmation screen to remove the delegated permissions.

Delegate Permissions for WMI Filters

Scenario/Problem: A team requires the capability to create WMI filters, which will be used to filter the application of GPOs.

Solution: Delegate the permissions to create WMI filters.

To delegate permissions for WMI filters, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.

2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, select the WMI Filters node.
4. In the details pane, click the Delegation tab.
5. Click Add.
6. On the Select User, Computer, or Group window, enter the name of the group to which you want to delegate the capability to create WMI filters and click OK.
7. On the Add Group or User window, select the Full Control or Creator Owner permission and click OK.

Modify Delegated Permissions for WMI Filters

Scenario/Problem: A team was previously granted the Creator Owner permission on WMI filters in your domain. They now need the Full Control permission.

Solution: Modify delegated permissions on WMI filters.

To modify delegated permissions for WMI filters, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, select the WMI Filters node.
4. In the details pane, click the Delegation tab.
5. In the details pane, right-click the group for which you want to modify delegated permissions; then select Full Control or Creator Owner.
6. Click OK on the confirmation screen to change inheritance.

Remove Delegated Permissions for WMI Filters

Scenario/Problem: A team was previously granted the capability to create WMI filters. They no longer require this permission.

Solution: Remove delegated permissions for WMI filters.

To remove delegated permissions for WMI filters, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree, select the WMI Filters node.
4. In the details pane, click the Delegation tab.
5. In the details pane, right-click the group for which you want to remove delegated permissions and select Remove.
6. Click OK on the confirmation screen to remove the delegated permissions.

This page intentionally left blank

CHAPTER 10

Manage Password Replication Policies

IN THIS CHAPTER

- Add a User, Group, or Computer to the Password Replication Policy
- Remove a User, Group, or Computer from the Password Replication Policy
- View Cached Credentials on a Read-Only Domain Controller
- Review Accounts That Have Been Authenticated on a Read-only Domain Controller
- Automatically Move Accounts That Have Been Authenticated by an RODC to the Allowed List
- Pre-populate the Password Cache for Read-only Domain Controller
- Reset the Credentials That Are Cached on a Read-only Domain Controller

Password Replication Policies are new in Windows Server 2008. Password Replication Policies define the accounts a read-only domain controller (RODC) is permitted to cache, as well as the accounts it is not permitted to cache. When an RODC is originally deployed, the Password Replication Policy must be configured on the writable domain controller (DC) that will be its replication partner.

In addition to configuring the Password Replication Policy for an RODC, you must perform a number of other tasks for Password Replication Policies. This chapter describes the steps required to manage Password Replication Policies.

Add a User, Group, or Computer to the Password Replication Policy

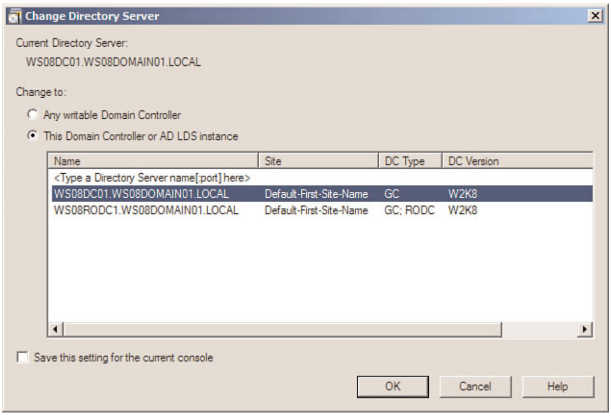
Scenario/Problem: You recently deployed an RODC in your domain. You need to ensure that the RODC caches passwords for users from your company's New York office.

Solution: Add all New York users to an Active Directory Domain Services (AD DS) group. Add a Password Replication Policy on the RODC to allow passwords to be cached for members of the AD DS group.

To add a user, group, or computer to the password replication policy, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Right-click Active Directory Users and Computers in the console tree, and click Change Domain Controller.
4. On the Change Directory Server window, shown in Figure 10.1, select a writable domain controller that has W2K8 in the DC Version column and click OK.
5. In the console tree, expand the domain node and select the Domain Controllers node.
6. In the details pane, right-click the RODC on which you want to configure the password replication policy; then click Properties.
7. On the RODC Properties page, click the Password Replication Policy tab.

NOTE The Password Replication Policy tab will only be presented on the properties page for read-only domain controllers. This tab will not be present for writable domain controllers.



Current Directory Server:
WS08DC01.WS08DOMAIN01.LOCAL

Change to:

○ Any writable Domain Controller

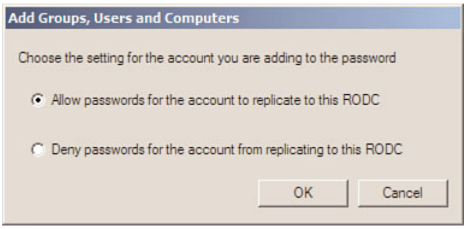
● This Domain Controller or AD LDS instance

Name	Site	DC Type	DC Version
<Type a Directory Server name[:port] here>			
WS08DC01.WS08DOMAIN01.LOCAL	Default-First-Site-Name	GC	W2K8
WS08RODC1.WS08DOMAIN01.LOCAL	Default-First-Site-Name	GC; RODC	W2K8

□ Save this setting for the current console

FIGURE 10.1
The Change Directory Server window.

8. Click Add.
9. On the Add Groups, Users and Computers window, shown in Figure 10.2, select Allow passwords for the account to replicate to this RODC or Deny passwords for the account from replicating to this RODC. Then click OK.



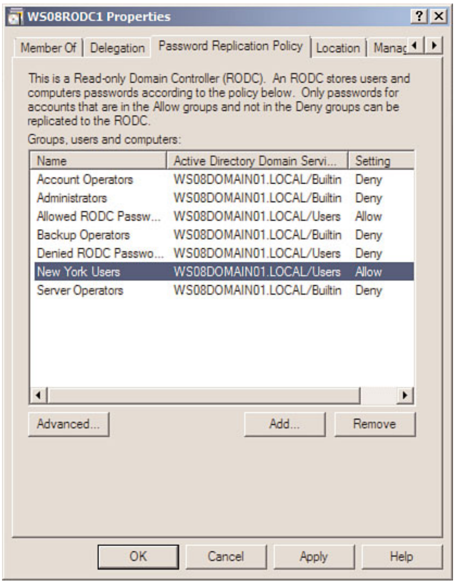
Choose the setting for the account you are adding to the password

● Allow passwords for the account to replicate to this RODC

○ Deny passwords for the account from replicating to this RODC

FIGURE 10.2
The Add Groups, Users and Computers window.

10. Type the name of the user, group, or computer you want to allow or deny password replication, and click OK. The group, user, or computer will be added to the Password Replication Policy tab, as shown in Figure 10.3.
11. Click OK or Apply to save the changes.



This is a Read-only Domain Controller (RODC). An RODC stores users and computers passwords according to the policy below. Only passwords for accounts that are in the Allow groups and not in the Deny groups can be replicated to the RODC.

Groups, users and computers:

Name	Active Directory Domain Servi...	Setting
Account Operators	WS08DOMAIN01.LOCAL/Builtin	Deny
Administrators	WS08DOMAIN01.LOCAL/Builtin	Deny
Allowed RODC Passw...	WS08DOMAIN01.LOCAL/Users	Allow
Backup Operators	WS08DOMAIN01.LOCAL/Builtin	Deny
Denied RODC Passwo...	WS08DOMAIN01.LOCAL/Users	Deny
New York Users	WS08DOMAIN01.LOCAL/Users	Allow
Server Operators	WS08DOMAIN01.LOCAL/Builtin	Deny

FIGURE 10.3
The Password Replication Policy tab.

Remove a User, Group, or Computer from the Password Replication Policy

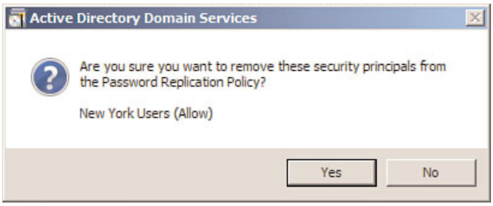
Scenario/Problem: A group of employees relocated from your company's New York office to your company's head office. The RODC in the New York office previously cached the password for these employees. These employees no longer need to authenticate against the RODC.

Solution: Remove the group from the Password Replication Policy on the RODC.

To remove a user, group, or computer from the password replication policy, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Right-click Active Directory Users and Computers in the console tree, and click Change Domain Controller.
4. On the Change Directory Server window, select a writable domain controller that has W2K8 in the DC Version column and click OK.

5. In the console tree, expand the domain node and select the Domain Controllers node.
6. In the details pane, right-click the RODC on which you want to configure the password replication policy; then click Properties.
7. On the RODC Properties page, click the Password Replication Policy tab.
8. Select the user, group, or computer you want to remove from the Password Replication Policy, and click Remove.
9. Select Yes on the confirmation to remove the security principal from the Password Replication Policy, shown in Figure 10.4.



Are you sure you want to remove these security principals from the Password Replication Policy?

New York Users (Allow)

FIGURE 10.4
The confirmation to remove security principal from Password Replication Policy.

View Cached Credentials on a Read-Only Domain Controller

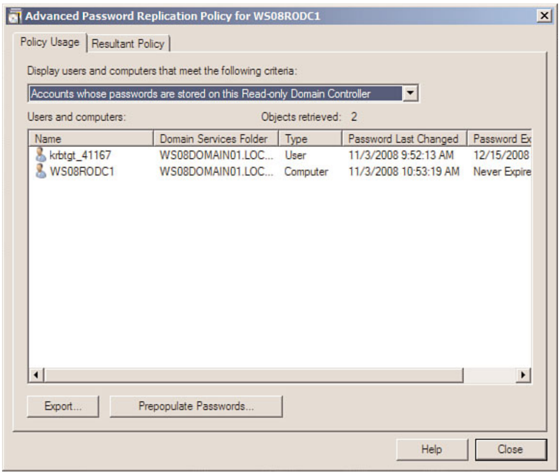
Scenario/Problem: You need to determine which passwords an RODC has cached.

Solution: View the cached credentials on an RODC.

To determine which credentials an RODC has cached, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Right-click Active Directory Users and Computers in the console tree, and click Change Domain Controller.
4. On the Change Directory Server window, select a writable domain controller that has W2K8 in the DC Version column and click OK.
5. In the console tree, expand the domain node and select the Domain Controllers node.
6. In the details pane, right-click the RODC on which you want to view the cached credentials and click Properties.

7. Click on the Password Replication Policy tab.
8. On the RODC Properties page, click Advanced.
9. On the Advanced Password Replication Policy page, select Accounts whose passwords are stored on this Read-only Domain Controller from the drop-down list, as shown in Figure 10.5.


Advanced Password Replication Policy for WS08RODC1

Display users and computers that meet the following criteria:
Accounts whose passwords are stored on this Read-only Domain Controller

Users and computers: Objects retrieved: 2

Name	Domain Services Folder	Type	Password Last Changed	Password Ex
krbtgt_41167	WS08DOMAIN01.LOC...	User	11/3/2008 9:52:13 AM	12/15/2008
WS08RODC1	WS08DOMAIN01.LOC...	Computer	11/3/2008 10:53:19 AM	Never Expire

FIGURE 10.5
View cached credentials on an RODC.

10. View the accounts that have been cached by the RODC by reviewing the Users and computers section of the window.

Review Accounts That Have Been Authenticated on a Read-only Domain Controller

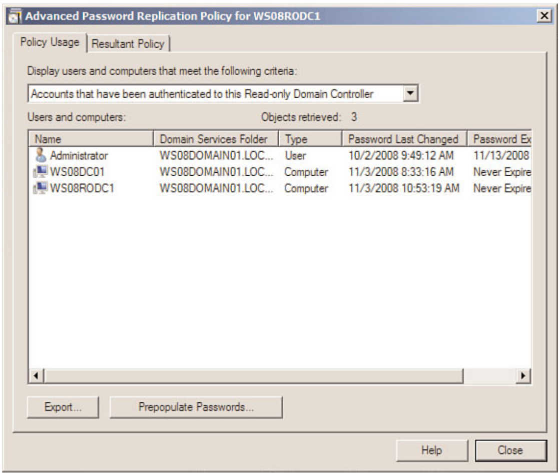
Scenario/Problem: You need to determine which users have logged on to AD DS by authenticating against an RODC.

Solution: Review the accounts that have been authenticated on an RODC.

To review the accounts that have been authenticated on an RODC, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.

3. Right-click Active Directory Users and Computers in the console tree, and click Change Domain Controller.
4. On the Change Directory Server window, select a writable domain controller that has W2K8 in the DC Version column and click OK.
5. In the console tree, expand the domain node and select the Domain Controllers node.
6. In the details pane, right-click the RODC on which you want to view the authenticated accounts; then click Properties.
7. Click on the Password Replication Policy tab.
8. On the RODC Properties page, click Advanced.
9. On the Advanced Password Replication Policy page, select Accounts that have been authenticated to this Read-only Domain Controller from the drop-down list, as shown in Figure 10.6.
10. View the accounts that have been authenticated by the RODC by reviewing the Users and computers section of the window.



Display users and computers that meet the following criteria:

Accounts that have been authenticated to this Read-only Domain Controller

Users and computers: Objects retrieved: 3

Name	Domain Services Folder	Type	Password Last Changed	Password Ex
Administrator	WS08DOMAIN01.LOC...	User	10/2/2008 9:49:12 AM	11/13/2008
WS08DC01	WS08DOMAIN01.LOC...	Computer	11/3/2008 8:33:16 AM	Never Expire
WS08RODC1	WS08DOMAIN01.LOC...	Computer	11/3/2008 10:53:19 AM	Never Expire

FIGURE 10.6
Viewing authenticated accounts on an RODC.

Automatically Move Accounts That Have Been Authenticated by an RODC to the Allowed List

Scenario/Problem: A number of users have been authenticated by an RODC. You want the RODC to cache the passwords for these accounts.

Solution: Use `repadmin /prp` to automatically add these accounts to the Allowed List for the Password Replication Policy on the RODC.

To automatically move accounts that have been authenticated by an RODC to the allowed list, perform the following steps:

1. Log on to a writable domain controller that has Windows Server 2008 installed.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   repadmin /prp move WS08RODC1.WS08DOMAIN01.local "WS08RODC1
   On-Demand"
   ```

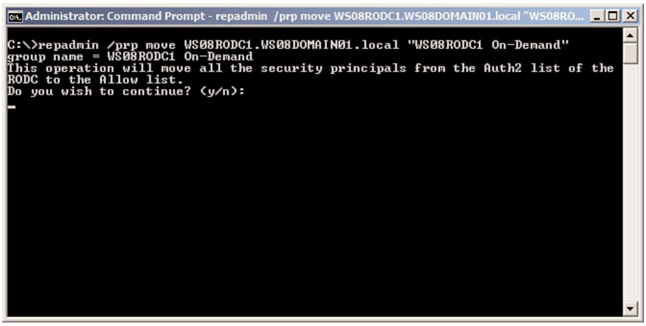
   Table 10.1 lists each parameter used in the previous command.

TIP For a full list of repadmin /prp parameters, go to http://technet.microsoft.com/en-us/library/cc835090.aspx.

Table 10.1 **Parameters to Automatically Move Accounts That Have Been Authenticated by an RODC to the Allowed List**

Parameter	Meaning
`WS08R0DC1.WS08DOMAIN01.local`	Fully qualified domain name (FQDN) of RODC
`"WS08RODC1 On-Demand"`	The group name to be created in which to store the accounts

4. On the confirmation to move all security principals from the Auth2 list of the RODC to the Allow list, shown in Figure 10.7, type **Y**.

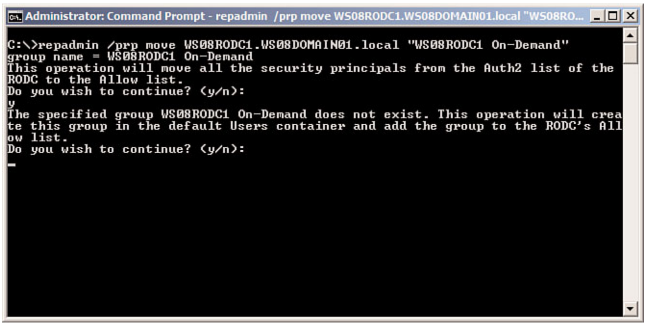


Administrator: Command Prompt - repadmin /prp move WS08RODC1.WS08DOMAIN01.local "WS08RO...

```
C:\>repadmin /prp move WS08RODC1.WS08DOMAIN01.local "WS08RODC1 On-Demand"
group name = WS08RODC1 On-Demand
This operation will move all the security principals from the Auth2 list of the
RODC to the Allow list.
Do you wish to continue? (y/n):
_
```

FIGURE 10.7
Confirmation to move accounts that have been authenticated by an RODC to the Allowed list.

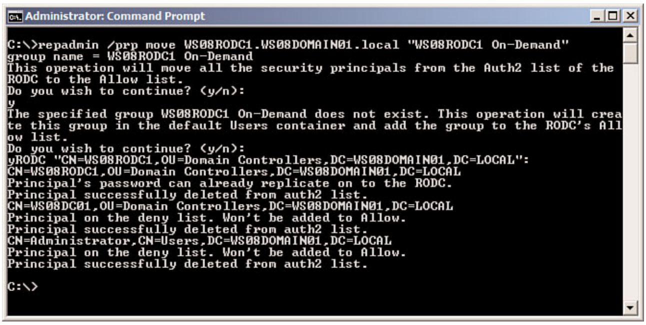
5. On the confirmation page to create the AD DS group, shown in Figure 10.8, type **Y**.
6. Verify the command completed successfully, as shown in Figure 10.9.



Administrator: Command Prompt - repadmin /prp move WS08RODC1.WS08DOMAIN01.local "WS08RO...

```
C:\>repadmin /prp move WS08RODC1.WS08DOMAIN01.local "WS08RODC1 On-Demand"
group name = WS08RODC1 On-Demand
This operation will move all the security principals from the Auth2 list of the
RODC to the Allow list.
Do you wish to continue? (y/n):
y
The specified group WS08RODC1 On-Demand does not exist. This operation will crea
te this group in the default Users container and add the group to the RODC's All
ow list.
Do you wish to continue? (y/n):
_
```

FIGURE 10.8
Confirm group creation.



```
C:\>repadmin /prp move WS08RODC1.WS08DOMAIN01.local "WS08RODC1 On-Demand"
group name = WS08RODC1 On-Demand
This operation will move all the security principals from the Auth2 list of the
RODC to the Allow list.
Do you wish to continue? (y/n):
y
The specified group WS08RODC1 On-Demand does not exist. This operation will crea
te this group in the default Users container and add the group to the RODC's All
ow list.
Do you wish to continue? (y/n):
yRODC "CN=WS08RODC1,OU=Domain Controllers,DC=WS08DOMAIN01,DC=LOCAL":
CN=WS08RODC1,OU=Domain Controllers,DC=WS08DOMAIN01,DC=LOCAL
Principal's password can already replicate on to the RODC.
Principal successfully deleted from auth2 list.
CN=WS08DC01,OU=Domain Controllers,DC=WS08DOMAIN01,DC=LOCAL
Principal on the deny list. Won't be added to Allow.
Principal successfully deleted from auth2 list.
CN=Administrator,CN=Users,DC=WS08DOMAIN01,DC=LOCAL
Principal on the deny list. Won't be added to Allow.
Principal successfully deleted from auth2 list.

C:\>
```

FIGURE 10.9
Move accounts that have been authenticated by an RODC to the Allowed list.

Pre-populate the Password Cache for Read-only Domain Controller

Scenario/Problem: You want to ensure users can log on to the network in a branch office for the first time, even if the wide area network (WAN) link goes down.

Solution: Pre-populate the password cache for an RODC.

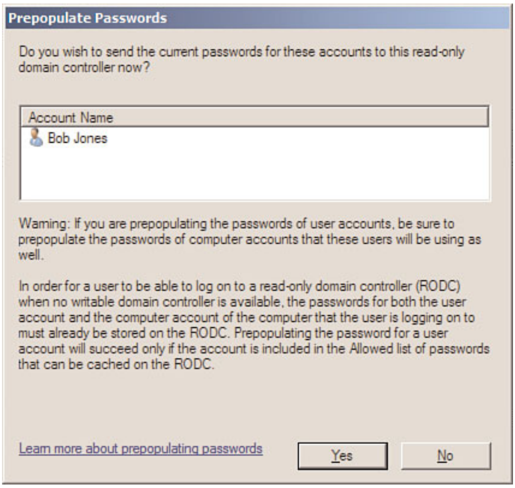
To pre-populate the password cache for an RODC, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.

3. Right-click Active Directory Users and Computers in the console tree, and click Change Domain Controller.
4. On the Change Directory Server window, select a writable domain controller that has W2K8 in the DC Version column and click OK.
5. In the console tree, expand the domain node and select the Domain Controllers node.
6. In the details pane, right-click the RODC on which you want to pre-populate the passwords; then click Properties.
7. Click on the Password Replication Policy tab.
8. On the RODC Properties page, click Advanced.
9. Click Prepopulate Passwords.
10. On the Select Users or Computers window, type the name of the user or computer for which you want to pre-populate the password. Then click OK.

NOTE The accounts for which the password are being pre-populated need to be added to the Allow List in the Password Replication Policy of the RODC. If you try to pre-populate the password for an account that does not belong to the Allow List, you will be presented with an error.

11. On the Prepopulate Passwords window, shown in Figure 10.10, click Yes to send the password to the RODC.



Prepopulate Passwords

Do you wish to send the current passwords for these accounts to this read-only domain controller now?

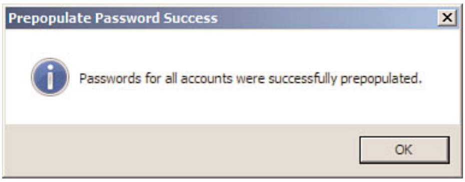
Account Name
Bob Jones

Warning: If you are prepopulating the passwords of user accounts, be sure to prepopulate the passwords of computer accounts that these users will be using as well.

In order for a user to be able to log on to a read-only domain controller (RODC) when no writable domain controller is available, the passwords for both the user account and the computer account of the computer that the user is logging on to must already be stored on the RODC. Prepopulating the password for a user account will succeed only if the account is included in the Allowed list of passwords that can be cached on the RODC.

FIGURE 10.10
The Prepopulate Passwords window.

12. Ensure the results shows successful, as shown in Figure 10.11, and click OK.



Passwords for all accounts were successfully prepopulated.

FIGURE 10.11
The pre-populate password results.

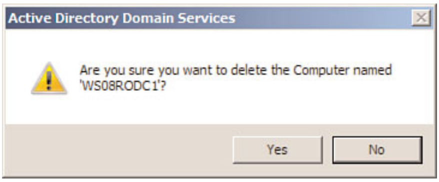
Reset the Credentials That Are Cached on a Read-only Domain Controller

Scenario/Problem: An RODC has been compromised. You want to ensure the cached credentials on the RODC cannot be used to compromise your AD DS forest.

Solution: Reset the credentials that are cached on the RODC.

To reset the credentials that are cached on an RODC, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. Right-click Active Directory Users and Computers in the console tree, and click Change Domain Controller.
4. On the Change Directory Server window, select a writable domain controller that has W2K8 in the DC Version column and click OK.
5. In the console tree, expand the domain node and select the Domain Controllers node.
6. In the details pane, right-click the RODC that was compromised; then select Delete.
7. Click Yes to confirm the deletion, shown in Figure 10.12.



Are you sure you want to delete the Computer named 'WS08RODC1'?

FIGURE 10.12
Confirming the RODC deletion.

8. On the Deleting Domain Controller page, select Reset All Passwords for User Accounts That Were Cached on This Read-only Domain Controller, type a location and filename to export the list of accounts that were cached on the RODC in the Location field, and click Delete.

CHAPTER 11

Manage Fine-Grained Password and Account Lockout Policies

IN THIS CHAPTER

- Create Password Settings Objects
- Delete Password Settings Objects
- View Settings Defined in Password Settings Objects
- Modify Settings Defined in Password Settings Objects
- Apply a Password Settings Object to Users and Security Groups
- Modify the Precedence for Password Settings Objects
- View the Resultant Password Settings Objects for a User or Group
- Create Shadow Groups

Fine-grained password and account lockout policies are a new feature in Windows Server 2008. Fine-grained password policies allow you to define multiple password policies to different sets of users in a domain. Fine-grained account lockout policies allow you to define multiple account lockout policies to different sets of users in a domain.

This chapter describes the steps required to manage fine-grained password and account lockout policies.

NOTE Fine-grained password and account lockout policies require a domain functional level of Windows Server 2008.

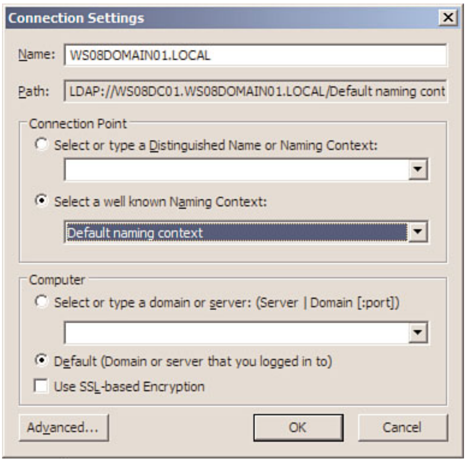
Create Password Settings Objects

Scenario/Problem: Your company wants to enforce a stronger password policy for all IT administrators. This policy can apply only to IT administrators.

Solution: Create a password settings object (PSO).

To create a PSO, perform the following steps:

1. Log on to a domain controller (DC) or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Run, type **`adsiedit.msc`**, and then click OK.
3. In the ADSI Edit snap-in, right-click ADSI Edit and then click Connect to.
4. On the Connection Settings window, shown in Figure 11.1, in the Name field type the fully qualified domain name (FQDN) of the domain in which you want to create the password settings object (PSO), ensure Default naming context is selected in the Select a well known Naming Context field, and then click OK.
5. In the console tree, expand the domain node; then expand `DC=`*`domainname`*, where *`domainname`* is the name of your domain.
6. Expand `CN=System`.
7. In the console tree, right-click the CN=Password Settings Container node, select New, and then click Object.
8. On the Create Object window, shown in Figure 11.2, click Next.



Connection Settings

Name: WS08DOMAIN01.LOCAL

Path: LDAP://WS08DC01.WS08DOMAIN01.LOCAL/Default naming cont

Connection Point

○ Select or type a Distinguished Name or Naming Context:

● Select a well known Naming Context:

Default naming context

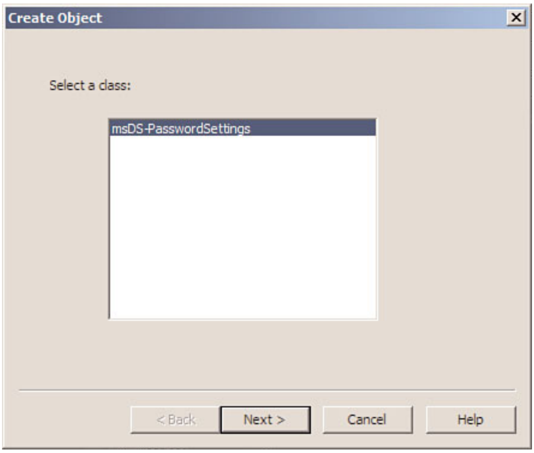
Computer

○ Select or type a domain or server: (Server | Domain [:port])

● Default (Domain or server that you logged in to)

□ Use SSL-based Encryption

FIGURE 11.1
The ADSI Edit snap-in Connection Settings window.



Create Object

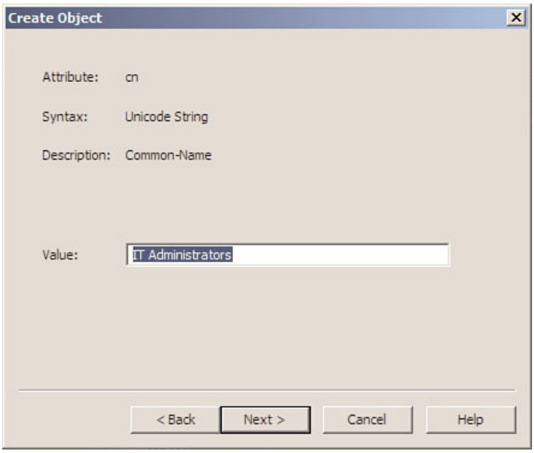
Select a class:

msDS-PasswordSettings

FIGURE 11.2
The Create Object window.

9. For the `cn` attribute, shown in Figure 11.3, type a name for the PSO in the Value field to set a Common-Name for the PSO; click Next.

10. For the `msDS-PasswordSettingsPrecedence` attribute, shown in Figure 11.4, type a value for the precedence in the Value field to set a password settings precedence for the PSO. Then click Next.



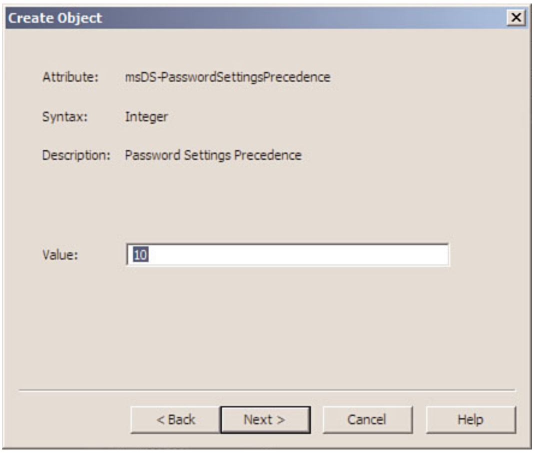
Attribute: cn

Syntax: Unicode String

Description: Common-Name

Value: IT Administrators

FIGURE 11.3
Creating the PSO's Common-Name.



Attribute: msDS-PasswordSettingsPrecedence

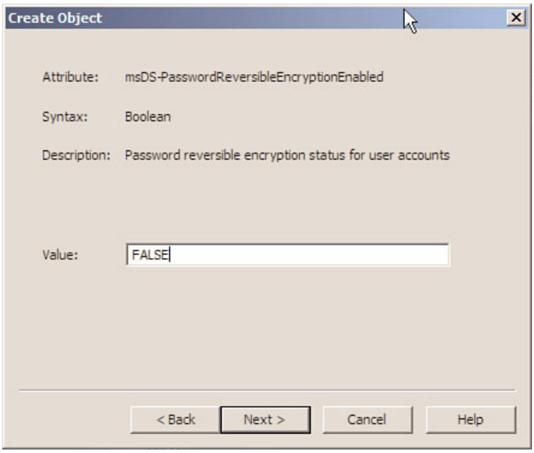
Syntax: Integer

Description: Password Settings Precedence

Value: 10

FIGURE 11.4
Creating the PSO's password settings precedence.

11. For the `msDS-PasswordReversibleEncryptionEnabled` attribute, shown in Figure 11.5, type **`TRUE`** in the Value field to enable store password using reversible encryption or type **`FALSE`** in the Value field to disable store password using reversible encryption. Then click Next.



Attribute: msDS-PasswordReversibleEncryptionEnabled

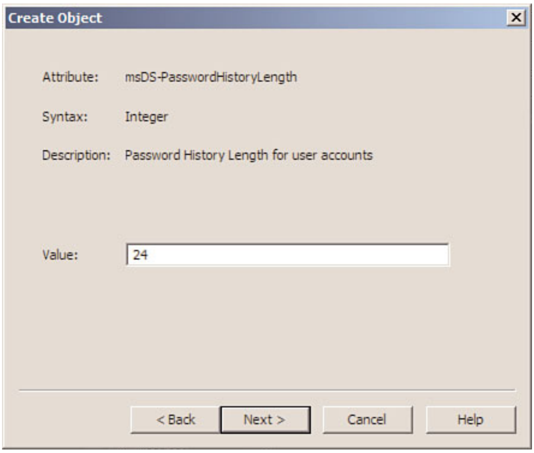
Syntax: Boolean

Description: Password reversible encryption status for user accounts

Value: FALSE

FIGURE 11.5
Creating the PSO's password reversible encryption status for user accounts.

12. For the `msDS-PasswordHistoryLength` attribute, shown in Figure 11.6, type a value for the password history length in the Value field and click Next.



Attribute: msDS-PasswordHistoryLength

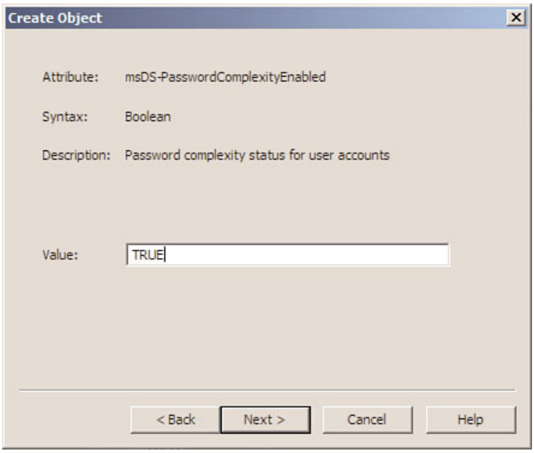
Syntax: Integer

Description: Password History Length for user accounts

Value: 24

FIGURE 11.6
Creating the PSO's password history length for user accounts.

13. For the `msDS-PasswordComplexityEnabled` attribute, shown in Figure 11.7, type **`TRUE`** in the Value field to enable password complexity or type **`FALSE`** in the Value field to disable password complexity; then click Next.


Create Object

Attribute: msDS-PasswordComplexityEnabled

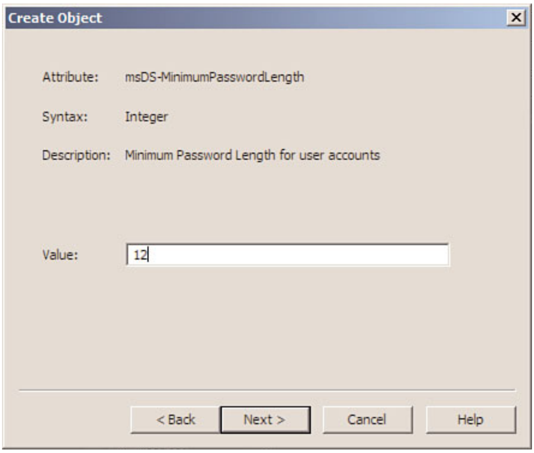
Syntax: Boolean

Description: Password complexity status for user accounts

Value: TRUE

FIGURE 11.7
Creating the PSO's password complexity status for user accounts.

14. For the `msDS-MinimumPasswordLength` attribute, shown in Figure 11.8, type a value for the minimum password length in the Value field and click Next.


Create Object

Attribute: msDS-MinimumPasswordLength

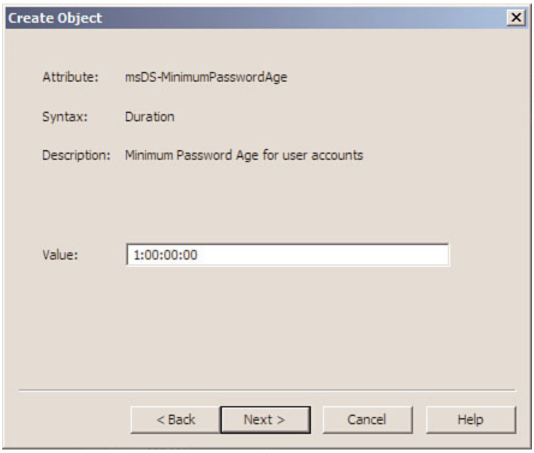
Syntax: Integer

Description: Minimum Password Length for user accounts

Value: 12

FIGURE 11.8
Creating the PSO's minimum password length for user accounts.

15. For the `msDS-MinimumPasswordAge` attribute, shown in Figure 11.9, type a value for the minimum password age in the Value field. Then click Next.



Attribute: msDS-MinimumPasswordAge

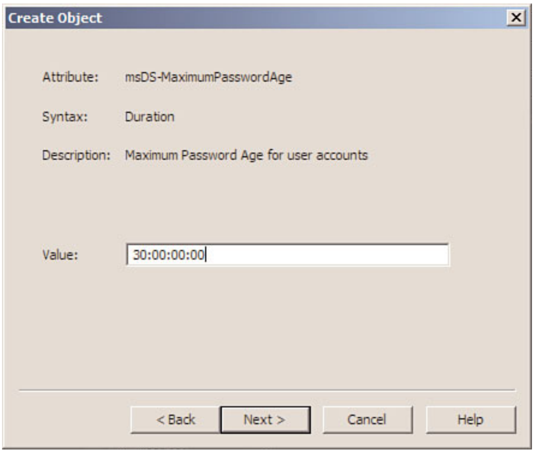
Syntax: Duration

Description: Minimum Password Age for user accounts

Value: 1:00:00:00

FIGURE 11.9
Creating the PSO's minimum password age for user accounts.

16. For the msDS-MaximumPasswordAge attribute, shown in Figure 11.10, type a value for the maximum password age in the Value field and click Next.



Attribute: msDS-MaximumPasswordAge

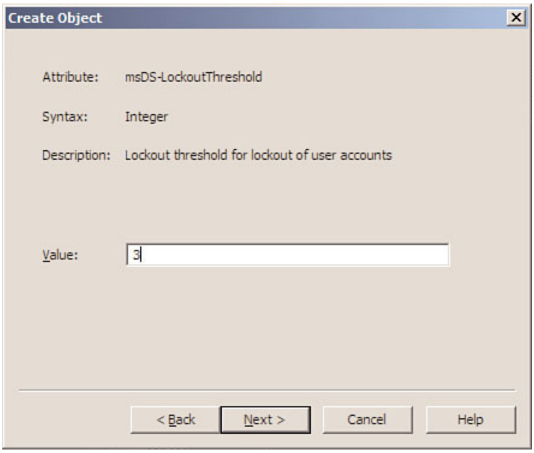
Syntax: Duration

Description: Maximum Password Age for user accounts

Value: 30:00:00:00

FIGURE 11.10
Creating the PSO's maximum password age for user accounts.

17. For the msDS-LockoutThreshold attribute, shown in Figure 11.11, type a value for the lockout threshold in the Value field; then click Next.


Create Object

Attribute: msDS-LockoutThreshold

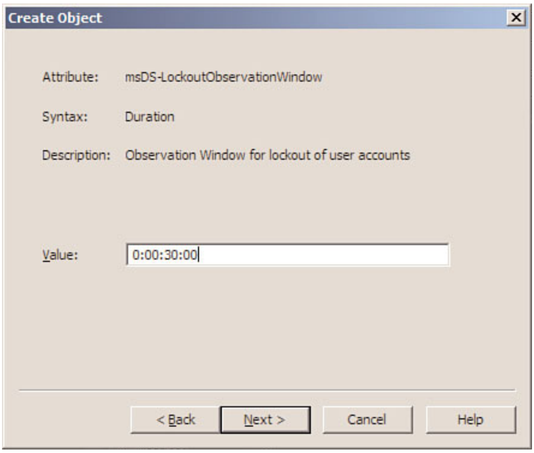
Syntax: Integer

Description: Lockout threshold for lockout of user accounts

Value: 3

FIGURE 11.11
Creating the PSO's lockout threshold for lockout of user accounts.

18. For the `msDS-LockoutObservationWindow` attribute, shown in Figure 11.12, type a value for the observation window for lockout of user accounts in the Value field and click Next.


Create Object

Attribute: msDS-LockoutObservationWindow

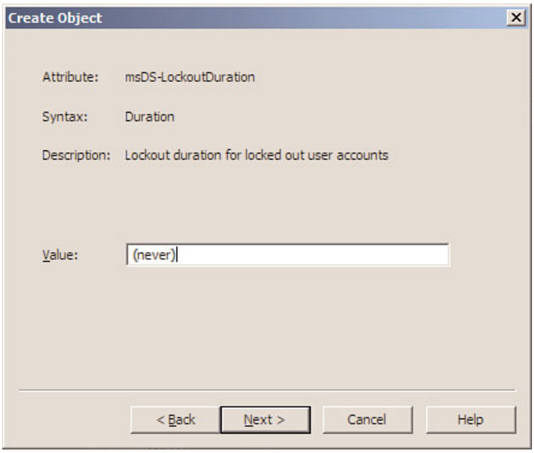
Syntax: Duration

Description: Observation Window for lockout of user accounts

Value: 0:00:30:00

FIGURE 11.12
Creating the PSO's observation window for lockout of user accounts.

19. For the `msDS-LockoutDuration` attribute, shown in Figure 11.13, type a value for the duration of the lockout of user accounts in the Value field; then click Next.


Create Object

Attribute: msDS-LockoutDuration

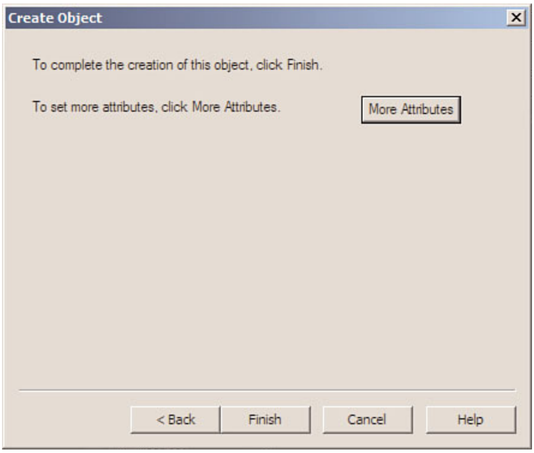
Syntax: Duration

Description: Lockout duration for locked out user accounts

Value: (never)

FIGURE 11.13
Creating the PSO's lockout duration for lockout of user accounts.

20. On the Create Object window, shown in Figure 11.14, click Finish to create the PSO.


Create Object

To complete the creation of this object, click Finish.

To set more attributes, click More Attributes.

FIGURE 11.14
Completing the Create PSO Wizard.

NOTE The time-related PSO attributes (`msDS-MaximumPasswordAge`, `msDS-MinimumPasswordAge`, `msDS-LockoutObservationWindow`, and `msDS-LockoutDuration`) must be entered in the d:hh:mm:ss format or the I8 format. The d:hh:mm:ss format is only available in the Windows Server 2008 version of ADSI Edit.

Delete Password Settings Objects

Scenario/Problem: You previously created a PSO in your domain. The PSO is no longer required and you want to prevent it from being used in the future.

Solution: Delete the PSO.

To delete a PSO, perform the following steps:

1. Log on to a DC or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. On the View menu, ensure Advanced Features is selected.
4. In the console tree, expand the System node and then select the Password Settings Container node.
5. In the details pane, right-click the PSO you want to delete; then click Delete.
6. Select Yes on the confirmation screen to delete the PSO.

View Settings Defined in Password Settings Objects

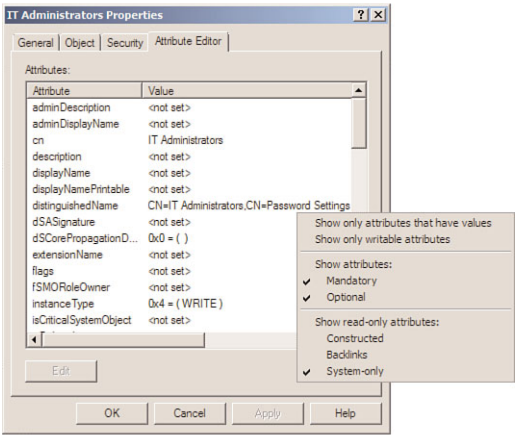
Scenario/Problem: You need to determine the settings that are applied in a PSO.

Solution: View settings defined in the the PSO.

To view the settings defined in a PSO, perform the following steps:

1. Log on to a DC or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. On the View menu, ensure Advanced Features is selected.
4. In the console tree, expand the System node and then select the Password Settings Container node.
5. In the details pane, right-click the PSO you want to view; then click Properties.

6. If you do not see attributes whose settings you want to view, click Filter to customize the list of attributes shown on the Attribute Editor tab. The filter dialog box is shown in Figure 11.15.



Attribute	Value
adminDescription	<not set>
adminDisplayName	<not set>
cn	IT Administrators
description	<not set>
displayName	<not set>
displayNamePrintable	<not set>
distinguishedName	CN=IT Administrators,CN=Password Settings
dSASignature	<not set>
dSCorePropagationD...	0x0 = ( )
extensionName	<not set>
flags	<not set>
fSMORoleOwner	<not set>
instanceType	0x4 = (WRITE)
isCriticalSystemObject	<not set>

FIGURE 11.15
Customizing the list of attributes shown on the Attribute Editor tab.

7. Scroll the list of attributes to view the settings defined.

Modify Settings Defined in Password Settings Objects

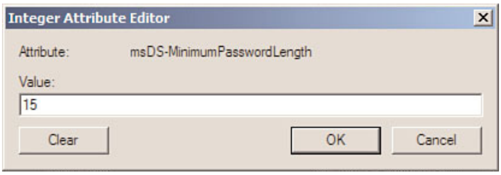
Scenario/Problem: You previously created a PSO. You need to change the minimum password length in this PSO.

Solution: Modify settings defined in a PSO.

To modify the settings defined in a PSO, perform the following steps:

1. Log on to a DC or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. On the View menu, ensure Advanced Features is selected.
4. In the console tree, expand the System node; then select the Password Settings Container node.
5. In the details pane, right-click the PSO you want to modify and click Properties.

6. If you do not see attributes whose settings you want to view, click Filter to customize the list of attributes shown on the Attribute Editor tab.
7. Select the attribute you want to modify, and click Edit.
8. Modify the value for the attribute, as shown in Figure 11.16, click OK, and then click OK to close the Attribute Editor.


Integer Attribute Editor

Attribute: msDS-MinimumPasswordLength

Value: 15

FIGURE 11.16
Modifying the settings defined in a PSO.

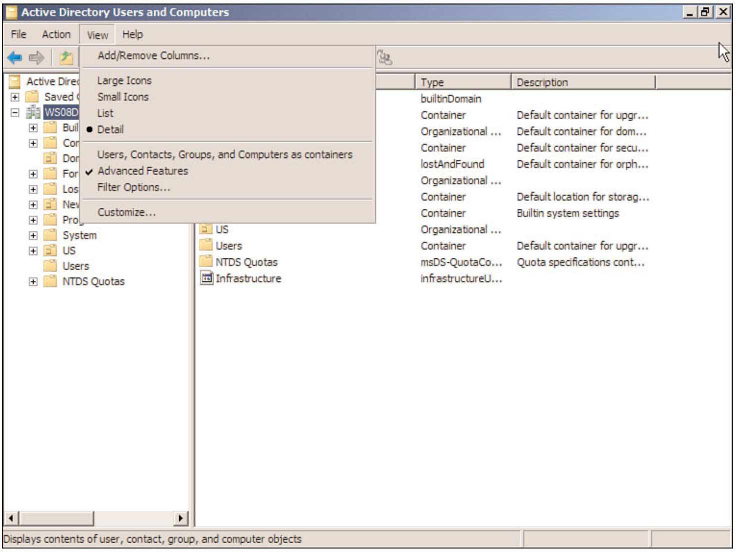
Apply a Password Settings Object to Users and Security Groups

Scenario/Problem: You created a new PSO in your domain. You want to ensure the PSO is applied to all IT administrators.

Solution: Apply the PSO to an Active Directory Domain Services (AD DS) group to which all IT administrators belong.

To apply a PSO to a user or group, perform the following steps:

1. Log on to a DC or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. On the View menu, ensure Advanced Features is selected as shown in Figure 11.17.
4. In the console tree, expand the System node and then select the Password Settings Container node.
5. In the details pane, right-click the PSO you want to configure and select Properties.
6. On the PSO properties page, click the Attribute Editor tab.
7. Click Filter, ensure the Show only attributes that have values option is not checked, as shown in Figure 11.18.

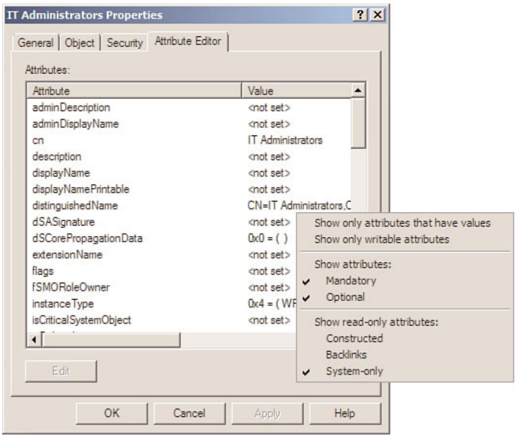


	Type	Description
	builtinDomain	
	Container	Default container for upgr...
	Organizational ...	Default container for dom...
	Container	Default container for secu...
	lostAndFound	Default container for orph...
	Organizational ...	
	Container	Default location for storag...
	Container	Builtin system settings
US	Organizational ...	
Users	Container	Default container for upgr...
NTDS Quotas	msDS-QuotaCo...	Quota specifications cont...
Infrastructure	infrastructureU...	

Displays contents of user, contact, group, and computer objects

FIGURE 11.17

Advanced features in the Active Directory Users and Computers console.



Attribute	Value
adminDescription	<not set>
adminDisplayName	<not set>
cn	IT Administrators
description	<not set>
displayName	<not set>
displayNamePrintable	<not set>
distinguishedName	CN=IT Administrators,C
dSASignature	<not set>
dSCorePropagationData	0x0 = ( )
extensionName	<not set>
flags	<not set>
fSMORoleOwner	<not set>
instanceType	0x4 = (WF
isCriticalSystemObject	<not set>

FIGURE 11.18

Filtering attributes in the Attribute Editor.

8. Select the `msDS-PsoAppliesTo` attribute, and click Edit.
9. On the Multi-valued Distinguished Name with Security Principal Editor window, shown in Figure 11.19, click Add Windows Account.

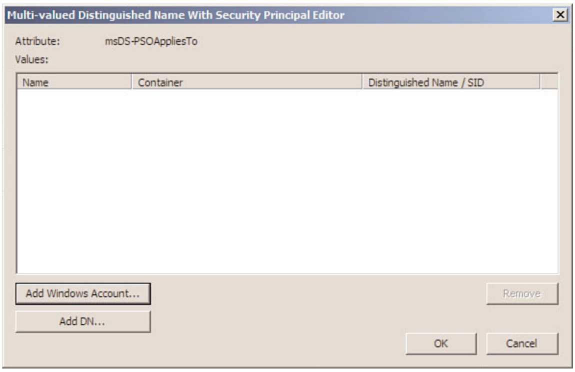

Multi-valued Distinguished Name With Security Principal Editor
Attribute: msDS-PSOAppliesTo
Values:
Name
Container
Distinguished Name / SID
Add Windows Account...
Add DN...
Remove
OK
Cancel

FIGURE 11.19
The Multi-valued Distinguished Name with Security Principal Editor window.

10. In the Select Users, Computers, or Groups window, type the name of the user or global group to which you want to apply the PSO, and click OK.
11. Click OK on the Multi-valued Distinguished Name with Security Principal Editor window; then click OK to close the properties for the PSO.

Modify the Precedence for Password Settings Objects

Scenario/Problem: You have multiple PSOs in your domain that are applied to global security groups. You want to ensure that a particular PSO is always applied to members of the IT Administrators AD DS group.

Solution: Modify the precedence for the PSO.

To modify the precedence for PSOs, perform the following steps:

1. Log on to a DC or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. On the View menu, ensure Advanced Features is selected.
4. In the console tree, expand the System node and then select the Password Settings Container node.
5. In the details pane, right-click the PSO for which you want to modify the precedence; then select Properties.
6. On the PSO properties page, click the Attribute Editor tab.
7. Select the `msDS-PasswordSettingsPrecedence` attribute and click Edit.

8. In the Integer Attribute Editor window, shown in Figure 11.20, enter the new value for the PSO Precedence, and then click OK.

TIP When multiple PSOs are applied to users or global groups in AD DS, the PSO with the lowest precedence value wins.

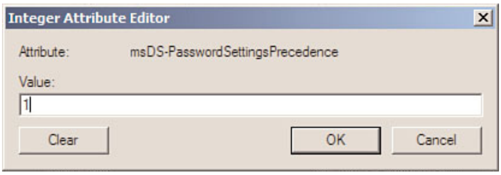


FIGURE 11.20
The Integer Attribute Editor window.

View the Resultant Password Settings Objects for a User or Group

Scenario/Problem: You have multiple PSOs defined in your domain. You need to determine the effective PSO for a user account.

Solution: View the resultant PSOs for a user.

To view the resultant PSO for a user or group, perform the following steps:

1. Log on to a DC or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. On the View menu, ensure Advanced Features is selected.
4. Locate the user account or group for which you want to view the resultant password settings objects, and click Properties.
5. Click the Attribute Editor tab.
6. Click Filter.
7. Ensure that the Show attributes/Optional check box is selected.
8. Ensure that the Show read-only attributes/Constructed check box is selected.
9. Select the `msDS-ResultantPSO` attribute and click View.
10. The resultant PSO is listed.

Create Shadow Groups

Scenario/Problem: You recently created a PSO in your domain. You need to apply the PSO to all user accounts located in an organizational unit called New York.

Solution: Create a shadow group in AD DS.

To create a shadow group, perform the following steps:

1. Log on to a DC.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

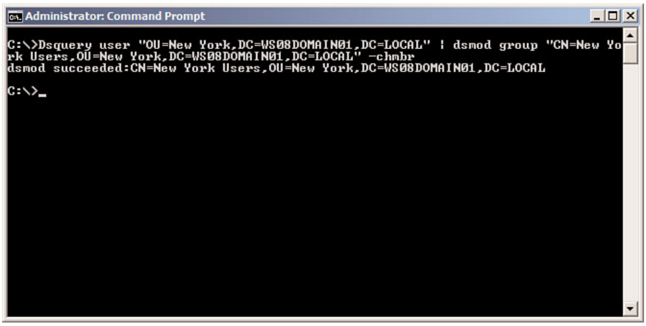
   ```
   Dsquery user "OU=New York,DC=WS08DOMAIN01,DC=LOCAL" ¦ dsmod group
   "CN=New York Users,OU=New York,DC=WS08DOMAIN01,DC=LOCAL" -chmbr
   ```

   Table 11.1 lists each parameter used in the previous command.

Table 11.1 **Parameters to Create a Shadow Group**

Parameter	Meaning
`"OU=New York,DC=WS08DOMAIN01,DC=LOCAL"`	The DN of the OU that contains the user accounts.
`"CN=New York Users,OU=New York,DC=WS08DOMAIN01,DC=LOCAL"`	The DN of the group you want to use as the shadow group.
`-chmbr`	Replace group membership.

4. Verify that the results of the `dsmod` command entered above returns `dsmod` succeeded, shown in Figure 11.21.



```
C:\>Dsquery user "OU=New York,DC=WS08DOMAIN01,DC=LOCAL" ¦ dsmod group "CN=New Yo
rk Users,OU=New York,DC=WS08DOMAIN01,DC=LOCAL" -chmbr
dsmod succeeded:CN=New York Users,OU=New York,DC=WS08DOMAIN01,DC=LOCAL

C:\>_
```

FIGURE 11.21
Creating shadow groups.

CHAPTER 12

Manage Active Directory Domain Services Backup and Recovery

IN THIS CHAPTER:

- Install the Windows Server Backup Server Feature
- Perform an Unscheduled Backup of Critical Volumes of a Domain Controller
- Perform an Unscheduled System State Backup of a Domain Controller
- Perform an Unscheduled Full Server Backup of a Domain Controller
- Schedule Regular Full Server Backups of a Domain Controller
- Perform a Nonauthoritative Restore of Active Directory Domain Services
- Perform an Authoritative Restore of Deleted Active Directory Domain Services Objects
- Perform a Full Server Recovery of a Domain Controller
- Create a Onetime Active Directory Domain Services Snapshot
- Create Scheduled Active Directory Domain Services Snapshots
- Expose an Active Directory Domain Services Snapshot as an LDAP Server
- Access Data Stored in Active Directory Domain Services Snapshots

Backup and recovery in Windows Server 2008 has changed significantly from previous versions of Windows Server. Microsoft has replaced the NT Backup program with the Windows Server Backup server feature. Windows Server Backup is used to back up and restore Active Directory Domain Services (AD DS).

This chapter describes the steps required to manage AD DS backup and recovery.

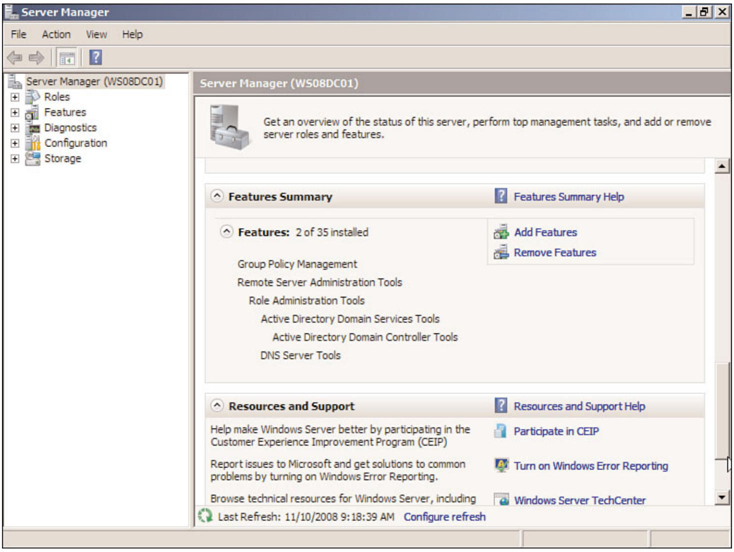
Install the Windows Server Backup Server Feature

Scenario/Problem: You need to be able to perform backup and restore tasks on a domain controller.

Solution: Install the Windows Server Backup server feature.

To install the Windows Server Backup server feature, perform the following steps:

1. Log on to a domain controller that you want to back up.
2. Click Start, and then click Server Manager.
3. In the Features Summary section of Server Manager, shown in Figure 12.1, click Add Features.



Get an overview of the status of this server, perform top management tasks, and add or remove server roles and features.

Group Policy Management
Remote Server Administration Tools
Role Administration Tools
Active Directory Domain Services Tools
Active Directory Domain Controller Tools
DNS Server Tools

Help make Windows Server better by participating in the Customer Experience Improvement Program (CEIP)

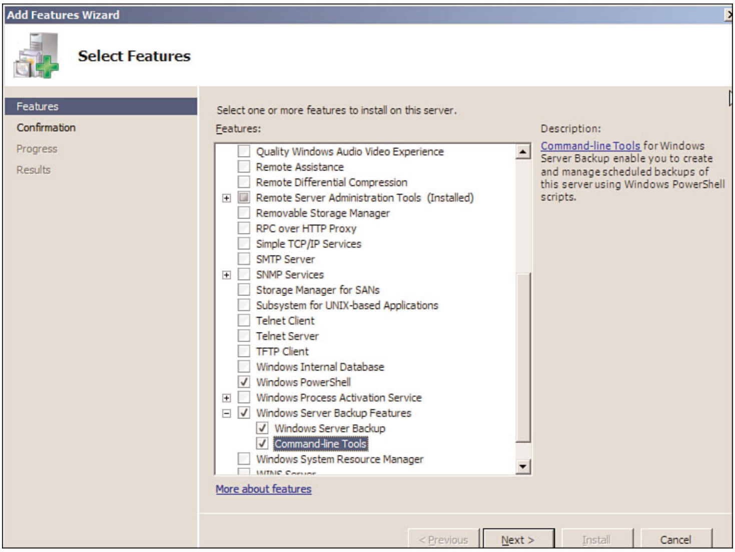
Report issues to Microsoft and get solutions to common problems by turning on Windows Error Reporting.

Browse technical resources for Windows Server, including

Windows Server TechCenter
Last Refresh: 11/10/2008 9:18:39 AM
Configure refresh

FIGURE 12.1
The Server Manager.

4. On the Select Features page, shown in Figure 12.2, select Windows Server Backup and Command-line Tools under the Windows Server Backup Features node and then click Next.



Select one or more features to install on this server.

Features:

- ☐ Quality Windows Audio Video Experience
- ☐ Remote Assistance
- ☐ Remote Differential Compression
- ⊞ ▣ Remote Server Administration Tools (Installed)
- ☐ Removable Storage Manager
- ☐ RPC over HTTP Proxy
- ☐ Simple TCP/IP Services
- ☐ SMTP Server
- ⊞ ☐ SNMP Services
- ☐ Storage Manager for SANs
- ☐ Subsystem for UNIX-based Applications
- ☐ Telnet Client
- ☐ Telnet Server
- ☐ TFTP Client
- ☐ Windows Internal Database
- ☑ Windows PowerShell
- ⊞ ☐ Windows Process Activation Service
- ⊟ ☑ Windows Server Backup Features
  - ☑ Windows Server Backup
  - ☑ Command-line Tools
- ☐ Windows System Resource Manager
- ☐ WINS Server

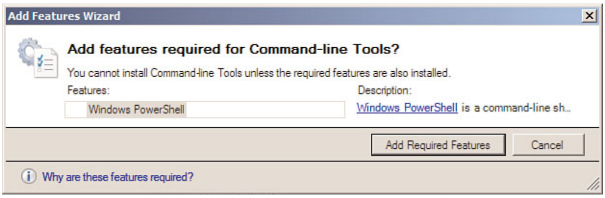
Description:

Command-line Tools for Windows Server Backup enable you to create and manage scheduled backups of this server using Windows PowerShell scripts.

FIGURE 12.2

The Add Windows Server Backup feature.

5. If Windows PowerShell is not installed, you are prompted to install it, as shown in Figure 12.3. Click Add Required Features, and then click Next.



Add features required for Command-line Tools?

You cannot install Command-line Tools unless the required features are also installed.

Features: Windows PowerShell

Description: Windows PowerShell is a command-line sh...

FIGURE 12.3

Adding the required features.

6. On the Confirm Installation Selections page, click Install.

7. Confirm that the installations completed successfully; then click Close.

Perform an Unscheduled Backup of Critical Volumes of a Domain Controller

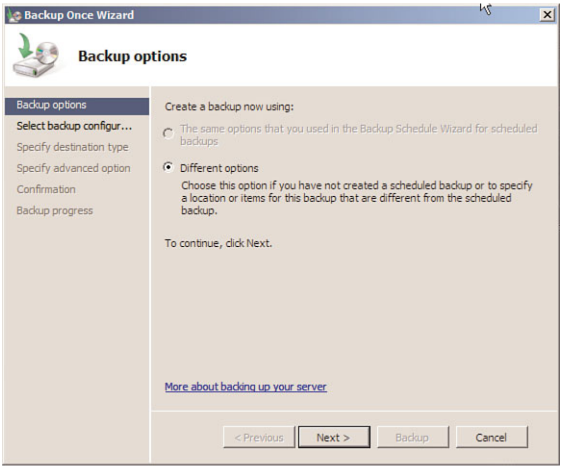
Scenario/Problem: You are preparing to install new software on a domain controller. You want to be able to recover the domain controller to the state prior to installing the new software in the event of an issue.

Solution: Perform an unscheduled backup of critical volumes of a domain controller.

Perform an Unscheduled Backup of Critical Volumes of a Domain Controller by Using the Windows Interface

To perform an unscheduled backup of critical volumes of a domain controller by using the Windows interface, perform the following tasks:

1. Log on to a domain controller you want to back up.
2. Click Start, click Administrative Tools, and then click Windows Server Backup.
3. On the Action menu in Windows Server Backup, click Backup Once.
4. If you are creating the first backup of the domain controller, click Next to select Different options.
5. On the Backup options page of the Backup Once Wizard, shown in Figure 12.4, click Next.



Create a backup now using:

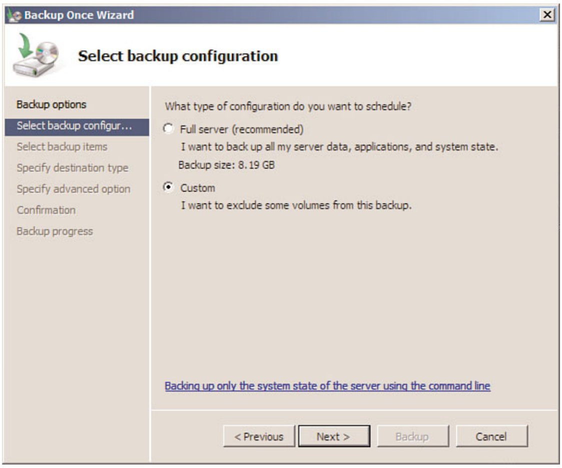
○ The same options that you used in the Backup Schedule Wizard for scheduled backups

● Different options
Choose this option if you have not created a scheduled backup or to specify a location or items for this backup that are different from the scheduled backup.

To continue, click Next.

FIGURE 12.4
The Backup options page.

6. On the Select backup configuration page, shown in Figure 12.5, click Custom and then click Next.



Select backup configuration

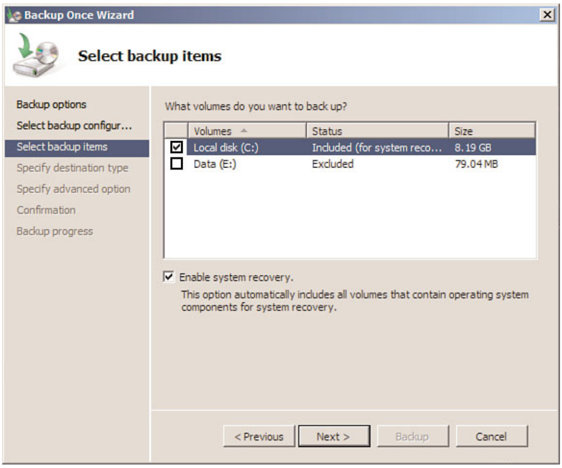
What type of configuration do you want to schedule?

○ Full server (recommended)
I want to back up all my server data, applications, and system state.
Backup size: 8.19 GB

● Custom
I want to exclude some volumes from this backup.

FIGURE 12.5
The Select backup configuration page.

7. On the Select backup items page, shown in Figure 12.6, select the Enable system recovery check box to select all critical volumes; then click Next.



Select backup items

What volumes do you want to back up?

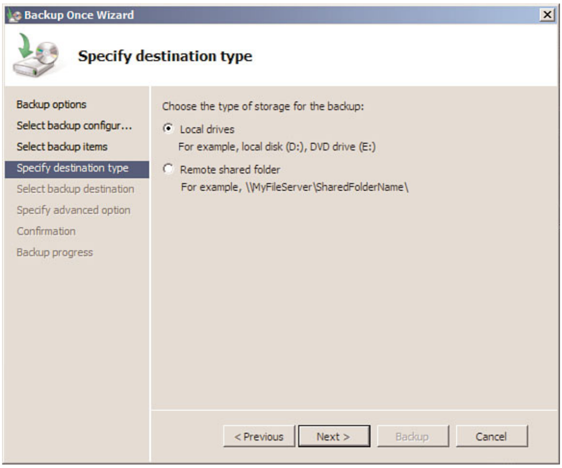
	Volumes	Status	Size
☑	Local disk (C:)	Included (for system reco...	8.19 GB
□	Data (E:)	Excluded	79.04 MB

☑ Enable system recovery.
This option automatically includes all volumes that contain operating system components for system recovery.

FIGURE 12.6
The Select backup items page.

8. On the Specify destination type page, shown in Figure 12.7, click Local drives or Remote shared folder and click Next.

TIP When a local drive is used as the backup destination, you cannot select a drive that is included in the critical-volume backup.



Specify destination type

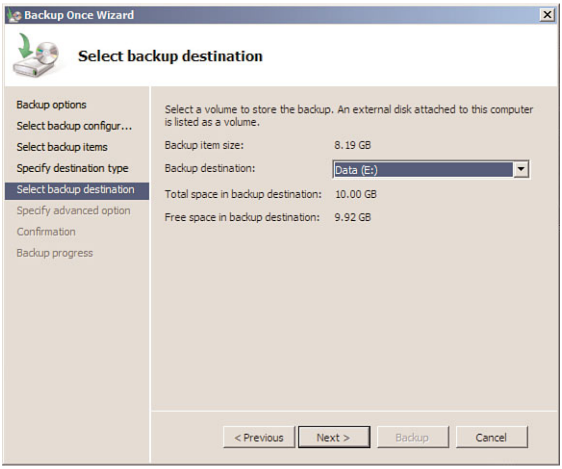
Choose the type of storage for the backup:

● Local drives
For example, local disk (D:), DVD drive (E:)

○ Remote shared folder
For example, \\MyFileServer\SharedFolderName\

FIGURE 12.7
The Specify destination type page.

9. If you are backing up to a local drive, on the Select backup destination page, shown in Figure 12.8, in the Backup destination box, select a drive; then click Next.



Select backup destination

Select a volume to store the backup. An external disk attached to this computer is listed as a volume.

Backup item size: 8.19 GB

Backup destination: Data (E:)

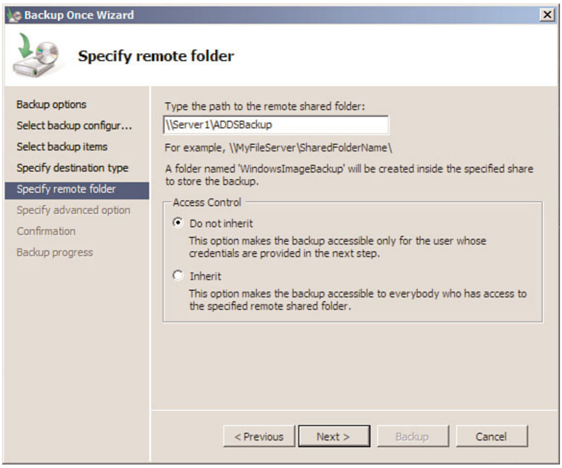
Total space in backup destination: 10.00 GB

Free space in backup destination: 9.92 GB

FIGURE 12.8
The Select Backup Destination page.

10. If you are backing up to a remote shared folder, on the Specify remote folder page, shown in Figure 12.9, type the path to the shared folder, select Do not inherit under the Access Control section, and click Next.

11. On the Specify advanced option page, shown in Figure 12.10, select VSS copy backup and click Next.



Type the path to the remote shared folder:

\\Server1\ADDSBackup

For example, \\MyFileServer\SharedFolderName\

A folder named 'WindowsImageBackup' will be created inside the specified share to store the backup.

Access Control

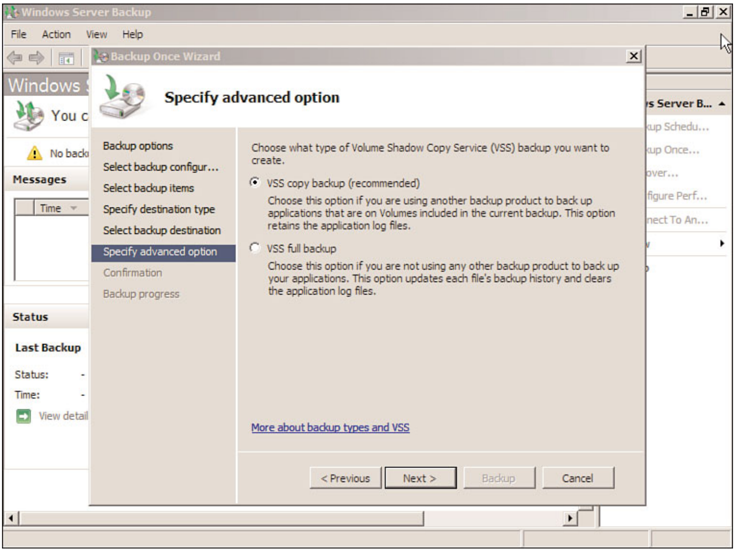
● Do not inherit

This option makes the backup accessible only for the user whose credentials are provided in the next step.

○ Inherit

This option makes the backup accessible to everybody who has access to the specified remote shared folder.

FIGURE 12.9
The Specify remote folder page.



Choose what type of Volume Shadow Copy Service (VSS) backup you want to create.

● VSS copy backup (recommended)

Choose this option if you are using another backup product to back up applications that are on Volumes included in the current backup. This option retains the application log files.

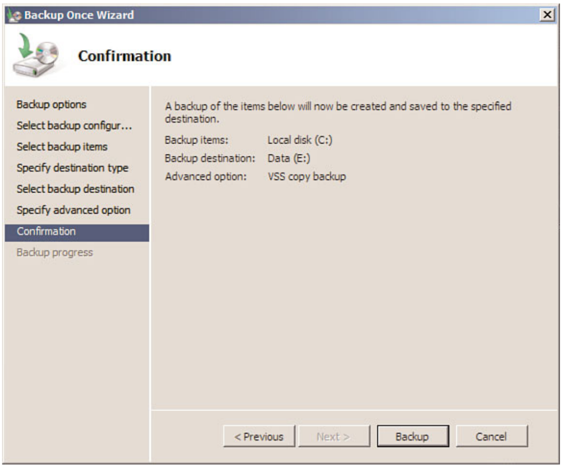
○ VSS full backup

Choose this option if you are not using any other backup product to back up your applications. This option updates each file's backup history and clears the application log files.

FIGURE 12.10
The Specify advanced option page.

12. On the Confirmation page, shown in Figure 12.11, confirm your selections and click Backup.

TIP After the Backup Once Wizard begins the backup, you can click Close at any time. The backup runs in the background and you can view backup progress at any time during the process. The wizard closes automatically when the backup is complete.



A backup of the items below will now be created and saved to the specified destination.

Backup items: Local disk (C:)

Backup destination: Data (E:)

Advanced option: VSS copy backup

FIGURE 12.11
The Confirmation page.

Perform an Unscheduled Backup of Critical Volumes of a Domain Controller by Using the Command Line

To perform an unscheduled backup of critical volumes of a domain controller by using the command line, perform the following tasks:

1. Log on to the domain controller you want to back up.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   wbadmin start backup -backupTarget:E: -allCritical -quiet
   ```

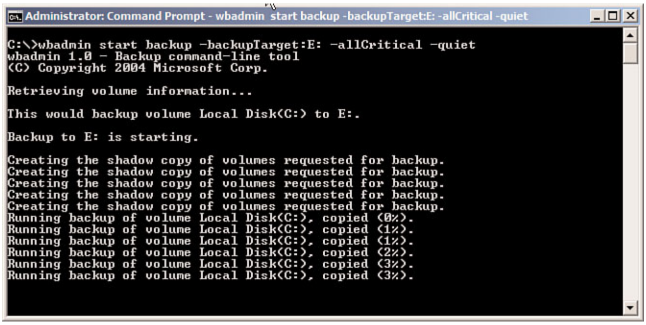
   Table 12.1 lists each parameter used in the previous command.

Table 12.1 **Parameters to Perform an Unscheduled Backup of Critical Volumes of a Domain Controller by Using the Command Line**

Parameter	Meaning
`start backup`	Run a one-time backup.
`-backupTarget`	The storage location of the backup.
`-allCritical`	Include all critical volumes.
`-quiet`	Do not prompt to proceed with the backup operation.

TIP When a local drive is used as the backup target, you cannot select a drive that is included in the critical-volume backup.

4. The status and results of the backup are written to the command prompt window, as shown in Figure 12.12.



```
Administrator: Command Prompt - wbadmin  start backup -backupTarget:E: -allCritical -quiet

C:\>wbadmin start backup -backupTarget:E: -allCritical -quiet
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.

Retrieving volume information...

This would backup volume Local Disk(C:) to E:.

Backup to E: is starting.

Creating the shadow copy of volumes requested for backup.
Creating the shadow copy of volumes requested for backup.
Creating the shadow copy of volumes requested for backup.
Creating the shadow copy of volumes requested for backup.
Creating the shadow copy of volumes requested for backup.
Running backup of volume Local Disk(C:), copied (0%).
Running backup of volume Local Disk(C:), copied (1%).
Running backup of volume Local Disk(C:), copied (1%).
Running backup of volume Local Disk(C:), copied (2%).
Running backup of volume Local Disk(C:), copied (3%).
Running backup of volume Local Disk(C:), copied (3%).
```

FIGURE 12.12
The critical-volume backup status and results shown in the command prompt window.

TIP For a full list of `wbadmin start backup` parameters, go to http://technet.microsoft.com/en-us/library/cc742083.aspx.

Perform an Unscheduled System State Backup of a Domain Controller

Scenario/Problem: You are preparing to make a change to your AD DS database. You want to be able to recover AD DS data in the event that the change is problematic.

Solution: Perform an unscheduled system state backup of a domain controller.

To perform an unscheduled system backup of a domain controller, perform the following steps:

1. Log on to the domain controller you want to back up.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   wbadmin start systemstatebackup -backupTarget:E: -quiet
   ```

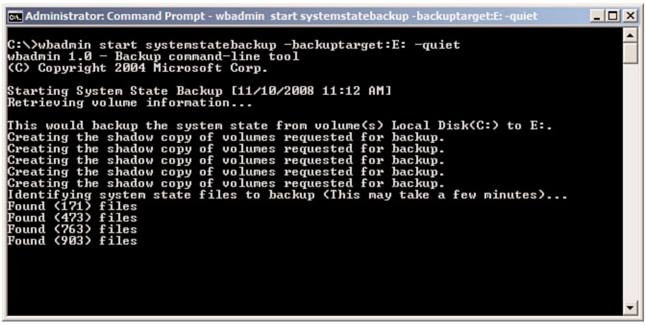
   Table 12.2 lists each parameter used in the previous command.

Table 12.2 **Parameters to Perform an Unscheduled System State Backup of a Domain Controller by Using the Command Line**

Parameter	Meaning
`start systemstatebackup`	Run a system state backup.
`-backupTarget`	The storage location of the backup.
`-quiet`	Do not prompt to proceed with the backup operation.

TIP You cannot store a system state backup on a network shared drive.

4. The status and results of the backup are written to the command prompt window, as shown in Figure 12.13.



Administrator: Command Prompt - wbadmin start systemstatebackup -backuptarget:E: -quiet

```
C:\>wbadmin start systemstatebackup -backuptarget:E: -quiet
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.

Starting System State Backup [11/10/2008 11:12 AM]
Retrieving volume information...

This would backup the system state from volume(s) Local Disk(C:) to E:.
Creating the shadow copy of volumes requested for backup.
Creating the shadow copy of volumes requested for backup.
Creating the shadow copy of volumes requested for backup.
Creating the shadow copy of volumes requested for backup.
Creating the shadow copy of volumes requested for backup.
Identifying system state files to backup (This may take a few minutes)...
Found (171) files
Found (473) files
Found (763) files
Found (903) files
```

FIGURE 12.13
The system state backup status and results shown in the command prompt window.

NOTE For a full list of `wbadmin start systemstatebackup` parameters, go to http://technet.microsoft.com/en-us/library/cc742124.aspx.

Perform an Unscheduled Full Server Backup of a Domain Controller

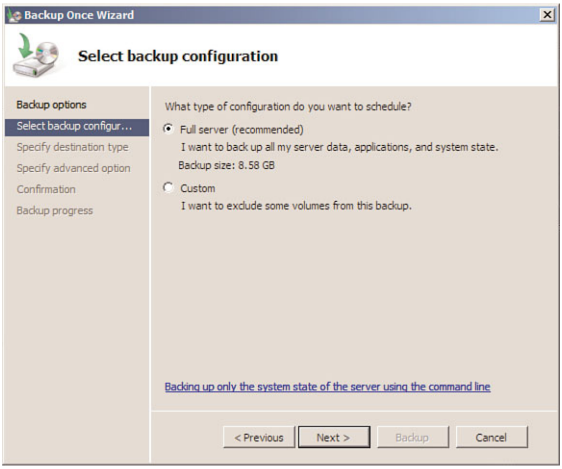
Scenario/Problem: You are making a configuration change to a domain controller. You want to ensure that data from all volumes can be restored.

Solution: Perform an unscheduled full server backup of a domain controller.

Perform an Unscheduled Full Server Backup of a Domain Controller by Using the Windows Interface

To perform an unscheduled full server backup of a domain controller by using the Windows interface, perform the following steps:

1. Log on to a domain controller you want to back up.
2. Click Start, click Administrative Tools, and then click Windows Server Backup.
3. On the Action menu in Windows Server Backup, click Backup Once.
4. If you are creating the first backup of the domain controller, click Next to select Different options.
5. On the Backup Options page of the Backup Once Wizard, click Next.
6. On the Select backup configuration page, shown in Figure 12.14, click Full server (recommended); then click Next.



Select backup configuration

What type of configuration do you want to schedule?

● Full server (recommended)
I want to back up all my server data, applications, and system state.
Backup size: 8.58 GB

○ Custom
I want to exclude some volumes from this backup.

Backing up only the system state of the server using the command line

FIGURE 12.14 The Select backup configuration page.

7. On the Specify destination type page, click Local drives or Remote shared folder and click Next.

NOTE When a local drive is used as the backup destination, you cannot select a drive that is included in the critical-volume backup.

8. If you are backing up to a local drive, on the Select backup destination page, in the Backup destination box, select a drive; then click Next.
9. If you are backing up to a remote shared folder, on the Specify Remote folder page, type the path to the shared folder, select Inherit under the Access Control section, and click Next.
10. On the Specify advanced option page, select VSS copy backup and then click Next.
11. On the Confirmation page, confirm your selections and click Backup.

TIP After the Backup Once Wizard begins the backup, you can click Close at any time. The backup runs in the background, and you can view backup progress at any time during the process. The wizard closes automatically when the backup is complete.

Perform an Unscheduled Full Server Backup of a Domain Controller by Using the Command Line

To perform an unscheduled full server backup of a domain controller by using the command line, perform the following steps:

1. Log on to the domain controller you want to back up.
2. Click Start, and click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

   ```
   wbadmin start backup -include:C:,D:,F: -backuptarget:E: -quiet
   ```

   Table 12.3 lists each parameter used in the previous command.

Table 12.3 **Parameters to Perform an Unscheduled Full Server Backup of a Domain Controller by Using the Command Line**

Parameter	Meaning
`start backup`	Run a one-time backup.
`-include`	The volumes to backup.
`-backupTarget`	The storage location of the backup.
`-quiet`	Do not prompt to proceed with the backup operation.

TIP When a local drive is used as the backup target, you cannot select a drive that is included in the full backup.

4. The status and results of the backup are written to the command prompt window.

NOTE For a full list of `wbadmin start systemstatebackup` parameters, go to http://technet.microsoft.com/en-us/library/cc742124.aspx.

Schedule Regular Full Server Backups of a Domain Controller

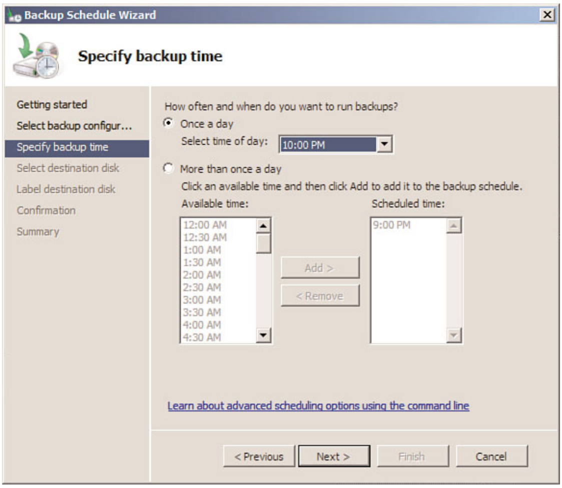
Scenario/Problem: You want to ensure that you can restore your domain controller to a previous date.

Solution: Schedule a regular full server backup of the domain controller.

Schedule Regular Full Server Backups of a Domain Controller by Using the Windows Interface

To schedule a regular full server backup of a domain controller by using the Windows interface, perform the following steps:

1. Log on to a domain controller you want to back up.
2. Click Start, click Administrative Tools, and then click Windows Server Backup.
3. On the Action menu in Windows Server Backup, click Backup Schedule.
4. On the Getting Started page, click Next.
5. On the Select backup configuration page, click Full server (recommended) and click Next.
6. If you want to schedule the backup to run once daily, on the Specify backup time page, shown in Figure 12.15, select Once a day, and select the time of day you want the backup to run, and click Next.



How often and when do you want to run backups?

● Once a day

Select time of day: 10:00 PM

○ More than once a day

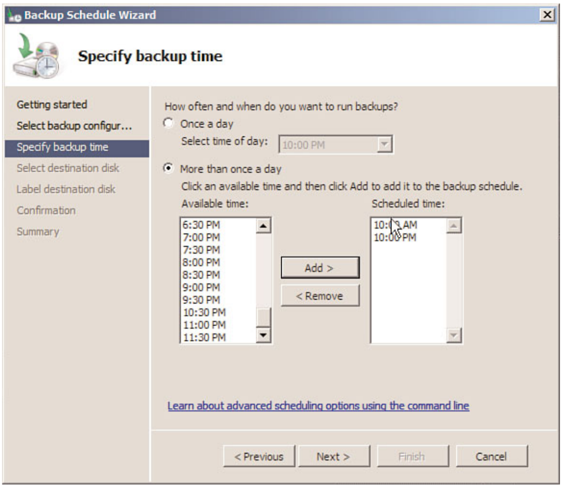
Click an available time and then click Add to add it to the backup schedule.

Available time: 12:00 AM, 12:30 AM, 1:00 AM, 1:30 AM, 2:00 AM, 2:30 AM, 3:00 AM, 3:30 AM, 4:00 AM, 4:30 AM

Scheduled time: 9:00 PM

FIGURE 12.15
Scheduling a full server backup to run once a day.

7. If you want to schedule the backup to run more than once a day, on the Specify backup time page, shown in Figure 12.16, select More than once a day, select the times of day from the Available time section, click Add, and then click Next.



Backup Schedule Wizard

Specify backup time

Getting started
Select backup configur...
Specify backup time
Select destination disk
Label destination disk
Confirmation
Summary

How often and when do you want to run backups?

○ Once a day

Select time of day: 10:00 PM

● More than once a day

Click an available time and then click Add to add it to the backup schedule.

Available time:	Scheduled time:
6:30 PM 7:00 PM 7:30 PM 8:00 PM 8:30 PM 9:00 PM 9:30 PM 10:30 PM 11:00 PM 11:30 PM	10:00 AM 10:00 PM

Add > | < Remove

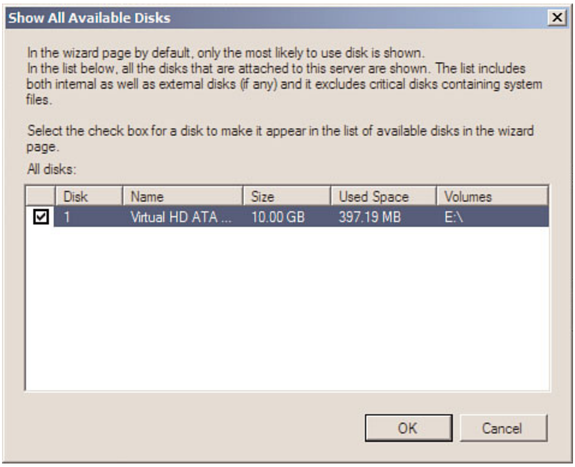
Learn about advanced scheduling options using the command line

< Previous | Next > | Finish | Cancel

FIGURE 12.16
Scheduling a full server backup to run more than once a day.

8. On the Select destination disk page, click Show All Available Disks.

9. On the Show All Available Disks page, shown in Figure 12.17, select the disk on which you want to store the backups; then click OK.



Show All Available Disks

In the wizard page by default, only the most likely to use disk is shown.
In the list below, all the disks that are attached to this server are shown. The list includes both internal as well as external disks (if any) and it excludes critical disks containing system files.

Select the check box for a disk to make it appear in the list of available disks in the wizard page.

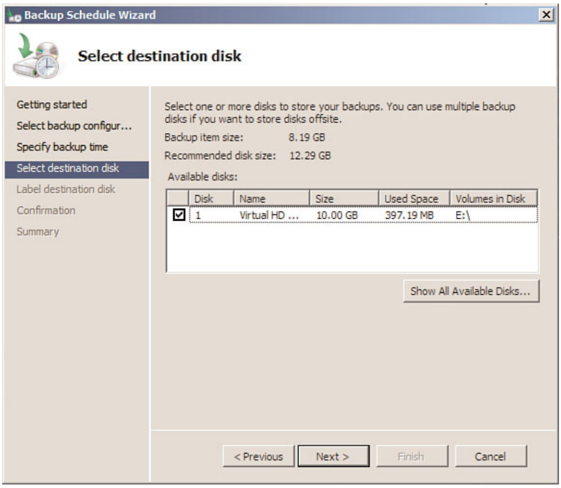
All disks:

	Disk	Name	Size	Used Space	Volumes
☑	1	Virtual HD ATA ...	10.00 GB	397.19 MB	E:\

OK | Cancel

FIGURE 12.17
The Show All Available Disks page.

10. On the Select destination disk page, shown in Figure 12.18, select the disk on which you want to store the backups and click Next.



Select one or more disks to store your backups. You can use multiple backup disks if you want to store disks offsite.

Backup item size: 8.19 GB

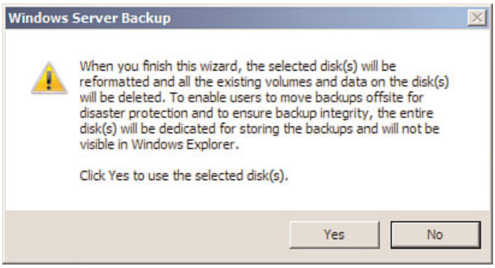
Recommended disk size: 12.29 GB

Available disks:

	Disk	Name	Size	Used Space	Volumes in Disk
☑	1	Virtual HD ...	10.00 GB	397.19 MB	E:\

FIGURE 12.18
The Select destination disk page.

11. On the confirmation page to proceed, shown in Figure 12.19, click Yes.



When you finish this wizard, the selected disk(s) will be reformatted and all the existing volumes and data on the disk(s) will be deleted. To enable users to move backups offsite for disaster protection and to ensure backup integrity, the entire disk(s) will be dedicated for storing the backups and will not be visible in Windows Explorer.

Click Yes to use the selected disk(s).

FIGURE 12.19
The page to confirm to proceed.

TIP When scheduling backups using Windows Server Backup, the destination disk is reformatted and data on that disk is lost.

12. On the Label destination disk page, click Next.
13. On the Confirmation page, click Finish.

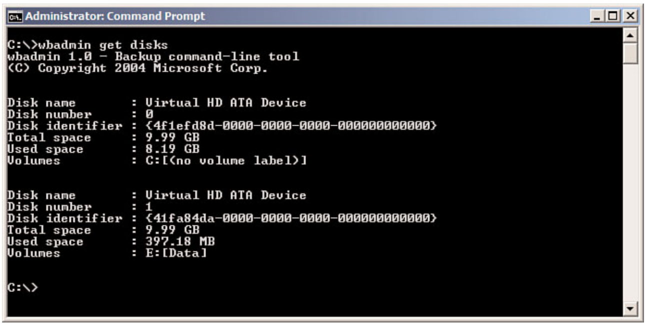
Schedule Regular Full Server Backups of a Domain Controller by Using the Command Line

To schedule a regular full server backup of a domain controller by using the command line, perform the following steps:

1. Log on to the domain controller you want to back up.
2. Click Start, and click Command Prompt.

3. To obtain the Disk Identifier value to use for the backup target, type the following command into the Command Prompt window, as shown in Figure 12.20, and then press Enter:

   `wbadmin get disks`



```
C:\>wbadmin get disks
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.

Disk name       : Virtual HD ATA Device
Disk number     : 0
Disk identifier : {4f1efd8d-0000-0000-0000-000000000000}
Total space     : 9.99 GB
Used space      : 8.19 GB
Volumes         : C:[(no volume label)]

Disk name       : Virtual HD ATA Device
Disk number     : 1
Disk identifier : {41fa84da-0000-0000-0000-000000000000}
Total space     : 9.99 GB
Used space      : 397.18 MB
Volumes         : E:[Data]

C:\>
```

FIGURE 12.20
Obtaining a disk identifier.

4. Copy the value Disk Identifier value.
5. In the Command Prompt window, type the following command and press Enter:

   `wbadmin enable backup -addtarget:{41fa84da-0000-0000-0000-000000000000} -schedule:21:00 -include:C: -quiet`

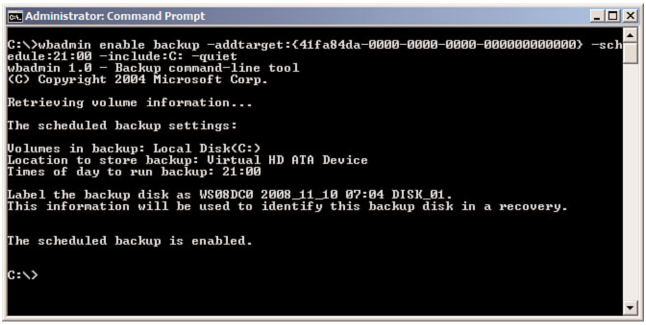
   Table 12.4 lists each parameter used in the previous command.

Table 12.4 **Parameters to Schedule Regular Full Server Backups of a Domain Controller by Using the Command Line**

Parameter	**Meaning**
`enable backup`	Configure and enable a daily backup.
`-addtarget:`	The storage location of the backups. `{41fa84da-0000-0000-0000-000000000000}` represents the object identifier retrieved in Step 3.
`-schedule`	The schedule of the daily backups.
`-include`	The disks to include in the backups.
`-quiet`	Do not prompt to proceed with the backup operation.

TIP When a local drive is used as the backup target, you cannot select a drive that is included in the full backup.

6. The status and results of the backup are written to the command prompt window, as shown in Figure 12.21.



```
C:\>wbadmin enable backup -addtarget:{41fa84da-0000-0000-0000-000000000000} -sch
edule:21:00 -include:C: -quiet
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.

Retrieving volume information...

The scheduled backup settings:

Volumes in backup: Local Disk(C:)
Location to store backup: Virtual HD ATA Device
Times of day to run backup: 21:00

Label the backup disk as WS08DC0 2008_11_10 07:04 DISK_01.
This information will be used to identify this backup disk in a recovery.


The scheduled backup is enabled.


C:\>
```

FIGURE 12.21
Scheduling a full backup status and results in the command prompt window.

TIP For a full list of `wbadmin enable backup` parameters, go to http://technet.microsoft.com/en-us/library/cc742130.aspx.

Perform a Nonauthoritative Restore of Active Directory Domain Services

Scenario/Problem: A domain controller experienced a hardware failure that corrupted the AD DS database on this domain controller. The hardware failure has been resolved, and you need to restore the domain controller.

Solution: Perform a nonauthoritative restore of AD DS on the domain controller.

To perform an nonauthoritative restore of AD DS, perform the following steps:

1. Restart the domain controller you want to restore into Directory Services Restore Mode (DSRM).

TIP To restart a domain controller in DSRM, you can use the following command before restarting the server: `bcdedit /set safeboot dsrepair`. After you completed your tasks, type the following command to ensure the domain controller restarts normally thereafter: **`bcdedit /deletevalue safeboot`**.

2. At the Windows logon screen, click Switch User and then click Other User.
3. Type **`.\administrator`** as the user name, type the DSRM password for the server, and then press Enter.
4. Click Start, and then click Command Prompt.
5. In the Command Prompt window, type the following command and then press Enter:

```
wbadmin get versions -backuptarget:E: -machine:WS08DC01
```

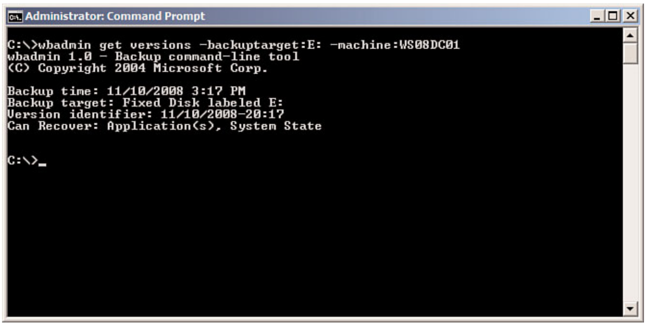
Table 12.5 lists each parameter used in the previous command.

Table 12.5 **Parameters to Get Backup Versions by Using Wbadmin**

Parameter	Meaning
`get versions`	Lists details of recoverable backups.
`-backupTarget`	The storage location that contains the backups.
`-machine`	The computer for which you want the backup details.

TIP For a full list of `wbadmin get versions` parameters, go to http://technet.microsoft.com/en-us/library/cc742116.aspx.

6. Copy the version of the backup you want to restore, shown in Figure 12.22.



```
C:\>wbadmin get versions -backuptarget:E: -machine:WS08DC01
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.

Backup time: 11/10/2008 3:17 PM
Backup target: Fixed Disk labeled E:
Version identifier: 11/10/2008-20:17
Can Recover: Application(s), System State

C:\>_
```

FIGURE 12.22
Getting a backup version identifier.

7. In the Command Prompt window, type the following command and then press Enter:

```
wbadmin start systemstaterecovery -version:11/10/2008-20:17
-backupTarget:E: -machine:WS08DC01 -quiet
```

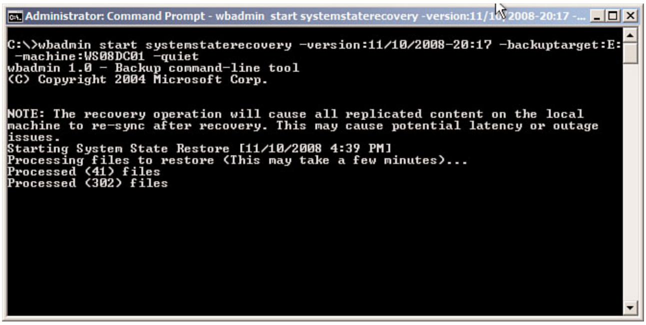
Table 12.6 lists each parameter used in the previous command.

Table 12.6 **Parameters to Get Backup Versions by Using Wbadmin**

Parameter	Meaning
`start systemstaterecovery`	Run a system state recovery.
`-version`	The version identifier for the backup you want to restore. `"11/10/2008-20:17"` represents the version identifier retrieved in Step 6.
`-backupTarget`	The storage location of the backup.
`-machine`	The computer for which you want the backup details.
`-quiet`	Do not prompt to proceed with the restore operation.

TIP For a full list of `wbadmin start systemstaterecovery` parameters, go to http://technet.microsoft.com/en-us/library/cc742035.aspx.

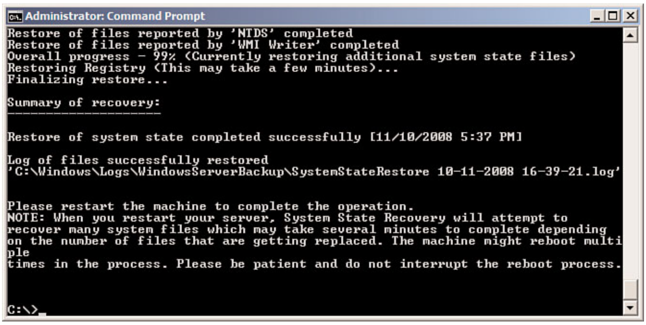
8. The system state recovery process begins, and the status updates in the Command Prompt window, as shown in Figure 12.23.


Administrator: Command Prompt - wbadmin start systemstaterecovery -version:11/10/2008-20:17 -...

```
C:\>wbadmin start systemstaterecovery -version:11/10/2008-20:17 -backuptarget:E:
 -machine:WS08DC01 -quiet
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.


NOTE: The recovery operation will cause all replicated content on the local
machine to re-sync after recovery. This may cause potential latency or outage
issues.
Starting System State Restore [11/10/2008 4:39 PM]
Processing files to restore (This may take a few minutes)...
Processed (41) files
Processed (302) files
```

FIGURE 12.23
The system state recovery progress.

9. When the system state recovery is complete, a summary of the recovery operation is written to the Command Prompt window, as shown in Figure 12.24.
10. Ensure the recovery was successful, and restart the domain controller.



```
Restore of files reported by 'NTDS' completed
Restore of files reported by 'WMI Writer' completed
Overall progress - 99% (Currently restoring additional system state files)
Restoring Registry (This may take a few minutes)...
Finalizing restore...

Summary of recovery:
--------------------

Restore of system state completed successfully [11/10/2008 5:37 PM]

Log of files successfully restored
'C:\Windows\Logs\WindowsServerBackup\SystemStateRestore 10-11-2008 16-39-21.log'


Please restart the machine to complete the operation.
NOTE: When you restart your server, System State Recovery will attempt to
recover many system files which may take several minutes to complete depending
on the number of files that are getting replaced. The machine might reboot multi
ple
times in the process. Please be patient and do not interrupt the reboot process.


C:\>_
```

FIGURE 12.24

The summary report for system state recovery.

Perform an Authoritative Restore of Deleted Active Directory Domain Services Objects

Scenario/Problem: An organizational unit (OU) was accidently deleted from your domain. You need to restore the OU and the objects that were located in the OU.

Solution: Perform an authoritative restore of AD DS on the domain controller.

To perform an authoritative restore of AD DS, perform the following steps:

1. Restart the domain controller you want to restore into DSRM.

TIP To restart a domain controller in DSRM, you can use the following command before restarting the server: `bcdedit /set safeboot dsrepair`. After you completed your tasks, type the following command to ensure the domain controller restarts normally thereafter: **`bcdedit /deletevalue safeboot`**.

2. At the Windows logon screen, click Switch User and then click Other User.
3. Type **`.\administrator`** as the user name, type the DSRM password for the server, and then press Enter.
4. Click Start, and then click Command Prompt.
5. In the Command Prompt window, type the following command and then press Enter:

   ```
   wbadmin get versions -backupTarget:E: -machine:WS08DC01
   ```

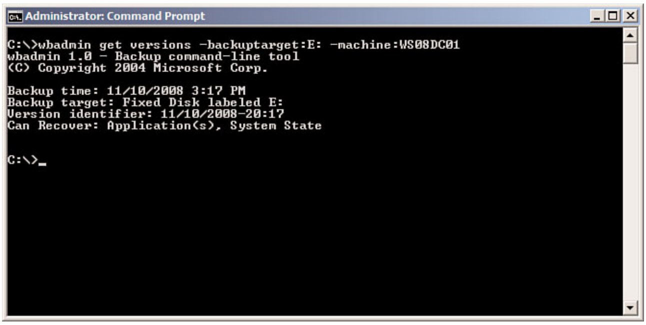
   Table 12.7 lists each parameter used in the previous command.

Table 12.7 **Parameters to Get Backup Versions by Using Wbadmin**

Parameter	Meaning
`get versions`	Lists details of recoverable backups.
`-backupTarget`	The storage location that contains the backups.
`-machine`	The computer for which you want the backup details.

TIP For a full list of `wbadmin get versions` parameters, go to http://technet.microsoft.com/en-us/library/cc742116.aspx.

6. Copy the version of the backup you want to restore, shown in Figure 12.25.



```
C:\>wbadmin get versions -backuptarget:E: -machine:WS08DC01
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.

Backup time: 11/10/2008 3:17 PM
Backup target: Fixed Disk labeled E:
Version identifier: 11/10/2008-20:17
Can Recover: Application(s), System State


C:\>_
```

FIGURE 12.25
Getting the backup version identifier.

7. In the Command Prompt window, type the following command and then press Enter:

```
wbadmin start systestaterecovery -version:11/10/2008-20:17
-backupTarget:E: -machine:WS08DC01 -quiet
```

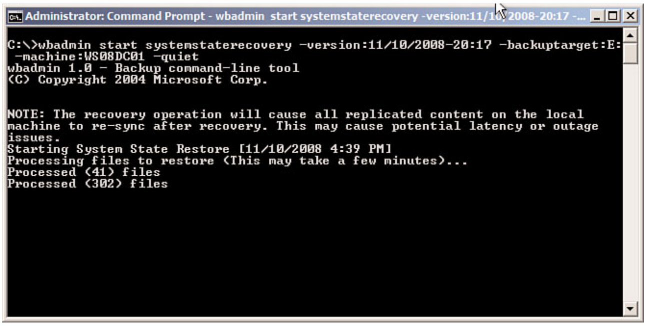
Table 12.8 lists each parameter used in the previous command.

Table 12.8 **Parameters to Start System State Recovery by Using Wbadmin**

Parameter	Meaning
`start systemstaterecovery`	Run a system state recovery.
`-version`	The version identifier for the backup you want to restore. `"11/10/2008-20:17"` represents the version identifier retrieved in Step 6.
`-backupTarget`	The storage location of the backup.
`-machine`	The computer you want restore.
`-quiet`	Do not prompt to proceed with the restore operation.

TIP For a full list of `wbadmin start systemstaterecovery` parameters, go to http://technet.microsoft.com/en-us/library/cc742035.aspx.

8. The system state recovery process begins, and the status updates in the Command Prompt window, as shown in Figure 12.26.

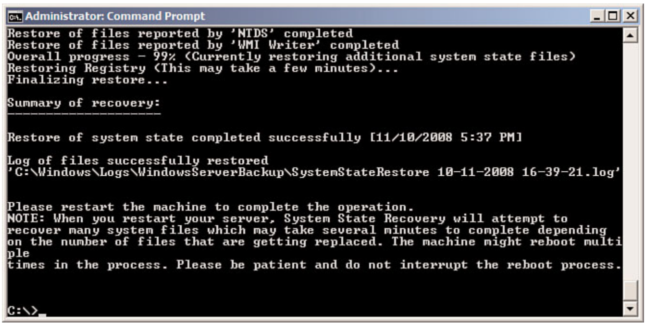


Administrator: Command Prompt - wbadmin start systemstaterecovery -version:11/10/2008-20:17 -...

```
C:\>wbadmin start systemstaterecovery -version:11/10/2008-20:17 -backuptarget:E:
 -machine:WS08DC01 -quiet
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.


NOTE: The recovery operation will cause all replicated content on the local
machine to re-sync after recovery. This may cause potential latency or outage
issues.
Starting System State Restore [11/10/2008 4:39 PM]
Processing files to restore (This may take a few minutes)...
Processed (41) files
Processed (302) files
```

FIGURE 12.26
The progress of the system state recovery.

9. When the system state recovery is complete, a summary of the recovery operation is written to the Command Prompt window, as shown in Figure 12.27.

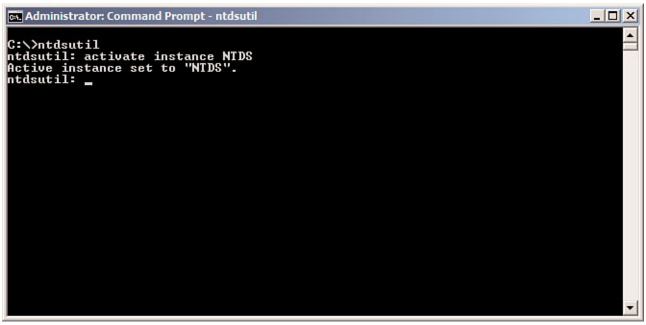


Administrator: Command Prompt

```
Restore of files reported by 'NTDS' completed
Restore of files reported by 'WMI Writer' completed
Overall progress - 99% (Currently restoring additional system state files)
Restoring Registry (This may take a few minutes)...
Finalizing restore...

Summary of recovery:
--------------------

Restore of system state completed successfully [11/10/2008 5:37 PM]

Log of files successfully restored
'C:\Windows\Logs\WindowsServerBackup\SystemStateRestore 10-11-2008 16-39-21.log'


Please restart the machine to complete the operation.
NOTE: When you restart your server, System State Recovery will attempt to
recover many system files which may take several minutes to complete depending
on the number of files that are getting replaced. The machine might reboot multi
ple
times in the process. Please be patient and do not interrupt the reboot process.



C:\>_
```

FIGURE 12.27
The summary report for system state recovery.

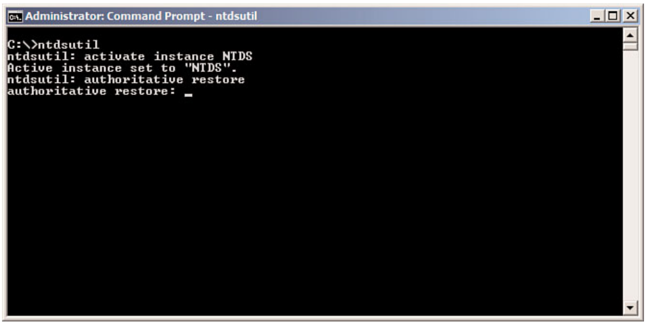
10. Ensure the recovery was successful.
11. In the Command Prompt window, type **`ntdsutil`** and press Enter.
12. At the `ntdsutil` prompt, type **`activate instance NTDS`**, as shown in Figure 12.28, and press Enter.



```
C:\>ntdsutil
ntdsutil: activate instance NTDS
Active instance set to "NTDS".
ntdsutil: _
```

FIGURE 12.28
The ntdsutil activate instance.

13. At the `ntdsutil:` prompt, type **`authoritative restore`**, as shown in Figure 12.29, and press Enter.



```
C:\>ntdsutil
ntdsutil: activate instance NTDS
Active instance set to "NTDS".
ntdsutil: authoritative restore
authoritative restore: _
```

FIGURE 12.29
The ntdsutil authoritative restore.

14. To restore a subtree, type **`restore subtree`** ***`DistinguishedName`***, where *`DistinguishedName`* is the distinguished name of the subtree you want to restore.
15. To restore an object, type **`restore object`** ***`DistinguishedName`***, where *`DistinguishedName`* is the distinguished name of the object you want to restore.

TIP For a full list of `ntdsutil` parameters, go to http://technet.microsoft.com/en-us/library/cc753343.aspx.

16. On the Authoritative Restore Confirmation Dialog page, shown in Figure 12.30, click Yes.

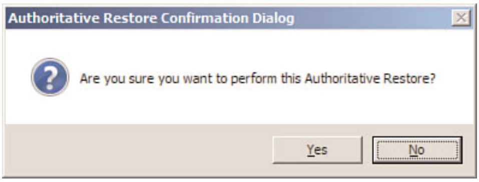
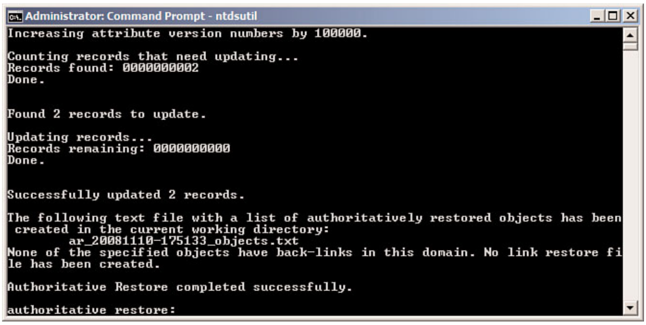

Authoritative Restore Confirmation Dialog
Are you sure you want to perform this Authoritative Restore?
Yes
No

FIGURE 12.30
The Authoritative Restore Confirmation Dialog page.

17. The status and results of the authoritative restore are written to the Command Prompt window, as shown in Figure 12.31.



```
Increasing attribute version numbers by 100000.

Counting records that need updating...
Records found: 0000000002
Done.

Found 2 records to update.

Updating records...
Records remaining: 0000000000
Done.

Successfully updated 2 records.

The following text file with a list of authoritatively restored objects has been
 created in the current working directory:
        ar_20081110-175133_objects.txt
None of the specified objects have back-links in this domain. No link restore fi
le has been created.

Authoritative Restore completed successfully.

authoritative restore:
```

FIGURE 12.31
The authoritative restore results.

18. Ensure the authoritative restore completed successfully.
19. At the `authoritative restore:` prompt, type **`quit`**; then press Enter.
20. At the `ntdsutil:` prompt, type **`quit`**; then press Enter.
21. Restart the domain controller.

Perform a Full Server Recovery of a Domain Controller

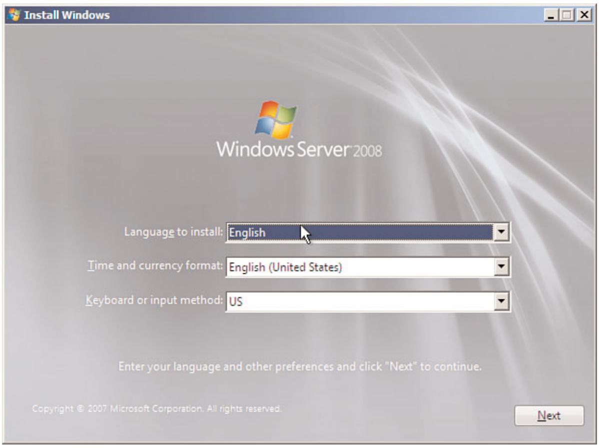
Scenario/Problem: A domain controller experienced a hard drive failure. The faulty hard drive has been replaced. You need to restore the domain controller to a functional state.

Solution: Perform a full server recovery on the domain controller.

Perform a Full Server Recovery of a Domain Controller by Using the Windows Interface

To perform a full server recovery on a domain controller by using the Windows interface, perform the followings steps:

1. Insert the Windows Server 2008 installation DVD into the disk drive, and then restart the domain controller.
2. When you are prompted, press a key to start from the DVD.
3. On the Install Windows screen, shown in Figure 12.32, accept or select language options, the time and currency format, and a keyboard layout; then click Next.



Language to install: English

Time and currency format: English (United States)

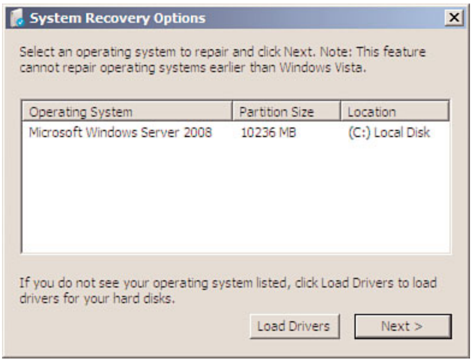
Keyboard or input method: US

Enter your language and other preferences and click "Next" to continue.

Copyright © 2007 Microsoft Corporation. All rights reserved.

FIGURE 12.32
The Install Windows screen.

4. At the Install Now screen, click Repair your computer.
5. In the System Recovery Options dialog box, shown in Figure 12.33, click anywhere to clear any operating systems that are selected for repair and then click Next.



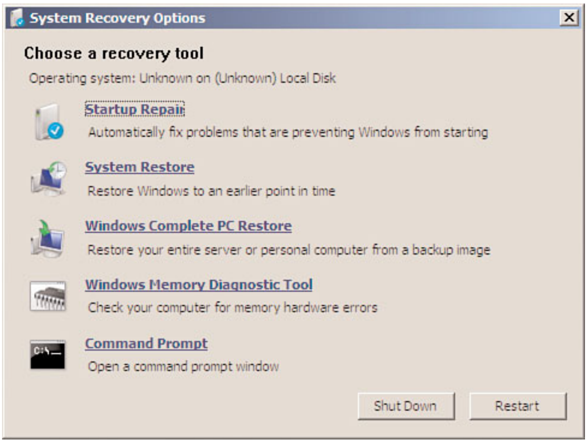
Select an operating system to repair and click Next. Note: This feature cannot repair operating systems earlier than Windows Vista.

Operating System	Partition Size	Location
Microsoft Windows Server 2008	10236 MB	(C:) Local Disk

If you do not see your operating system listed, click Load Drivers to load drivers for your hard disks.

FIGURE 12.33
The System Recovery Options dialog box.

6. Under Choose a recovery tool, shown in Figure 12.34, click Windows Complete PC Restore.



Choose a recovery tool

Operating system: Unknown on (Unknown) Local Disk

Startup Repair
Automatically fix problems that are preventing Windows from starting

System Restore
Restore Windows to an earlier point in time

Windows Complete PC Restore
Restore your entire server or personal computer from a backup image

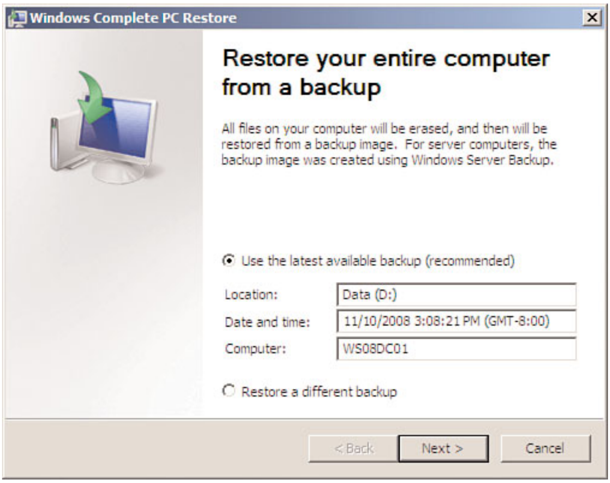
Windows Memory Diagnostic Tool
Check your computer for memory hardware errors

Command Prompt
Open a command prompt window

FIGURE 12.34
The System Recovery Options page.

TIP If the backup is stored on a remote server, a message indicates that Windows cannot find a backup on the hard disks or DVDs on this computer. Click Cancel to close the message.

7. On the Restore your entire computer from a backup page, shown in Figure 12.35, select Use the latest available backup (recommended); then click Next.



Restore your entire computer from a backup

All files on your computer will be erased, and then will be restored from a backup image. For server computers, the backup image was created using Windows Server Backup.

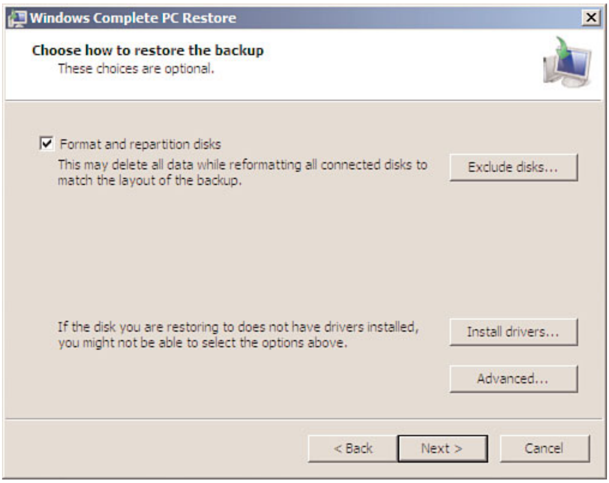
● Use the latest available backup (recommended)

Location: Data (D:)
Date and time: 11/10/2008 3:08:21 PM (GMT-8:00)
Computer: WS08DC01

○ Restore a different backup

FIGURE 12.35
The Restore your entire computer from a backup page.

8. If you want to replace all data on the volumes, on the Choose how to restore the backup page, select Format and repartition disks; then click Next.
9. To prevent volumes that are not included in the restore from being deleted and re-created, click Exclude Disks, select the check box for the disks you want to exclude, as shown in Figure 12.36, and then click OK.


Windows Complete PC Restore

Choose how to restore the backup

These choices are optional.

☑ Format and repartition disks

This may delete all data while reformatting all connected disks to match the layout of the backup.

If the disk you are restoring to does not have drivers installed, you might not be able to select the options above.

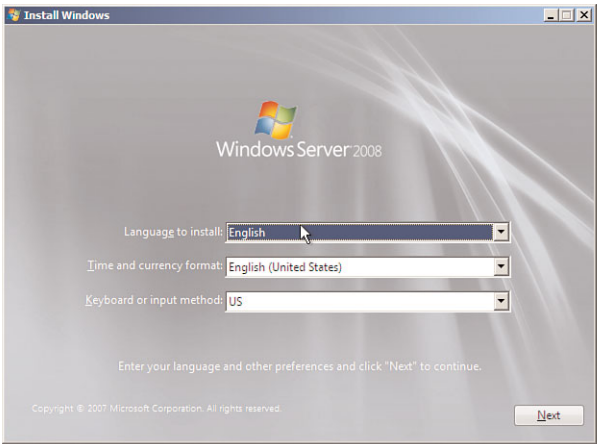
FIGURE 12.36
The Choose how to restore the backup page.

10. Click Next.
11. On the confirmation page, verify the restore settings and click Finish.
12. Select the I confirm that I want to format the disks and restore the backup check box, and then click OK.

Perform a Full Server Recovery of a Domain Controller by Using the Command Line

To perform a full server recovery on a domain controller by using the command line, perform the followings steps:

1. Insert the Windows Server 2008 installation DVD into the disk drive, and then restart the domain controller.
2. When you are prompted, press a key to start from the DVD.
3. On the Install Windows screen, shown in Figure 12.37, accept or select language options, the time and currency format, and a keyboard layout; then click Next.



Language to install: English

Time and currency format: English (United States)

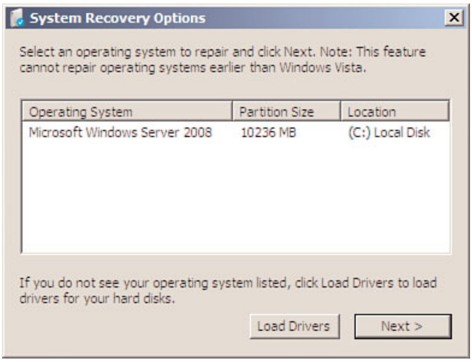
Keyboard or input method: US

Enter your language and other preferences and click "Next" to continue.

Copyright © 2007 Microsoft Corporation. All rights reserved.

FIGURE 12.37
The Install Windows screen.

4. At the Install Now screen, click Repair your computer.
5. In the System Recovery Options dialog box, shown in Figure 12.38, click anywhere to clear any operating systems that are selected for repair; then click Next.



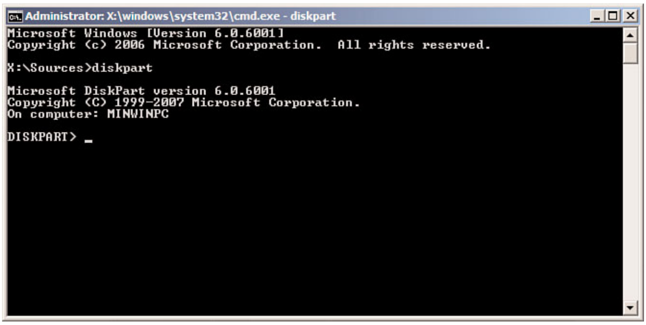
Select an operating system to repair and click Next. Note: This feature cannot repair operating systems earlier than Windows Vista.

Operating System	Partition Size	Location
Microsoft Windows Server 2008	10236 MB	(C:) Local Disk

If you do not see your operating system listed, click Load Drivers to load drivers for your hard disks.

FIGURE 12.38
The System Recovery Options dialog box.

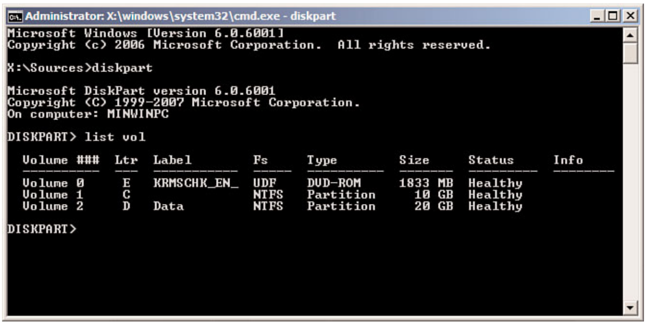
6. Under Choose a recovery tool, click Command Prompt.
7. At the Sources prompt, shown in Figure 12.39, type **`diskpart`** and then press Enter.
8. At the `Diskpart` prompt, shown in Figure 12.40, type **`list vol`** and then press Enter.



```
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation.  All rights reserved.

X:\Sources>diskpart

Microsoft DiskPart version 6.0.6001
Copyright (C) 1999-2007 Microsoft Corporation.
On computer: MINWINPC

DISKPART> _
```

FIGURE 12.39

The `Sources` prompt.



```
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation.  All rights reserved.

X:\Sources>diskpart

Microsoft DiskPart version 6.0.6001
Copyright (C) 1999-2007 Microsoft Corporation.
On computer: MINWINPC

DISKPART> list vol

  Volume ###  Ltr  Label        Fs     Type        Size     Status     Info
  ----------  ---  -----------  -----  ----------  -------  ---------  --------
  Volume 0     E   KRMSCHK_EN_  UDF    DVD-ROM     1833 MB  Healthy
  Volume 1     C                NTFS   Partition     10 GB  Healthy
  Volume 2     D   Data         NTFS   Partition     20 GB  Healthy

DISKPART>
```

FIGURE 12.40

The `list vol Dispart` command.

9. Identify the volume from the list that matches the location of the full server backup you want to restore.
10. Type **`exit`**, and then press Enter.
11. At the `Sources` prompt, type the following command and then press Enter:

    `wbadmin get versions -backupTarget:D: -machine:WS08DC01`

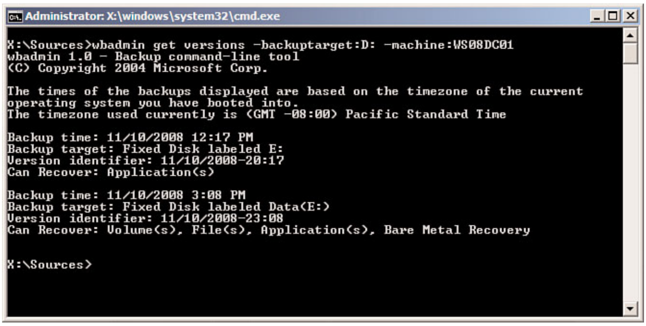
    Table 12.9 lists each parameter used in the previous command.

Table 12.9 **Parameters to Get Backup Versions by Using Wbadmin**

Parameter	Meaning
`get versions`	Lists details of recoverable backups.
`-backupTarget`	The storage location that contains the backups. This is the drive letter retrieved from Step 9.
`-machine`	The computer for which you want the backup details.

TIP For a full list of `wbadmin get versions` parameters, go to http://technet.microsoft.com/en-us/library/cc742116.aspx.

12. Copy the version identifier of the backup you want to restore, as shown in Figure 12.41.



```
X:\Sources>wbadmin get versions -backuptarget:D: -machine:WS08DC01
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.

The times of the backups displayed are based on the timezone of the current
operating system you have booted into.
The timezone used currently is (GMT -08:00) Pacific Standard Time

Backup time: 11/10/2008 12:17 PM
Backup target: Fixed Disk labeled E:
Version identifier: 11/10/2008-20:17
Can Recover: Application(s)

Backup time: 11/10/2008 3:08 PM
Backup target: Fixed Disk labeled Data(E:)
Version identifier: 11/10/2008-23:08
Can Recover: Volume(s), File(s), Application(s), Bare Metal Recovery


X:\Sources>
```

FIGURE 12.41
The backup version identifiers.

13. At the `Sources` prompt, type the following command and then press Enter:

```
wbadmin start sysrecovery -version:11/10/2008-23:08
-backupTarget:D: -machine:WS08DC01 -restoreAllVolumes
```

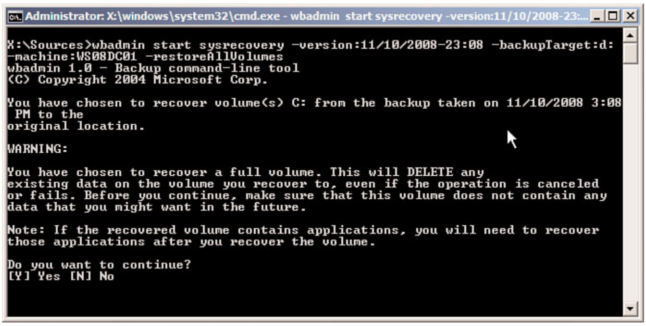
Table 12.10 lists each parameter used in the previous command.

Table 12.10 **Parameters to Start Full Server Recovery by Using the Command Line**

Parameter	Meaning
`start sysrecovery`	Run a system recovery.
`-version`	The version identifier for the backup you want to restore.
	`"11/10/2008-23:08"` represents the version identifier retrieved in Step 12.
`-backupTarget`	The storage location of the backup.
`-machine`	The computer you want restore.
`-restoreAllVolumes`	Restores all volumes from the selected backup.

TIP For a full list of `wbadmin start sysrecovery` parameters, go to http://technet.microsoft.com/en-us/library/cc742118.aspx.

14. When you are prompted, press **Y** to proceed with the recovery, as shown in Figure 12.42.



Administrator: X:\windows\system32\cmd.exe - wbadmin start sysrecovery -version:11/10/2008-23:...

```
X:\Sources>wbadmin start sysrecovery -version:11/10/2008-23:08 -backupTarget:d:
-machine:WS08DC01 -restoreAllVolumes
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2004 Microsoft Corp.

You have chosen to recover volume(s) C: from the backup taken on 11/10/2008 3:08
 PM to the
original location.

WARNING:

You have chosen to recover a full volume. This will DELETE any
existing data on the volume you recover to, even if the operation is canceled
or fails. Before you continue, make sure that this volume does not contain any
data that you might want in the future.

Note: If the recovered volume contains applications, you will need to recover
those applications after you recover the volume.

Do you want to continue?
[Y] Yes [N] No
```

FIGURE 12.42

The confirmation to proceed with the recovery.

15. Restart the domain controller after the recovery operation has completed.

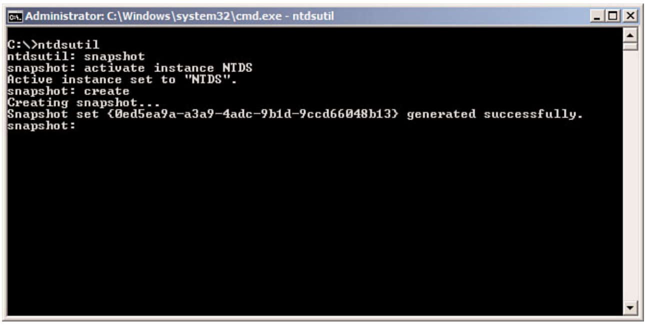
Create a Onetime Active Directory Domain Services Snapshot

Scenario/Problem: You plan to make a bulk change to AD DS data. You want the capability to compare AD DS data after the change against AD DS data before the change.

Solution: Create a onetime AD DS snapshot.

To create a onetime AD DS snapshot, perform the following steps:

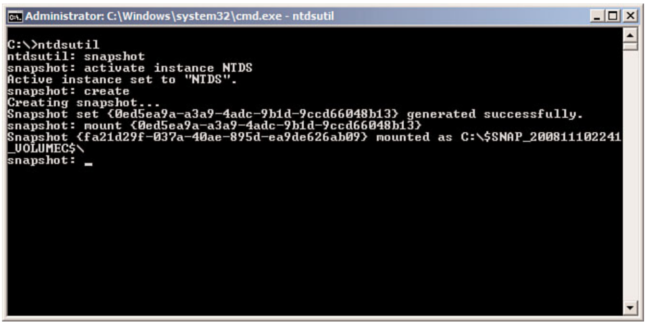
1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. In the Command Prompt window, type **`ntdsutil`** and then press Enter.
4. At the `ntdsutil` prompt, type **`snapshot`** and then press Enter.
5. At the `snapshot` prompt, type **`activate instance NTDS`** and then press Enter.
6. At the `snapshot` prompt, type **`create`** and then press Enter.
7. Record the GUID that is returned by the previous command, as shown in Figure 12.43.



```
C:\>ntdsutil
ntdsutil: snapshot
snapshot: activate instance NTDS
Active instance set to "NTDS".
snapshot: create
Creating snapshot...
Snapshot set {0ed5ea9a-a3a9-4adc-9b1d-9ccd66048b13} generated successfully.
snapshot:
```

FIGURE 12.43
Creating a snapshot.

8. At the `snapshot` prompt, type **`mount {0ed5ea9a-a3a9-4adc-9b1d-9ccd66048b13}`**, where *`{0ed5ea9a-a3a9-4adc-9b1d-9ccd66048b13}`* is the GUID retrieved from Step 7, as shown in Figure 12.44.



```
C:\>ntdsutil
ntdsutil: snapshot
snapshot: activate instance NTDS
Active instance set to "NTDS".
snapshot: create
Creating snapshot...
Snapshot set {0ed5ea9a-a3a9-4adc-9b1d-9ccd66048b13} generated successfully.
snapshot: mount {0ed5ea9a-a3a9-4adc-9b1d-9ccd66048b13}
Snapshot {fa21d29f-037a-40ae-895d-ea9de626ab09} mounted as C:\$SNAP_200811102241
_VOLUMEC$\
snapshot: _
```

FIGURE 12.44
Mounting a snapshot.

9. Record the path where the snapshot was mounted.

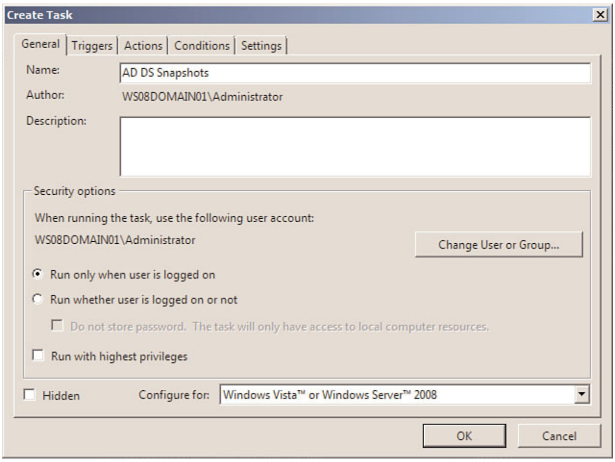
Create Scheduled Active Directory Domain Services Snapshots

Scenario/Problem: You want to be able to compare AD DS data on an ongoing basis.

Solution: Create a scheduled AD DS snapshot.

To create a scheduled AD DS snapshot, perform the following steps:

1. Log on to a domain controller.
2. Click Start, click Administrative Tools, and then click Task Scheduler.
3. On the Action menu in Task Scheduler, click Create Task.
4. On the General tab of the Create Task window, shown in Figure 12.45, type a name for the task in the Name field.



Name: AD DS Snapshots

Author: WS08DOMAIN01\Administrator

Description:

Security options

When running the task, use the following user account:
WS08DOMAIN01\Administrator

● Run only when user is logged on

○ Run whether user is logged on or not

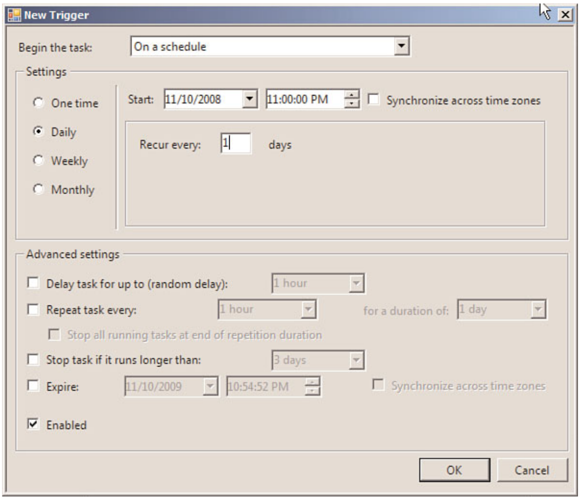
□ Do not store password. The task will only have access to local computer resources.

□ Run with highest privileges

□ Hidden Configure for: Windows Vista™ or Windows Server™ 2008

FIGURE 12.45
The General tab of the Create Task Wizard.

5. On the Triggers tab of the Create Task window, click New.
6. On the New Trigger page, define a trigger for the task and click OK, as shown in Figure 12.46.
7. On the Actions tab, click New.
8. On the New Action window, shown in Figure 12.47, ensure Start a program is selected from the drop-down list, type **`C:\Windows\System32\ntdsutil.exe`** into the Program/Script: field, and type **`ntdsutil "activate instance ntds" snapshot create quit quit`** into the Add arguments field; then click OK.
9. Click OK on the Create Task Wizard.



New Trigger

Begin the task: On a schedule

Settings

○ One time
● Daily
○ Weekly
○ Monthly

Start: 11/10/2008 11:00:00 PM □ Synchronize across time zones

Recur every: 1 days

Advanced settings

□ Delay task for up to (random delay): 1 hour

□ Repeat task every: 1 hour for a duration of: 1 day

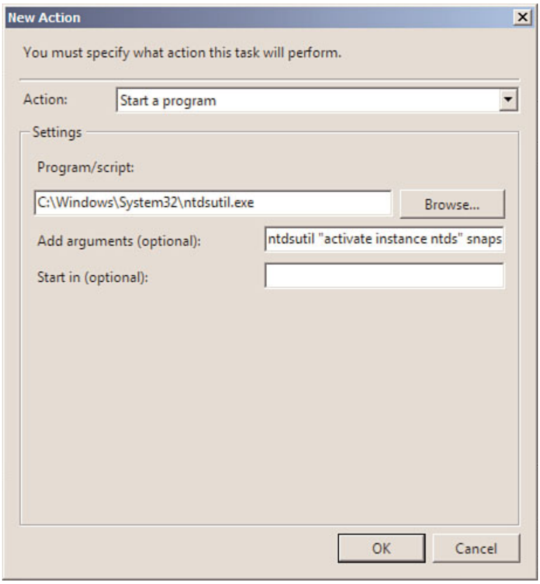
□ Stop all running tasks at end of repetition duration

□ Stop task if it runs longer than: 3 days

□ Expire: 11/10/2009 10:54:52 PM □ Synchronize across time zones

☑ Enabled

FIGURE 12.46
The New Trigger window.



New Action

You must specify what action this task will perform.

Action: Start a program

Settings

Program/script:
C:\Windows\System32\ntdsutil.exe

Add arguments (optional): ntdsutil "activate instance ntds" snaps

Start in (optional):

FIGURE 12.47
The New Action window.

Expose an Active Directory Domain Services Snapshot as an LDAP Server

Scenario/Problem: You previously created an AD DS snapshot. You need to be able to view data in the snapshot.

Solution: Expose an AD DS snapshot as an LDAP server.

To expose an AD DS snapshot as an LDAP server, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. In the Command Prompt window, type the following command and press Enter:

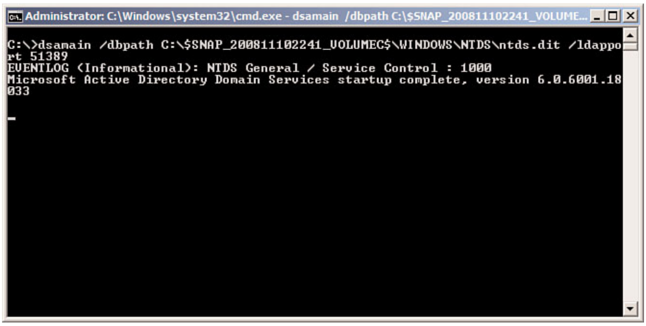
   ```
   dsamain /dbpath C:\$SNAP_200811102241_VOLUMEC$\WINDOWS\NTDS\ntds.dit
   /ldapport 51389
   ```

   Table 12.11 lists each parameter used in the previous command.

Table 12.11 **Parameters to Expose an Active Directory Domain Services Snapshot as an LDAP Server**

Parameter	Meaning
`/dbpath`	Path to database file.
`/ldapport`	LDAP port number to use.

4. A message indicates that AD DS startup is complete, as shown in Figure 12.48.


Administrator: C:\Windows\system32\cmd.exe - dsamain /dbpath C:\$SNAP_200811102241_VOLUME...

```
C:\>dsamain /dbpath C:\$SNAP_200811102241_VOLUMEC$\WINDOWS\NTDS\ntds.dit /ldappo
rt 51389
EVENTLOG (Informational): NTDS General / Service Control : 1000
Microsoft Active Directory Domain Services startup complete, version 6.0.6001.18
033

_
```

FIGURE 12.48
Exposing an AD DS snapshot as an LDAP server.

5. If you plan to access data that is stored in the snapshot, leave the Command Prompt window open.

Access Data Stored in Active Directory Domain Services Snapshots

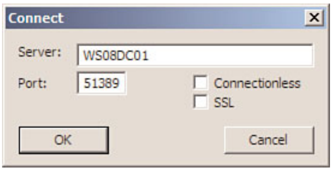
Scenario/Problem: You previously created an AD DS snapshot. You need to be able to retrieve data from the snapshot.

Solution: Access data stored in an AD DS snapshot.

Access Data Stored in Active Directory Domain Services Snapshots by Using LDP.exe

To access data that is stored in an AD DS snapshot by using LDP.exe, perform the following steps:

1. Log on to a domain controller.
2. Click Start, click Run, type **`LDP.exe`**, and then press Enter.
3. On the Connection menu, click Connect.
4. On the Connect window, shown in Figure 12.49, type the name of the server or type **`localhost`** in the Server field, type the port number to use to connect in the Port field, and then click OK.



Server: WS08DC01

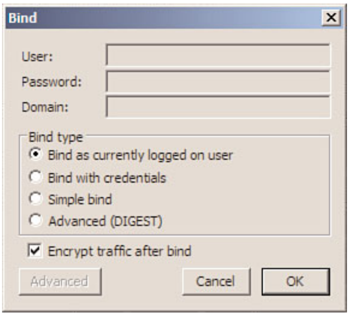
Port: 51389

□ Connectionless

□ SSL

FIGURE 12.49
The LDP Connect window.

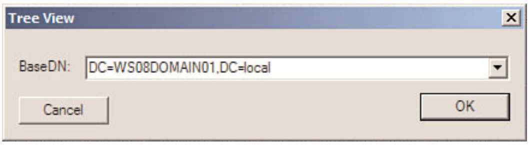
5. On the Connection menu, click Bind.
6. In the Bind type section of the Bind window, click Bind as currently logged on user or click Bind with credentials and type a username, password, and domain for a user account that has permission to access the Active Directory data, as shown in Figure 12.50. Click OK.
7. On the View menu, click Tree.
8. On the Tree View window, shown in Figure 12.51, type the distinguished name of the parent container for the data you want to view; then click OK.



Bind type
● Bind as currently logged on user
○ Bind with credentials
○ Simple bind
○ Advanced (DIGEST)

☑ Encrypt traffic after bind

FIGURE 12.50
The LDP Bind window.



BaseDN: DC=WS08DOMAIN01,DC=local

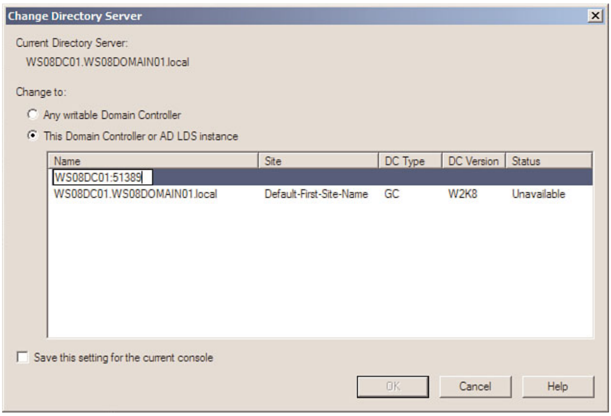
FIGURE 12.51
The LDP Tree View window.

9. In the console tree, double-click the container for the object you want to view.
10. The properties of the object appear in the details pane.

Access Data Stored in Active Directory Domain Services Snapshots by Active Directory Users and Computers

To access data that is stored in an AD DS snapshot by using Active Directory Users and Computers, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Administrative Tools, and then click Active Directory Users and Computers.
3. In the console tree, right-click the Active Directory Users and Computers node and click Change Domain Controller.
4. On the Change Directory Server window, shown in Figure 12.52, click <Type a Domain Controller name or an IP Address here>, and type the name and port number of the server on which the snapshot is exposed.
5. Double-click the appropriate containers for the object you want to view, and then double-click that object to view its properties.



Change Directory Server

Current Directory Server:
WS08DC01.WS08DOMAIN01.local

Change to:

○ Any writable Domain Controller

● This Domain Controller or AD LDS instance

Name	Site	DC Type	DC Version	Status
WS08DC01:51389				
WS08DC01.WS08DOMAIN01.local	Default-First-Site-Name	GC	W2K8	Unavailable

☐ Save this setting for the current console

FIGURE 12.52
The Change Directory Server window.

CHAPTER 13

Manage Active Directory Domain Services Auditing

IN THIS CHAPTER:

- Enable the Global Audit Policy
- Disable the Global Audit Policy
- Retrieve the State of Directory Service Access Auditing Subcategories
- Enable the Directory Service Access Auditing Subcategory
- Disable the Directory Service Access Auditing Subcategory
- Enable the Directory Service Changes Auditing Subcategory
- Disable the Directory Service Changes Auditing Subcategory
- Enable the Directory Service Replication Auditing Subcategory
- Disable the Directory Service Changes Auditing Subcategory
- Enable the Detailed Directory Service Replication Auditing Subcategory
- Disable the Detailed Directory Service Replication Auditing Subcategory
- Configure Auditing on Object Security Access Control Lists
- Exclude an Attribute from Directory Service Auditing

Active Directory Domain Services (AD DS) auditing in Windows Server 2008 has changed significantly from previous versions of Windows Server. Microsoft introduced more granular auditing capabilities in Windows Server 2008. In addition, AD DS auditing in Windows Server 2008 can be configured to log old and new values when changes to objects and their attributes are made.

This chapter describes the steps required to manage AD DS auditing.

Enable the Global Audit Policy

Scenario/Problem: You require the ability to audit access and changes made to AD DS data.

Solution: Enable the global audit policy.

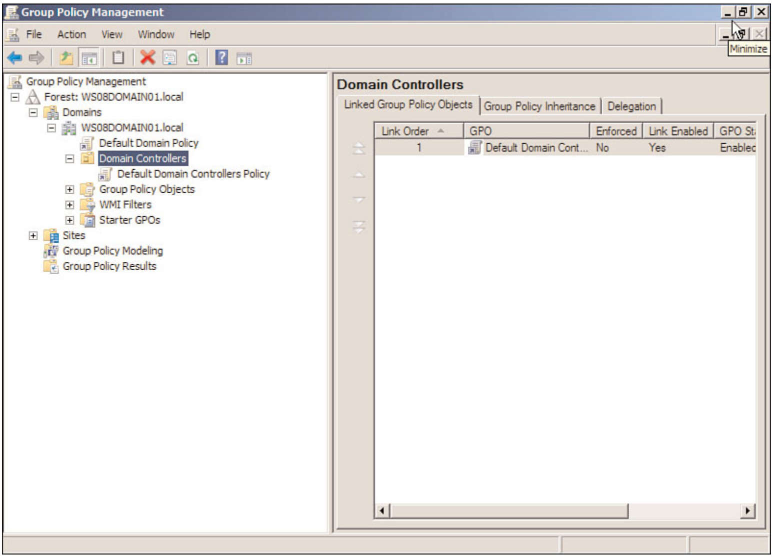
Enable the Global Audit Policy by Using the Windows Interface

To enable the global audit policy by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 Remote Server Administration Tools (RSAT) installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree of the Group Policy Management console, expand the Forest node, expand the Domains node, expand the node for the domain in which you want to configure auditing, and then expand the Domain Controllers node.
4. Right-click the Default Domain Controllers Policy, shown in Figure 13.1, and click Edit.

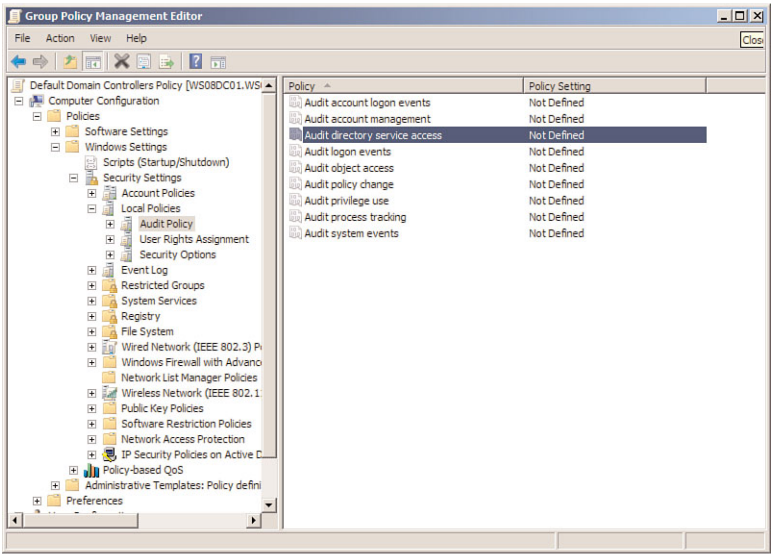
TIP By default, the Default Domain Controllers Policy group policy object (GPO) is linked to the Domain Controllers organizational unit (OU). If you have unlinked this GPO or linked additional GPOs, you need to select the applicable GPO.

5. In the console tree of the Group Policy Management Editor, expand the Computer Configuration node, expand the Policies node, expand the Windows Settings node, expand the Security Settings node, expand the Local Policies node, and select the Audit Policy node.
6. In the details pane, right-click Audit directory service access, shown in Figure 13.2, and click Properties.



Link Order	GPO	Enforced	Link Enabled	GPO St:
1	Default Domain Cont...	No	Yes	Enablec

FIGURE 13.1
The Group Policy Management console.

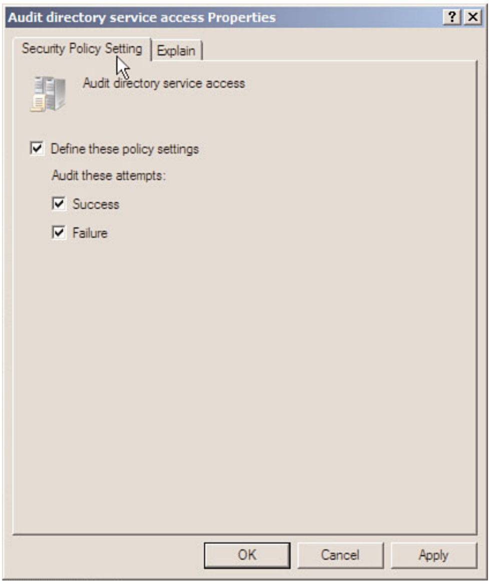

Group Policy Management Editor
File Action View Help
Clos
Default Domain Controllers Policy [WS08DC01.WS
Computer Configuration
Policies
Software Settings
Windows Settings
Scripts (Startup/Shutdown)
Security Settings
Account Policies
Local Policies
Audit Policy
User Rights Assignment
Security Options
Event Log
Restricted Groups
System Services
Registry
File System
Wired Network (IEEE 802.3) P
Windows Firewall with Advanc
Network List Manager Policies
Wireless Network (IEEE 802.1
Public Key Policies
Software Restriction Policies
Network Access Protection
IP Security Policies on Active D
Policy-based QoS
Administrative Templates: Policy defini
Preferences

Policy	Policy Setting
Audit account logon events	Not Defined
Audit account management	Not Defined
Audit directory service access	Not Defined
Audit logon events	Not Defined
Audit object access	Not Defined
Audit policy change	Not Defined
Audit privilege use	Not Defined
Audit process tracking	Not Defined
Audit system events	Not Defined

FIGURE 13.2
The Group Policy Management Editor.

7. On the Audit directory service access page, select Define these policy settings.

8. As shown in Figure 13.3, to audit successful directory services access attempts, select Success. To audit failed directory services access attempts, select Failed. Click OK.


Audit directory service access Properties
Security Policy Setting
Explain
Audit directory service access
OK
Cancel
Apply

☑ Define these policy settings

Audit these attempts:

☑ Success

☑ Failure

FIGURE 13.3
The Audit directory service access page.

9. Close the Group Policy Object Editor.

TIP Changes to GPOs take effect the next time group policy is applied to a user and/or computer. To force the application of a GPO, type **`gpupdate /force`** in the command line.

Enable the Global Audit Policy by Using the Command Line

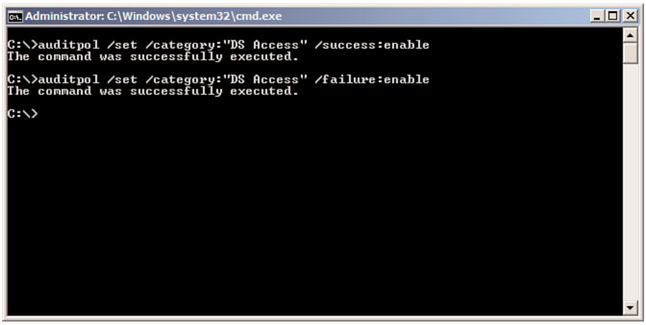
To enable the global audit policy by using the command line, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To enable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.4, and then press Enter.

```
auditpol /set /category:"DS Access" /success:enable
```

4. To enable the auditing of failed attempts, in the Command Prompt window type the following command, as shown in Figure 13.4, and then press Enter.

```
auditpol /set /category:"DS Access" /failure:enable
```



```
C:\>auditpol /set /category:"DS Access" /success:enable
The command was successfully executed.

C:\>auditpol /set /category:"DS Access" /failure:enable
The command was successfully executed.

C:\>
```

FIGURE 13.4
Enabling the global audit policy using the command line.

5. Close the Command Prompt window.

Disable the Global Audit Policy

Scenario/Problem: You previously required the ability to audit access and changes made to AD DS data. You no longer require this ability.

Solution: Disable the global audit policy.

Disable the Global Audit Policy by Using the Windows Interface

To disable the global audit policy by using the Windows interface, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Administrative Tools, and then click Group Policy Management.
3. In the console tree of the Group Policy Management console, expand the forest node, expand the domains node, expand the node for the domain in which you want to configure auditing, and then expand the Domain Controllers node.
4. Right-click the Default Domain Controllers Policy, and click Edit.

TIP By default, the Default Domain Controllers Policy GPO is linked to the Domain Controllers OU. If you have unlinked this GPO or linked additional GPOs, you need to select the applicable GPO.

5. In the console tree of the Group Policy Management Editor, expand the Computer Configuration node, expand the Policies node, expand the Windows Settings node, expand the Security Settings node, expand the Local Policies node, and select the Audit Policy node.
6. In the details pane, right-click Audit directory service access and click Properties.
7. On the Audit directory service access Properties page, shown in Figure 13.5, deselect Define these policy settings.

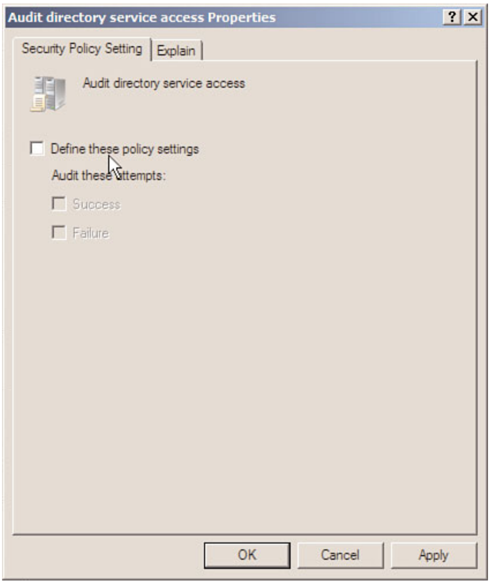

Audit directory service access Properties
? ×
Security Policy Setting
Explain
Audit directory service access
□ Define these policy settings
Audit these attempts:
□ Success
□ Failure
OK
Cancel
Apply

FIGURE 13.5
The Audit directory service access Properties page.

8. Close the Group Policy Object Editor.

TIP Changes to GPOs take effect the next time group policy is applied to a user and/or computer. To force the application of a GPO, type **`gpupdate /force`** on the command line.

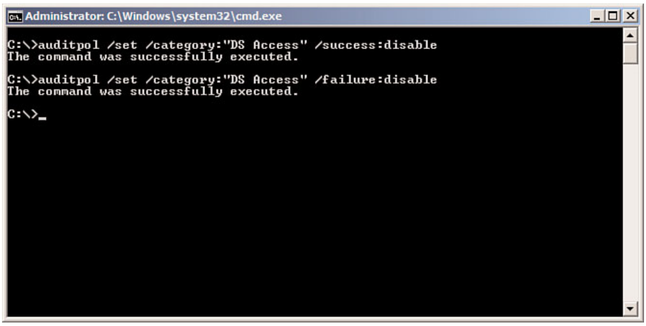
Disable the Global Audit Policy by Using the Command Line

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To disable the auditing of successful attempts, in the Command Prompt window, type the following command and then press Enter:

```
auditpol /set /category:"DS Access" /success:disable
```

4. To disable the auditing of failed attempts, in the Command Prompt window type the following command as shown in Figure 13.6, and then press Enter:

   ```
   auditpol /set /category:"DS Access" /failure:disable
   ```



```
C:\>auditpol /set /category:"DS Access" /success:disable
The command was successfully executed.

C:\>auditpol /set /category:"DS Access" /failure:disable
The command was successfully executed.

C:\>_
```

FIGURE 13.6
Disabling the global audit policy using the command line.

5. Close the Command Prompt window.

Retrieve the State of Directory Service Access Auditing Subcategories

Scenario/Problem: You need to determine the status of directory service access auditing.

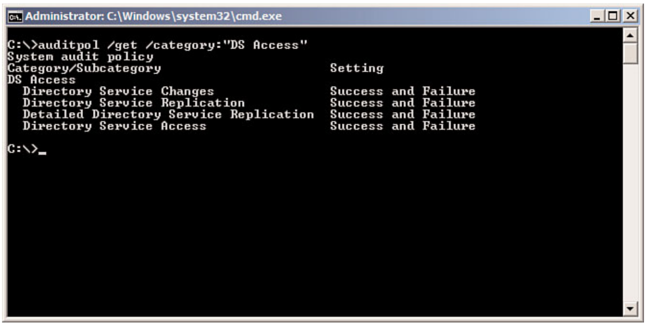
Solution: Retrieve the state of the auditing subcategories.

To retrieve the state of Directory Service Access auditing subcategories, perform the following tasks:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. In the Command Prompt window, type the following command and then press Enter:

   ```
   auditpol /get /category:"DS Access"
   ```

4. The status of each subcategory is returned in the Command Prompt window, as shown in Figure 13.7.



```
C:\>auditpol /get /category:"DS Access"
System audit policy
Category/Subcategory                      Setting
DS Access
  Directory Service Changes               Success and Failure
  Directory Service Replication           Success and Failure
  Detailed Directory Service Replication  Success and Failure
  Directory Service Access                Success and Failure

C:\>_
```

FIGURE 13.7

Retrieving the state of Directory Service Access auditing subcategories.

Enable the Directory Service Access Auditing Subcategory

Scenario/Problem: You need to audit all failed attempts to access AD DS data.

Solution: Enable the Directory Service Access auditing subcategory.

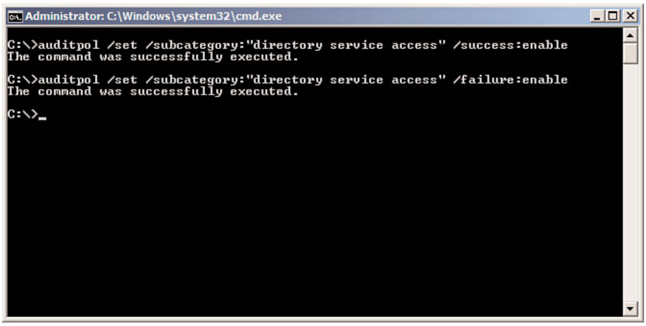
To enable the Directory Service Access auditing subcategory, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To enable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.8, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service access"
   /success:enable
   ```

4. To enable the auditing of failed attempts, in the Command Prompt window, type the following command, as shown in Figure 13.8, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service access"
   /failure:enable
   ```



```
C:\>auditpol /set /subcategory:"directory service access" /success:enable
The command was successfully executed.

C:\>auditpol /set /subcategory:"directory service access" /failure:enable
The command was successfully executed.

C:\>_
```

FIGURE 13.8
Enabling the Directory Service Access auditing subcategory.

Disable the Directory Service Access Auditing Subcategory

Scenario/Problem: You do not need to audit all failed attempts to access AD DS data.

Solution: Disable the Directory Service Access auditing subcategory.

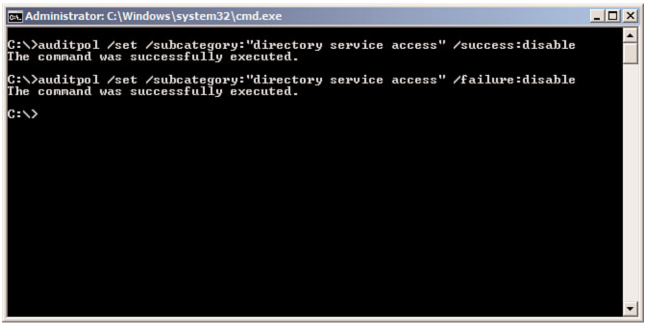
To disable the Directory Service Access auditing subcategory, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To disable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.9, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service access" /success:
   disable
   ```

4. To disable the auditing of failed attempts, in the Command Prompt window, type the following command, as shown in Figure 13.9, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service access" /failure:
   disable
   ```



```
C:\>auditpol /set /subcategory:"directory service access" /success:disable
The command was successfully executed.

C:\>auditpol /set /subcategory:"directory service access" /failure:disable
The command was successfully executed.

C:\>
```

FIGURE 13.9
Disabling the Directory Service Access auditing subcategory.

Enable the Directory Service Changes Auditing Subcategory

Scenario/Problem: You need to audit all failed attempts to modify AD DS data.

Solution: Enable the Directory Service Changes auditing subcategory.

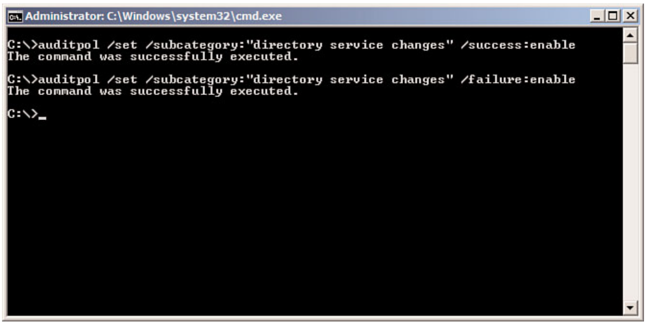
To enable the Directory Service Changes auditing subcategory, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To enable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.10, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service changes"
   /success:enable
   ```

4. To enable the auditing of failed attempts, in the Command Prompt window, type the following command, as shown in Figure 13.10, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service changes"
   /failure:enable
   ```



```
C:\>auditpol /set /subcategory:"directory service changes" /success:enable
The command was successfully executed.

C:\>auditpol /set /subcategory:"directory service changes" /failure:enable
The command was successfully executed.

C:\>_
```

FIGURE 13.10
Enabling the Directory Service Changes auditing subcategory.

Disable the Directory Service Changes Auditing Subcategory

Scenario/Problem: You do not need to audit all failed attempts to modify AD DS data.

Solution: Disable the Directory Service Changes auditing subcategory.

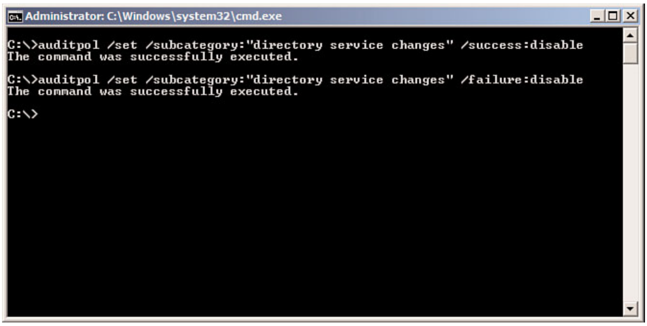
To disable the Directory Service Changes auditing subcategory, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To disable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.11, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service changes"
   /success:disable
   ```

4. To disable the auditing of failed attempts, in the Command Prompt window, type the following command, as shown in Figure 13.11, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service changes"
   /failure:disable
   ```



```
C:\>auditpol /set /subcategory:"directory service changes" /success:disable
The command was successfully executed.

C:\>auditpol /set /subcategory:"directory service changes" /failure:disable
The command was successfully executed.

C:\>
```

FIGURE 13.11

Disabling the Directory Service Changes auditing subcategory.

Enable the Directory Service Replication Auditing Subcategory

Scenario/Problem: You need to audit all failed attempts to replicate AD DS data.

Solution: Enable the Directory Service Replication auditing subcategory.

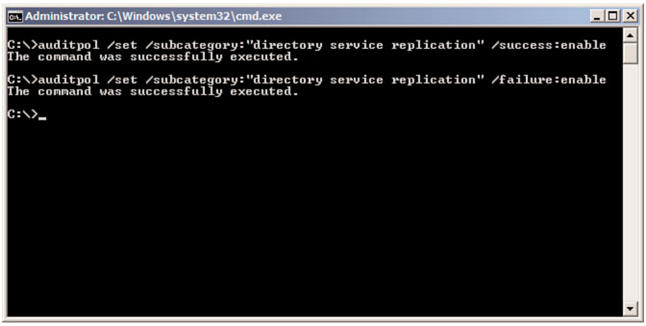
To enable the Directory Service Replication auditing subcategory, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To enable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.12, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service replication"
   /success:enable
   ```

4. To enable the auditing of failed attempts, in the Command Pompt window, type the following command, as shown in Figure 13.12, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service replication"
   /failure:enable
   ```



```
C:\>auditpol /set /subcategory:"directory service replication" /success:enable
The command was successfully executed.

C:\>auditpol /set /subcategory:"directory service replication" /failure:enable
The command was successfully executed.

C:\>_
```

FIGURE 13.12
Enabling the Directory Service Replication auditing subcategory.

Disable the Directory Service Replication Auditing Subcategory

Scenario/Problem: You do not need to audit all failed attempts to replicate AD DS data.

Solution: Disable the Directory Service Replication auditing subcategory.

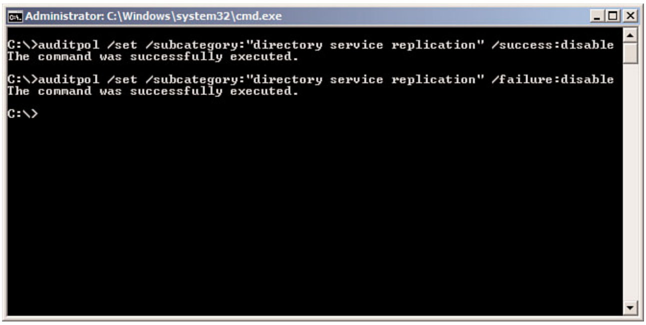
To disable the Directory Service Replication auditing subcategory, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To disable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.13, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service replication"
   /success:disable
   ```

4. To disable the auditing of failed attempts, in the Command Prompt window, type the following command, as shown in Figure 13.13, and then press Enter:

   ```
   auditpol /set /subcategory:"directory service replication"
   /failure:disable
   ```



```
C:\>auditpol /set /subcategory:"directory service replication" /success:disable
The command was successfully executed.

C:\>auditpol /set /subcategory:"directory service replication" /failure:disable
The command was successfully executed.

C:\>
```

FIGURE 13.13
Disabling the Directory Service Replication auditing subcategory.

Enable the Detailed Directory Service Replication Auditing Subcategory

Scenario/Problem: You need to audit detailed replication information.

Solution: Enable the Detailed Directory Service Replication auditing subcategory.

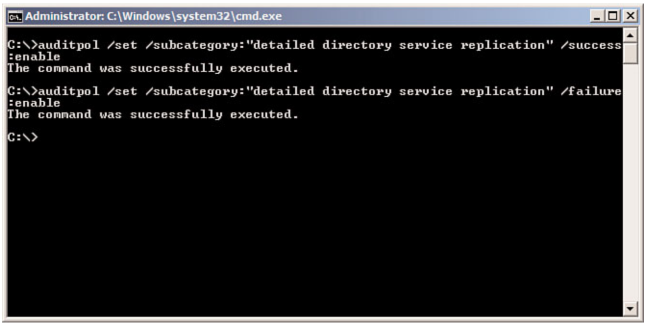
To enable the Detailed Directory Service Replication auditing subcategory, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To enable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.14, and then press Enter:

   ```
   auditpol /set /subcategory:"detailed directory service replication"
   /success:enable
   ```

4. To enable the auditing of failed attempts, in the Command Prompt window, type the following command, as shown in Figure 13.14, and then press Enter:

   ```
   auditpol /set /subcategory:"detailed directory service replication"
   /failure:enable
   ```



```
C:\>auditpol /set /subcategory:"detailed directory service replication" /success
:enable
The command was successfully executed.

C:\>auditpol /set /subcategory:"detailed directory service replication" /failure
:enable
The command was successfully executed.

C:\>
```

FIGURE 13.14
Enabling the Detailed Directory Service Replication auditing subcategory.

Disable the Detailed Directory Service Replication Auditing Subcategory

Scenario/Problem: You no longer need to audit detailed replication information.

Solution: Disable the Detailed Directory Service Replication auditing subcategory.

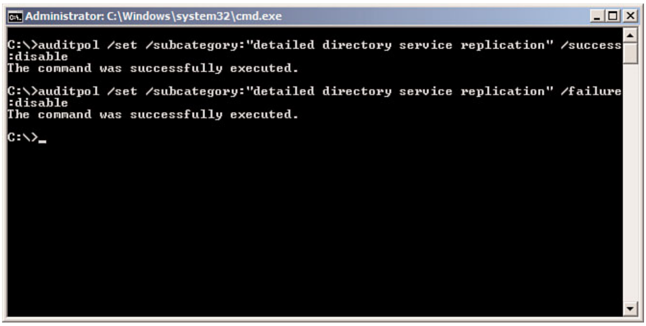
To disable the Detailed Directory Service Replication auditing subcategory, perform the following steps:

1. Log on to a domain controller.
2. Click Start, and then click Command Prompt.
3. To disable the auditing of successful attempts, in the Command Prompt window, type the following command, as shown in Figure 13.15, and then press Enter:

   ```
   auditpol /set /subcategory:"detailed directory service replication"
   /success:disable
   ```

4. To disable the auditing of failed attempts, in the Command Prompt window, type the following command, as shown in Figure 13.15, and then press Enter:

   ```
   auditpol /set /subcategory:"detailed directory service replication"
   /failure:disable
   ```



```
C:\>auditpol /set /subcategory:"detailed directory service replication" /success
:disable
The command was successfully executed.

C:\>auditpol /set /subcategory:"detailed directory service replication" /failure
:disable
The command was successfully executed.

C:\>_
```

FIGURE 13.15
Disabling the Detailed Directory Service Replication auditing subcategory.

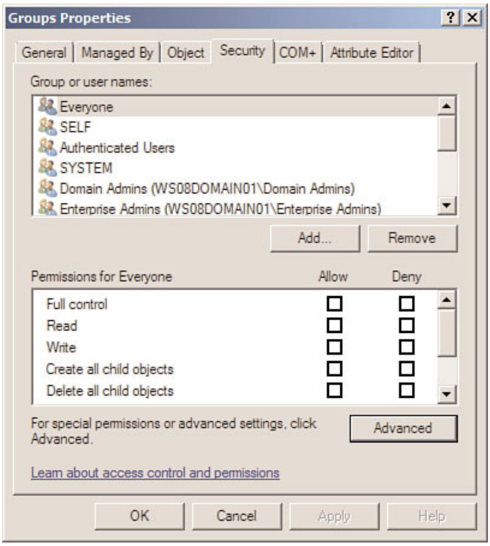
Configure Auditing on Object Security Access Control Lists

Scenario/Problem: You require the ability to report on changes to user accounts located in a particular OU. You need to report on the value before the change and the value after the change.

Solution: Configure auditing on object security access control lists (SACLs).

To configure auditing on object SACLs, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, Administrative Tools, and then click Active Directory Users and Computers.
3. On the View menu, ensure Advanced Features is selected.
4. Locate the object on which you want to configure auditing; then click Properties.
5. On the object properties page, click the Security tab, shown in Figure 13.16.
6. On the Security tab, click Advanced.
7. On the Advanced Security Settings page, click the Auditing tab.
8. On the Auditing tab, shown in Figure 13.17, click Add.



Groups Properties

? ✕
General | Managed By | Object | Security | COM+ | Attribute Editor

Group or user names:

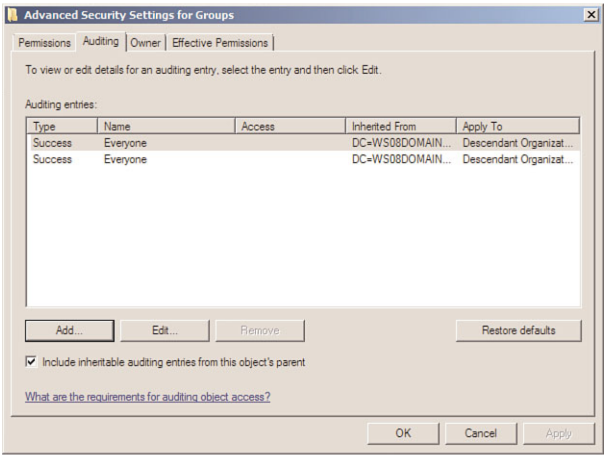
- Everyone
- SELF
- Authenticated Users
- SYSTEM
- Domain Admins (WS08DOMAIN01\Domain Admins)
- Enterprise Admins (WS08DOMAIN01\Enterprise Admins)

Permissions for Everyone	Allow	Deny
Full control	□	□
Read	□	□
Write	□	□
Create all child objects	□	□
Delete all child objects	□	□

For special permissions or advanced settings, click Advanced.

Advanced
Learn about access control and permissions
OK
Cancel
Apply
Help

FIGURE 13.16
The object's Security tab.



Advanced Security Settings for Groups

✕
Permissions | Auditing | Owner | Effective Permissions

To view or edit details for an auditing entry, select the entry and then click Edit.

Auditing entries:

Type	Name	Access	Inherited From	Apply To
Success	Everyone		DC=WS08DOMAIN...	Descendant Organizat...
Success	Everyone		DC=WS08DOMAIN...	Descendant Organizat...

Add...
Edit...
Remove
Restore defaults

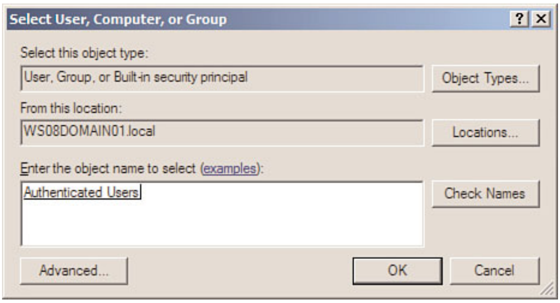
☑ Include inheritable auditing entries from this object's parent

What are the requirements for auditing object access?
OK
Cancel
Apply

FIGURE 13.17
The Auditing tab.

9. On the Select User, Computer, or Group page, shown in Figure 13.18, enter the name of the user, computer, or group for which you want to add the auditing entry; then click OK.

10. On the Auditing Entry page, under Apply Onto, select the types of objects to which you want the auditing applied.



Select this object type: User, Group, or Built-in security principal

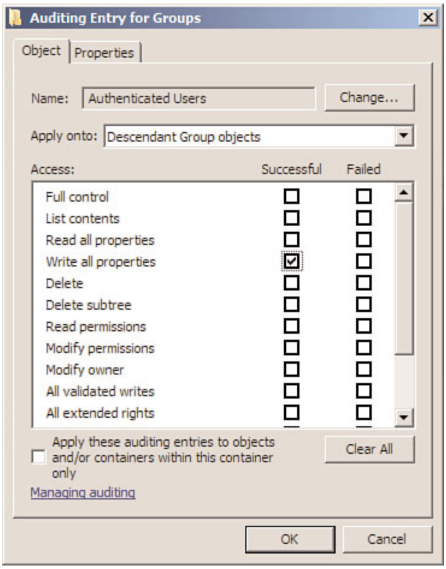
From this location: WS08DOMAIN01.local

Enter the object name to select (examples): Authenticated Users

FIGURE 13.18
The Select User, Computer, or Group page.

11. On the Auditing Entry for Groups, page, under Access, select the Successful and Failed actions you want to audit; then click OK.

12. Click OK to close the object properties page.



Name: Authenticated Users

Apply onto: Descendant Group objects

Access:	Successful	Failed
Full control	□	□
List contents	□	□
Read all properties	□	□
Write all properties	☑	□
Delete	□	□
Delete subtree	□	□
Read permissions	□	□
Modify permissions	□	□
Modify owner	□	□
All validated writes	□	□
All extended rights	□	□

□ Apply these auditing entries to objects and/or containers within this container only

FIGURE 13.19
The Auditing Entry for Groups page.

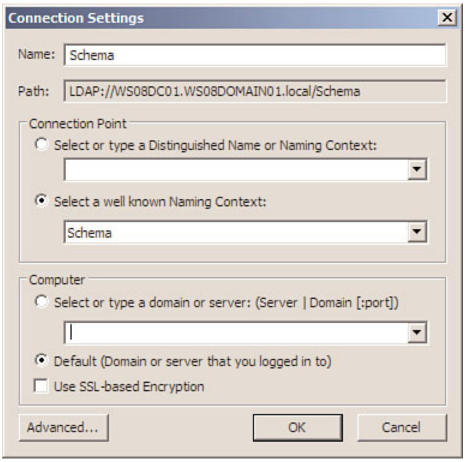
Exclude an Attribute from Directory Service Auditing

Scenario/Problem: You need the ability to audit changes to user objects. However, you do not want to audit changes made to the Description attribute.

Solution: Exclude an attribute for directory service auditing.

To exclude an attribute for directory service auditing, perform the following steps:

1. Log on to a domain controller or a member computer that has Windows Server 2008 RSAT installed.
2. Click Start, click Run, type **`ADSIEdit.msc`**, and then click OK.
3. In the ADSI Edit console, on the Action menu, click Connect To.
4. On the Connection Settings page, shown in Figure 13.20, type **`Schema`** in the Name field, select Schema from the drop-down list under Select a well known Naming Context, and then click OK.



Name: Schema

Path: LDAP://WS08DC01.WS08DOMAIN01.local/Schema

Connection Point

○ Select or type a Distinguished Name or Naming Context:

● Select a well known Naming Context: Schema

Computer

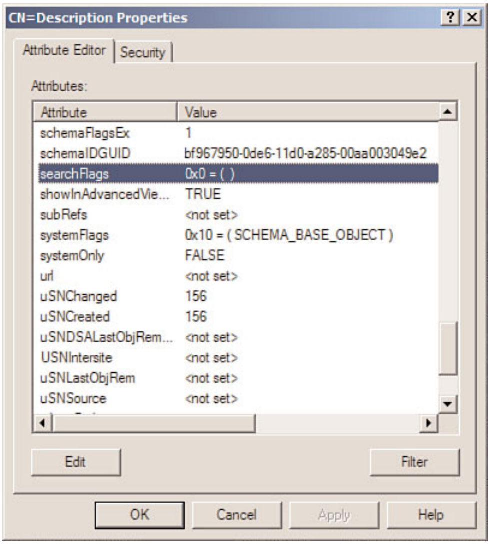
○ Select or type a domain or server: (Server | Domain [:port])

● Default (Domain or server that you logged in to)

□ Use SSL-based Encryption

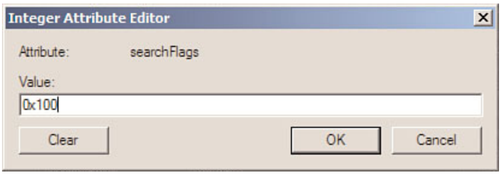
FIGURE 13.20
The ADSI Edit Connection Settings page.

5. In the console tree, select the Schema node.
6. In the details pane, right-click the attribute you want to exclude from directory service auditing; then click Properties.
7. On the Object Properties page, shown in Figure 13.21, select the `searchFlags` attribute and then click Edit.
8. On the Integer Attribute Editor page, shown in Figure 13.22, type **`0x100`** into the Value field and click OK.
9. In the Object Properties page, the value for the `searchFlags` attribute is changed to `0x100 = (NEVER_AUDIT_VALUE)`, as shown in Figure 13.23. Click OK to close the Object Properties page.



Attribute	Value
schemaFlagsEx	1
schemaIDGUID	bf967950-0de6-11d0-a285-00aa003049e2
searchFlags	0x0 = ( )
showInAdvancedVie...	TRUE
subRefs	<not set>
systemFlags	0x10 = (SCHEMA_BASE_OBJECT)
systemOnly	FALSE
url	<not set>
uSNChanged	156
uSNCreated	156
uSNDSALastObjRem...	<not set>
USNIntersite	<not set>
uSNLastObjRem	<not set>
uSNSource	<not set>

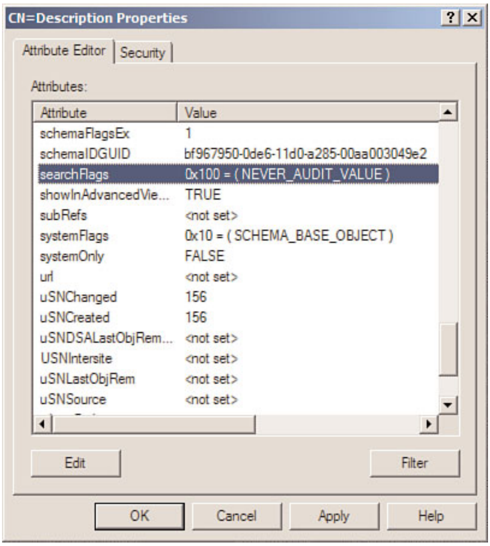
FIGURE 13.21
The Object Properties page.



Attribute: searchFlags

Value:
0x100

FIGURE 13.22
The Integer Attribute Editor page.



Attribute	Value
schemaFlagsEx	1
schemaIDGUID	bf967950-0de6-11d0-a285-00aa003049e2
searchFlags	0x100 = (NEVER_AUDIT_VALUE)
showInAdvancedVie...	TRUE
subRefs	<not set>
systemFlags	0x10 = (SCHEMA_BASE_OBJECT)
systemOnly	FALSE
url	<not set>
uSNChanged	156
uSNCreated	156
uSNDSALastObjRem...	<not set>
USNIntersite	<not set>
uSNLastObjRem	<not set>
uSNSource	<not set>

FIGURE 13.23
The `Never_Audit_Value`.

Index

This page intentionally left blank